This brief is being provided to inform the board, staff and public of the details of an agenda item that requires no immediate action from the board. The President of the Board will provide board members, staff, and the public the opportunity to ask questions about this topic when this agenda item is announced.

**Date:** April 19, 2021

**Originator:** Rich McLaughlin

**Agenda Topic Title:** Leachfield Update

**Purpose of Brief:** To update the Board of Directors of the slow degradation District Leach Fields

**Supporting Documents Included:**  Briefing Document

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1. **Agenda Topic Brief or Update:**

Performance of both the Windsong and Falling Water leachfields has been deteriorating at a rate quicker than previously anticipated, resulting in the need for both immediate remediation and operational changes to preserve performance. This situation has unfortunately escalated the urgency for major wastewater upgrades.

1. **Anticipated Impacts to the District -** (*Consider financial impact, change in procedures, customer, and staff communication*):

Failure to take immediate actions on both leachfields has the potential of resulting in leachfield failure with significant impacts on day-to-day life in the District. While interim measures should maintain functionality in the short to medium term, we are at the point that major wastewater upgrades need to be considered. Upgrades need to be designed as a long-term solution, not stop gap measures.

1. **Anticipated Impacts to the Customer –** *Standby, Residential, Commercial***:**

Recommended upgrades and longer-term solutions should solve the immediate performance challenges and provide for a long-term solution to District wastewater needs.

**Next Steps for this Topic**:

Understanding the history, function, problems, and potential solutions to wastewater handling.

Background:

The original development plan for Gold Mountain in 1996 planned for three leachfields, Windsong, Falling Water, and an eventual third field at the site of today’s maintenance building. Additionally, the California Regional Water Quality Control Board waste discharge permit requires the District to work with the Golf Course to utilize reclaimed water for irrigation purposes “at some point in the future.” The development plan envisioned a water reclamation facility associated with the third leachfield. Plumas County allowed the developer to build only the first phase of the system throwing the costs of completion to the CSD.

History.

The original developer began construction of two leachfields totaling 5.8 acres in the 1996-to-1997-time frame. After gaining control of the District in 2005, the resident Board of Directors commissioned John Shaw engineering to review the status of District infrastructure including the two leachfields.

Windsong: Designed as the primary leachfield. Due to excessive weed growth and ponding in the Windsong field, Shaw engineering drilled 18 test holes around the field and discovered major construction defects. Shaw engineering designed a replacement field on the original site which was constructed in late 2005 at a cost of $160k. Phase 1 included installation of automated valving allowing for future automation in a Phase II. With completion of Phase II, the rebuilt field was envisioned to handle the needs of 300 single family homes. Phase II has never been implemented. Valves have been in the ground for so long they are likely unusable.

Falling Water: While Shaw did not complete an extensive review of the Falling Water field, they believed the field would likely suffer from the same construction defects as had been observed at Windsong. Upon his hiring, Ivan Gossage, having understood that Windsong had been recently rebuilt, put his focus on improving the Falling Water field. Under Ivan’s leadership, the District undertook several projects to improve Falling Water performance including tree removal, boulder removal, and eventually the installation of the Dosing station to add automation to control the field’s operations. The Dosing station stores effluent in a holding tank, and through computer control of automated valves pumps the effluent into each trench allowing for more efficient use of the field.

During recent wet years, we observed that the Windsong field was becoming saturated and unusable during spring melt and extreme wet conditions. Due to inadequate valving, we could not completely isolate Windsong to allow it to dry out. In 2020, under Skyler’s supervision, the District installed valving allowing us to control the flow of effluent between leachfields, providing the ability to better manage flows between the fields and direct all flows to one or the other fields.

While tree clearing had been completed at Falling Water, trees had been allowed to flourish on the Windsong Field. Windsong is in a more visible location than Falling Water and I suspect that due to the sensitivity of clearing trees in the district up until recent years, there was a reluctance to clear trees in the Windsong field. Mature tree roots can easily destroy a leach field by creating tunnels and passageways for effluent to run between trenches, thereby greatly reducing the ability to effectively control effluent flows in the field. This appears to be the primary problem at Windsong

During the 2019-20 winter, we again started to see saturation in Windsong. Our solution to protect Windsong was two-fold. Installation of the new valving gave us the ability to isolate Windsong and direct all flows to Falling Water. We also started an aggressive tree removal program from Windsong in an effort to save the field from further deterioration. During the relatively dry winter of 20-21, we again experience saturation of the field and directed all flows to Falling Water.

Unfortunately, Falling Water is now experiencing an inability to handle the increased flows resulting in some minor surface expressions at the lower trenches. Field staff have been able to manually adjust the flows to reduce these problems, but it is an indication that the field is operating at near capacity. The District is working with the manufacturer to reprogram the Dosing station controller to better handle the flows, but the fact remains we need more capacity.

**Mitigation Options**

1. Falling Water field expansion. The CSD owns the three lots adjoining Falling Water to the east (part of settlement with original developer). The existing Dosing station was designed with the capacity to operate the expanded field. Preliminary tests, however, indicate that the site does not perk well due to an underlying hard pan layer. Additionally, the three lots are heavily forested. We have a bid in hand from Folchi Construction for $14k to come in and clear a test plot, and then break up the underlying hard pan allowing us to determine whether leach field expansion is a viable option. If it proves to be viable, we could execute a phase expansion adding trenches to the existing field on an incremental basis. We estimate that each of three expansion phases would cost approximately $60k.
2. Installing a water reclamation plant. Based on the recent experience of Grizzly, a drop in reclamation plant capable of processing 30,000 gallons a day, would cost between $200,000 and $300,000. This is a longer term and more permanent solution to District wastewater requirements and has always been part of our master plan. The reclamation plant is an IRWM approved project which may qualify for the next round of Prop 1 funding. The logical location for the plant would be at the Falling Water leach field where we have existing infrastructure in place. We have an agreement in place with Nakoma for the use of reclaimed water should we develop such a plant.
3. New leach field in a yet to be determined location. While there are likely other suitable areas in the district on golf course land, in common areas, or on currently private land holdings, surveying, land purchases, easements, and planning would likely make this the most expensive option as no shovel ready site has been identified.

**Current Solutions**

District field crews will carefully monitor both fields and manually control flows to avoid oversaturating either field.

**Recommendations**

1. We proceed with the testing for Falling Water expansion. Knowing whether this option is viable is critical to long term planning. We can likely reduce the current estimated quote of $14k by using Force labor for some of the tree clearing but we are currently pushing our field team to their limits with ongoing maintenance and the Power Resilience grant project. We will attempt to complete with operating dollars but as we close in on the end of our FY, this may require a transfer from reserves.
2. We make every effort to identify funding for the Reclamation plant. This is the ideal long-term solution and one that will meet the long-term requirements of the district. Such a plan is not a question of “if” but a question of “when,” it will eventually be required for wastewater handling. Prop 1 financing would be ideal; however, we should investigate other long term financing alternatives.