Cedar Lake 2024 Hydrology Report: Executive Summary

The Cedar Lake Hydrology Report presents technical results of the 2024 Cedar Lake water level monitoring program, ongoing since 2004. The long-term program's purpose is to understand critical management needs and influences toward supporting year-round desired in-lake water levels. Maintaining desirable summer-month water levels in Cedar Lake is a function of rainfall and targeted management strategies. Management strategies to date focus on improving water retention and natural hydrological functions in the northwest cedar swamp. Efforts include railroad culvert cleanouts since 2014, wetland enhancement berm in 2017, and Sherman Creek grade structures built in 2019, as well as the Lake Board's purchase of several critical wetland parcels for protection. The water level monitoring program continues to be vital for assessing, understanding, and cost-effectively pursuing appropriate phased water level augmentation options.

2024 Water Level Monitoring Program Results

Precipitation, spring snow melt, groundwater losses, and evaporation remain the dominant factors that influence the Cedar Lake elevation throughout the summer. Lake outflows occurred only during early-Spring, suggestive of low winter snowpack. Summer precipitation amounts in 2024 were just shy of the 11-inch threshold for avoiding a >1ft drop in lake level during the recreation period (Jun-Sep). As expected, the lake level dropped, and remained, below the minimum desired recreation level after mid-September 2024. The average and minimum lake levels observed during the 2024 recreation period (Jun-Sep) were lower than in 2023 (a year with more rainfall) but higher than 2022 (a year with less rainfall).

Lake level data since 2022 show the expected correlation between summer lake levels and summer precipitation. These data also show how the lake outlet structure more-effectively maintains the legal lake level by preventing spring and early-summer lake fluctuations above the legal level as historically seen with the old structure prior to 2020. This is reflected in a reduction of the maximum lake level above the legal level in years 2021-2024, compared to years 2009-2020. This change to the outflow regime may have shifted the lake's water levels to being more dependent on Spring water levels. This trend should continue to be monitored, and emphasizes the importance of ongoing augmentation efforts in the northwest wetland.

On the other hand, intentional watershed modifications in the Sherman Creek and Jones Ditch wetlands have continued to show value in terms of greater contributions to lake elevations throughout the summer. An analysis of trends shows that lake elevations prior to the construction of the wetland berm (in 2017) were more sensitive to spring and summer precipitation fluctuations, showing that watershed improvements have acted as a stabilizing force for summer lake elevations. The wetland berm has limited outflows via the King's Corner culvert and redirected groundwater flow towards the lake, while the 2017 Jones Ditch culvert replacement has increased wetland flows to the lake. Planning and coordination by the CLIB and K&A will continue to monitor emerging trends within the watershed and implement engineering design as needed. As such, the continuation of the hydrology monitoring program is recommended in 2025, as detailed below.

Recommendations for the 2025 Monitoring Program

1. Identify additional hydraulic improvements for Sherman Creek and Jones Ditch areas including the maintenance of railroad culverts for watershed flows, and identify improvements to Sherman and Jones swamps to provide ecological improvements such as fish passage and flow management.
2. Further calibration of the Jones Ditch discharge equation with level data and wetland topographic data to determine volume control options for surface and groundwater flow enhancements.
3. Redeployment of groundwater piezometers in Sherman Creek, especially with potential grant funding for fish passage improvements at the creek mouth, to better assess flow and groundwater retention, particularly in light of fish passage assessments planned for 2026.

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