**DECEMBER 2022**

**PERFORMANCE MEASURE INFORMATION SHEET**

**KINBASKET RESERVOIR: NAVIGATION**

## SUMMARY

**Goal**: Minimize disruptions to commercial navigation and transportation.

**Recommended Performance Measure:**

| Area | Performance Measure | Description |
|------|---------------------|-------------|
| Kinbasket Reservoir | Navigability days | Sum of number of days per year each of the following elevation thresholds are met or exceeded during the stated seasons (higher is better):<br>- 2415ft (736.1m): Jun 30 – Oct 31<br>- 2400ft (731.5m): May 1 – Nov 30<br>- 2392ft (729.2m): June 1 – Nov 30<br>- 2350ft (716.3m): Year round |

## INTRODUCTION

Commercial and industrial operations can be affected by Kinbasket reservoir elevations in part due to the reservoir's extensive drawdown zone. Either low or high reservoir elevations can result in a disruption to operations. When reservoir levels do not fall within critical elevations, businesses respond by changing sites or routes, altering facilities or equipment and/or by delaying logging or transport operations, all of which increase costs.

## PAST PERFORMANCE MEASURES

To determine appropriate performance measures, a preliminary list of sites in Kinbasket Reservoir potentially affected by BC Hydro's operations was identified by the Navigation/Transportation Columbia Water Use Plan Technical Subcommittee during the development of the Consultative Committee Report (2005). The critical elevations at which disruption to navigation occurred at each site were then defined. All were related to forestry operations around the reservoir. These critical elevations were subsequently reviewed by participants of the Non-Treaty Storage Stakeholder Forum meeting in October 2010. Revisions/updates were made to the sites and critical elevations, and specific time periods were defined for each site. The same performance measures were used for the CRT Review Technical Studies in 2013. These are summarized below.

*Table 1: Kinbasket Navigation PMs from the Non-Treaty Storage Agreement Options Review and CRT Review Technical Studies*

| Site | Critical Elevation (ft) | Critical Time period | Commercial Operator |
|------|-------------------------|----------------------|---------------------|
| Harvey Creek | 2415ft (736.1m) and above | June 30 – Oct 31 | Balcaen Consolidated Contracting Ltd. |
| Schlichting Creek | 2400ft (731.5m) and above | May 1–Nov 30 | Pacific Woodtech Corp. |
| Wood River | 2360ft (719.3m) and above | Year-round | Downie Timber Ltd. |

## NEW INFORMATION

The research team contacted the current forest sector operators to verify the current sites, critical elevations and critical time periods. The only change from the previous PMs was to the critical elevation for Downie Timber at the Wood River site where they are now able to operate at a wider elevation range than previously understood. Barging can now operate at elevations above 2350ft (716.3m).

During the research team's consultations with the Columbia Basin Regional Advisory Committee (CBRAC) and Columbia River Treaty Local Governments Committee (CRT LGC) regarding renewal of this performance measure, a committee member pointed out that Mica Heliskiing uses the reservoir to barge supplies to their lodge and therefore would also have an interest in a navigation PM. The research team contacted Mica Heliskiing and learned that their boat ramp (at Brown Creek) is operable at 2392ft (729.2m) and above, and that they need access from June to November. It is also possible that the ramp is operable at lower elevations, as the number above is based on the first use of the ramp in 2022.

The research team's current understanding of navigation sites, operators, and seasons are summarized in Table 2.

*Table 2: Elevation requirements and dates for commercial navigation sites on the Kinbasket Reservoir*

| Site and Operator | Season | Elevation Range |
|---|---|---|
| Harvey Creek (Balcaen Consolidated Contracting Ltd) | June 30 – Oct 31 | 2415ft (736.1m) and above |
| Schlichting Creek (Pacific Woodtech Corp.) | May 1–Nov 30 | 2400ft (731.5m) and above |
| Brown Creek (Mica Heliskiing) | June 1 – Nov 30 | 2392ft (729.2m) and above |
| Wood River(Downie Timber) | Year round | 2350ft (716.3m) and above |

## RECOMMENDED PM

Based on the information above the research team recommends consolidating navigational interests into one PM that reports the sum of the number of days annually within the required elevation range for each site (Table 2).

*Table 3: Recommended performance measure for Kinbasket navigability*

| Area | Performance Measure | Description |
|---|---|---|
| Kinbasket Reservoir | Navigability days | Sum of number of days per year above each of the following elevation thresholds during the following seasons (higher is better):<br>- 2415ft (736.1m): Jun 30 – Oct 31<br>- 2400ft (731.5m): May 1–Nov 30<br>- 2392ft (729.2m): June 1 – Nov 30<br>- 2350ft (716.3m): Year round |

The team recommends that the results for each site be provided as well as the summary PM for detailed scenario evaluation.

## COMPARISON OF PROPOSED PERFORMANCE MEASURE WITH HISTORICAL OPERATIONS

Achieving the ~~Wood Creek~~, Brown Creek and Schlichting Creek components is likely through most years except those when the reservoir is drawn down exceptionally low in the spring. Achieving the Harvey Creek component is less likely in the spring, as the reservoir is often drawn down below the minimum level at this site at this time of the year to create storage space for the upcoming freshet and high inflows, to avoid downstream flooding (Figure 1).
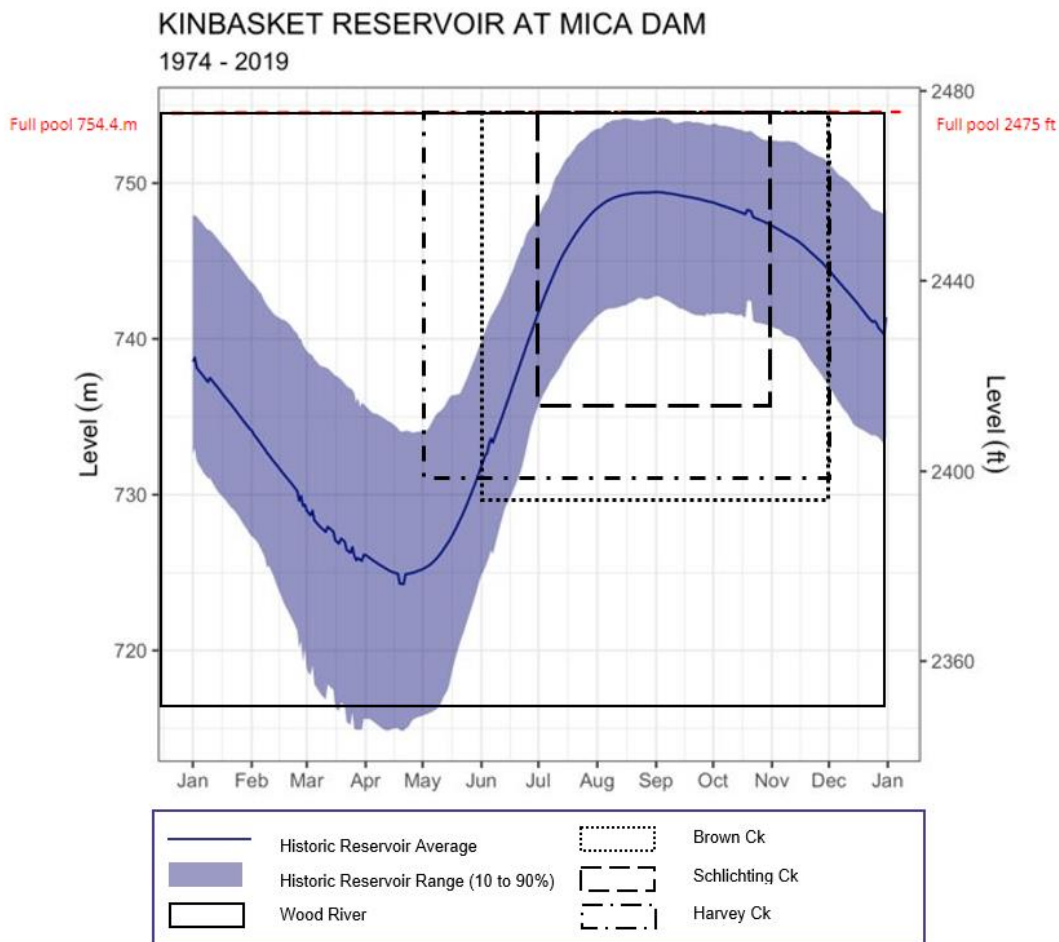


*Figure 1: Range of recommended performance measure in comparison to historic reservoir elevations*

## CALCULATIONS

For each scenario:

1. Assemble the simulated results for daily reservoir elevations over the simulation period.

2. Count the number of days over each year that the reservoir water levels are at or above the critical elevation for each site.

3. Sum the results to generate the overall result while also reporting results for individual sites.

## KEY ASSUMPTIONS AND UNCERTAINTIES

- Each scenario is simulated using the same set of system constraints, input assumptions (e.g., load forecasts) and historic basin inflows.

- Assumes that the critical elevations for each site are accurate.