

PERFORMANCE MEASURE INFORMATION SHEET #1

KINBASKET RESERVOIR: NAVIGATION

Objective / Location	Performance Measure	Units	Description	MSIC
Navigation/Kinbasket Reservoir	Navigability	# days per year	Reports # of days per year that a site is navigable to commercial operators	7 days per year

Description

Commercial operations (primarily local forest companies surrounding Kinbasket Reservoir) can be affected by reservoir elevations. Either low or high reservoir elevations can result in a disruption to operations. When reservoir levels do not fall within critical elevations, forest companies respond by changing sites or routes, altering facilities or equipment and/or by delaying logging or transport operations, all of which increase costs. One of the primary regions of concern related to navigation is Kinbasket Reservoir because of its use by local forest companies and its extensive drawdown zone.

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 WUP Technical Subcommittee. The critical elevations at which disruption to navigation occurs at each site were then defined. These critical elevations were subsequently reviewed by participants of the NTS 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. These are summarized below.

Site	Critical Elevation (ft)	Critical Time period	Commercial Operator
Harvey Creek	2415 ft and above	30 June - 31 Oct	Bell Pole Timber & Balchaen Consolidated Contracting
Schlichting Creek*	2400 ft and above	1 May – 30 Nov	Sterling Lumber
Downie Timber	2360 ft and above	Year-round	Wood River Forest Products

* Schlichting Creek is a BC Forest Service site used by commercial operators on the reservoir. It replaces the Bush Harbour site.

Calculations

For each scenario:

1. Assemble the simulated results for month-end reservoir elevations over 60 years (1940-2000; Figure 1).
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. Summarize all statistics (Figures 2-4).

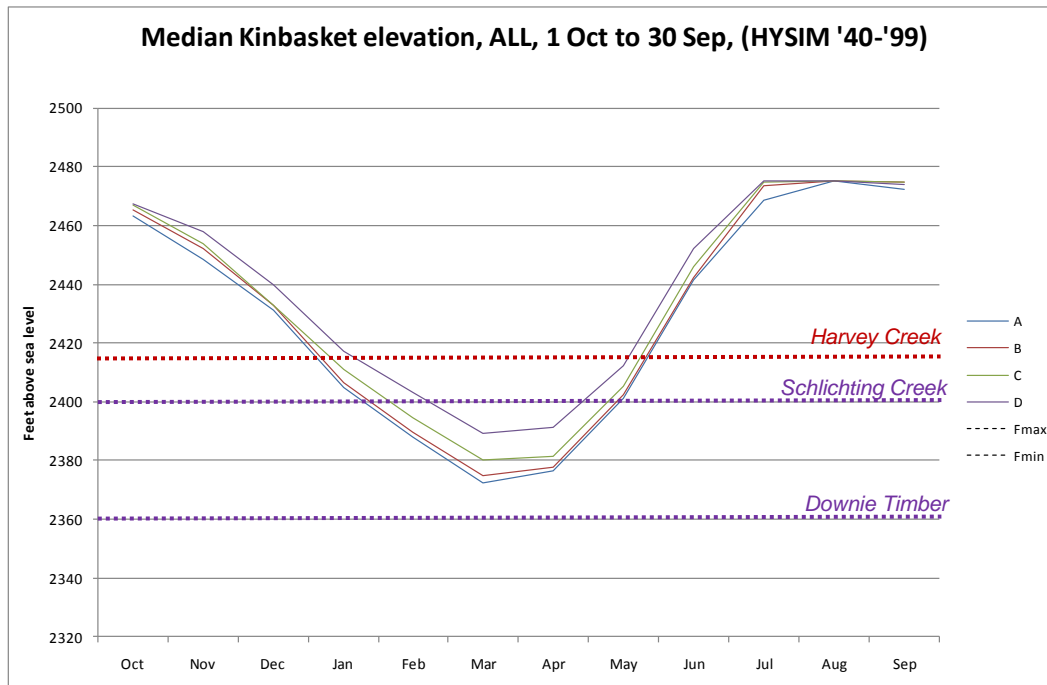


Figure 1. HYSIM Simulated Kinbasket Reservoir elevations. Median over 60 years showing the preferred elevation ranges for navigation

Key Assumptions and Uncertainties

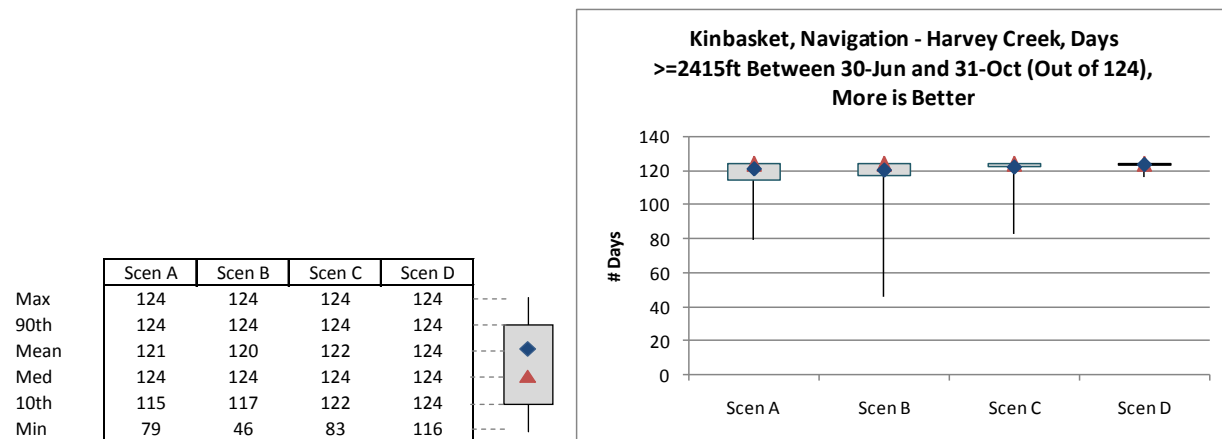
- Each scenario is simulated using the same set of system constraints, input assumptions (e.g., load forecasts) and historic basin inflows (1940 – 2000).
- Assumes that the critical elevations for each site are accurate

Results

Harvey Creek

The modeling indicates that all of the four scenarios would perform similarly for commercial navigation at Harvey Creek, except in dry years when the “with NTS” scenarios would cause Kinbasket water levels to be lower than Scenario D (no NTS) and cause navigability at this site to be reduced. This is most pronounced under Scenario B due to the deeper draft (i.e., 0.5 MAF) provision.

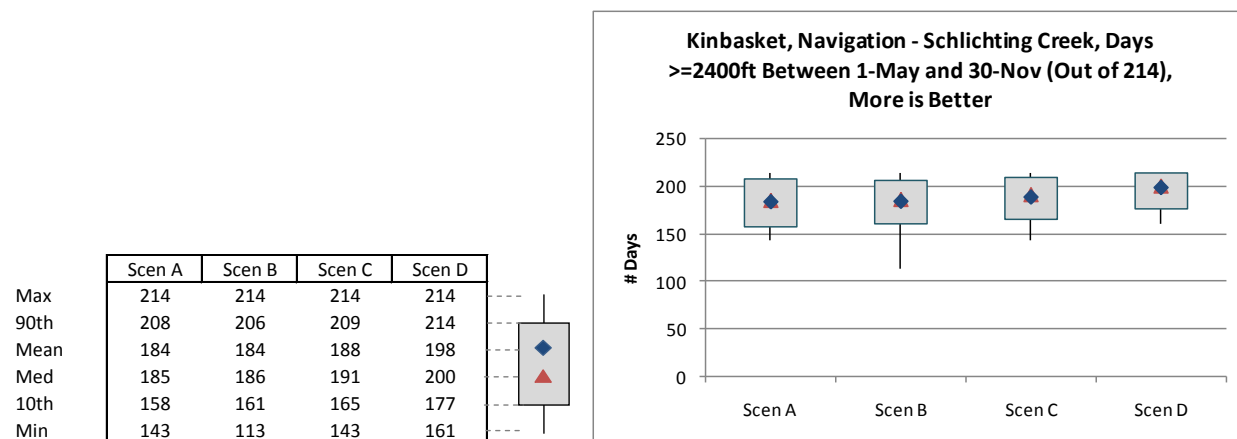
Figure 2. Navigable Days at Harvey Creek – HYSIM Results for all NTS scenarios



Schlichting Creek

The modeling indicates that Scenario D (no NTS) would perform slightly better than the “with NTS” scenarios (A, B, C) for navigation at the Schlichting Creek site. This would be most pronounced in dry years when utilization of the non-Treaty storage would cause the reservoir to be drafted deeper.

Figure 3. Navigable Days at Schlichting Creek – HYSIM Results for all NTS scenarios



Downie Timber

On average, Scenario D (no NTS) would perform significantly better than the “with NTS” scenarios (A, B, C) for navigation at the Downie Timber site.

Figure 4. Navigable Days at Downie Timber – HYSIM Results for all NTS scenarios. Red-shaded results carried forward into Consequence Table.

	Scen A	Scen B	Scen C	Scen D
Max	365	365	365	365
90th	365	365	365	365
Mean	343	346	350	360
Med	365	365	365	365
10th	271	273	292	364
Min	214	227	242	282

