

# How to Read a Reach Report

This guide can be used for planning canoe trips ranging in length from a few hours to many days. The following is an annotated review of the Reach Reports and has been prepared to help you to interpret the information contained. Interpretation requires some background and I have tried to give an indication of how each reach report section has been developed. This is a guide to the selection of a canoe trip appropriate to the skills, interests, and available time frame for paddlers. These reports should NOT be the only research an interested paddling party does; stream flows will need to be checked, better maps acquired, and other local paddlers should be consulted for a paddling conditions up-date.

## Title

This is the name for the river or lake.

## Reach

This is the part, section or *reach* of the river or lake contained in the report.

## Why Go

A brief description of why you may want to paddle this reach: the scenery, the whitewater, the camping, the wildlife, etc.

## Duration of Tours(s)

This section includes two pieces of information:

\*The overall distance in kilometers. These have either been measured using Garmin's *Topo Canada* as a "route" measure, or from an actual GPS "track". Any measure of a reach is an estimate. In the days when I manually measured distances from 1:50,000 NTS maps I found that with repeated measures of long distances I could get the variance down to about 2-3%. I find that even with repeated GPS "tracks" there is a small variance of 1-2% and from a "track" to a "route" measure a variance of 2-4%. So please take each reach measure with a "grain of salt" and let me know of any variance (error?) greater than 5%.

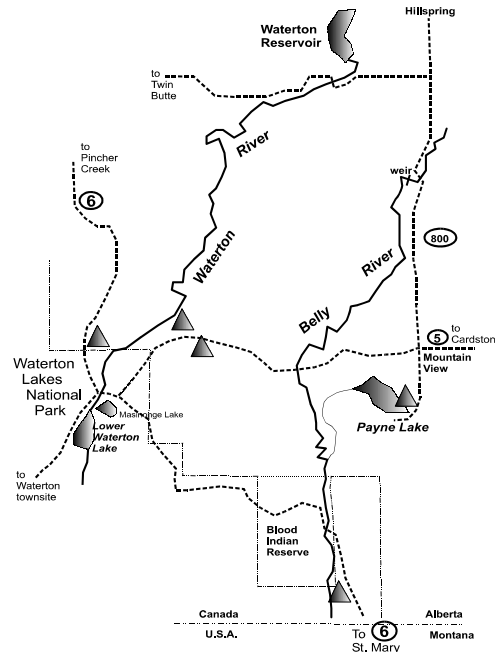
\* A conservative estimate of the time required, usually 1/2 day, day or multi days. Many of the reach reports include the possibility of intermediate access, and thus sub-reaches.

## A Location Map

This is only a location map and is designed to give a general overview of the river, and to help you locate possible access & shuttle routes, public or commercial campground locations, and local communities. The maps are all drawn with the "top" as north. There is no scale, but take a look at the length of the reach for a scale estimate, on some maps the reach is only a few kilometers long and on others hundreds of kilometers long.



Each report includes a photo of a typical, or a special scene .



## Classification

Each reach is rated according to the American Whitewater Association's version of the International Canoe Federation *International Scale of River Difficulty*. This rating **primarily applies to the rapids** on the reach. It does not account for many of the other common dangers and factors that increase risk on Alberta's foothills streams such as: logjams and sweepers, cold water, inaccessibility, weather and even wildlife.

In addition to the river ratings, I have suggested what level of paddling skill and experience is required for paddlers to safely complete the reported reach or lake run. Please use the next section of this guide to rate your skill and experience level before attempting any reach reported in this guidebook. On many reaches that have historically been used for the training of new paddlers, I have suggest a paddler rating for "self lead" groups, with no experienced leader who has been down the river recently, versus a group that does have experienced leaders (instructors, guides) who do know the river well and how to teach and lead less experienced paddlers.

## Start

This section provides some details about the first access location, and when appropriate, other access points that are commonly used to start sub-reach tours.

## Finish

Similar to start, just the other end!

## Intermediate Access and Distances

ie:

Location	Elevation <i>meters</i>	Km down	Km up	Km between	Access / Bank or Rapid / Class	MGRS datum NAD 1927 Zone 12 U	Gradients m/km

### Locations

The various location and features along the river from start to end.

### Elevation

The height in meters or feet above sea level. These elevations are all based on the NTS Topographic maps. But *Topo Canada*, the source for much of my data converts the actual "feet" on the older NTS sheet to meters and thus the numbers seem a bit odd at times. I have an ongoing concern that the placement of contour line crossings on streams, especially those in canyons or deeply entrenched valleys, is an imprecise science. This imprecision then has implications for the calculation of the average gradients between the contour lines. In many of the reports you will see again my expression of this concern that the calculated gradient does not match the experience of paddling the reach.

### Km (down)

This is a calculation of how far you have left to paddle to the last access point or finish of the report - km 0.

### Km (up)

This is a calculation of how far you have gone with the start as Km 0.

### Km (between)

This is a calculation of the distance between the more popular access points and thus the distance for popular sub-reaches.

### Access / Bank or Rapid Class

For each "location" I try to provide some description. For access locations this is either the right or left bank (as always taken facing downstream) and often upstream or downstream of "the bridge" or confluence where the access is. For rapids that are located on a reach, a rating range for the difficulty is expressed, as per the ICF River Classification system (see Appendix A).

### MGRS (datum)

I have provided in this guide a grid reference for GPS users, and map users that understand grid reference, for access points, most significant river features. I have chosen to use the "Military Grid Reference System" (MGRS) and to provide the grid reference to 100 m. I find MGRS is the system that coordinates best with the Canadian Topographic maps at 1:50,000 (see [http://maps.nrcan.gc.ca/topo101/mil\\_ref\\_e.php](http://maps.nrcan.gc.ca/topo101/mil_ref_e.php)). All Canadian Topo Maps at 1:50,000 include the MGRS (or UTM) grid to 1000 m, and one can easily interpolate the 100 m reference.

The reported grid references in this guide come from: actual waypoints taken on site, waypoints generated from *Topo Canada* or waypoints from map interpolation. Given the error inherent in our topo sheets (see example at [http://maps.nrcan.gc.ca/cgi-bin/kira\\_lin.cgi](http://maps.nrcan.gc.ca/cgi-bin/kira_lin.cgi)), and errors in locating waypoints, my goal has been to try to provide a reference that most folks will find to be within 100 to 200 m of the actual location. Anyone paddling these reaches MUST be able to recognize the signs of an upcoming river hazard such as a weir, ledge, falls, or rapid within the next 100 to 200 m.

Remember that MGRS references are in three parts: first a two letter coordinate that references a 100 km grid, then a three digit "easting" that is read from west to east across the map, and then the three digit northing that is read from south to north on the map. I have also provided the larger Zone reference for the 100,000 km grid. All NTS Topo sheets will have a small example on the side of the map of how to interpolate the last 100 m reference. One essential item that all GPS users MUST set correctly is the "Datum" year. This is either NAD 1927 Canada, or NAD 1983 (or WGS 1984). The wrong datum setting will provide an additional error of well over 100 m, and the two letter coordinate maybe off by 1000 km (see [http://maps.nrcan.gc.ca/topo101/correction\\_e.php](http://maps.nrcan.gc.ca/topo101/correction_e.php)).

Natural Resources Canada provides further excellent information about the NTS Maps at: [http://maps.nrcan.gc.ca/topo\\_e.php](http://maps.nrcan.gc.ca/topo_e.php)

I would also encourage paddlers unfamiliar with map use to work their way through "Topo 101" at: [http://maps.nrcan.gc.ca/topo101/index\\_e.php](http://maps.nrcan.gc.ca/topo101/index_e.php).

**Gradients**

The last or right column is the calculated mean gradient between each noted elevation. This must be taken "with a grain of salt". As noted above and many times again, contours are not perfect representations, and river difficulty is determined by **not** just gradient, but also by river volume and the geology of the river bed.

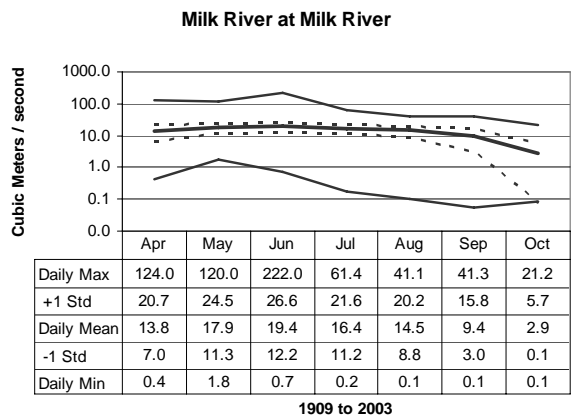
**Gradient**

This brief paragraph reviews the gradients, notes discrepancies, and highlights what sections may be more difficult. Big rivers like the North Saskatchewan in Edmonton flow along quite nicely for novice paddlers at a gradient of .5 to 1 m/km and a flow of 150 to 300 cms, whereas smaller foothill streams like the Red Deer are exciting white water with gradients of 7 to 10 m/km with just 30 to 70 cms. With more volume, less gradient is required to make exciting, or more dangerous rapids! The Nordegg to Rocky Mtn. House run on the North Saskatchewan river is a popular white water run and has a gradient of less than 3 m/km, but a volume of 150 to 300 cms through much of the summer.

**River Volume and Flow Rate**

Each report includes a hydrograph similar to the *Milk River at Milk River* graph and table to the right. Some key points to note are:

- the Y scale is a logarithmic scale and provides flow in Cubic metres per second (cms). 1 cms is approximately 35 cubic feet per second (cfs).
- Daily maximum & minimum flows are for a full day's flow, not an instantaneous measure.
- Daily mean flow is a full day's average flow.
- +1 Standard Deviation (Std) and -1 Std approximates the Alberta definition of normal flow from the 25 to 75 percentile of all recorded flows.
- the table below the graph is the actual data as provided by Environment Canada - Water Survey of Canada through the HYDAT Program ([http://www.wsc.ec.gc.ca/products/main\\_e.cfm?cname=products\\_e.cfm](http://www.wsc.ec.gc.ca/products/main_e.cfm?cname=products_e.cfm))



In addition to the graph each report includes a brief paragraph of recommended flows for safe and enjoyable paddling, often other volume facts, and estimates of the stream velocity at the reporting station for various flows. These velocities have been estimated from the Alberta Environment (1996) *Stream Flow Fact Sheets*.

Small rivers like the Wildhay, Belly or Sheep, may be a fun paddle at 20 Cms, or a medium sized river like the Red Deer at Red Deer may require 40 cms as a minimum, or an even larger stream like the North Saskatchewan in Edmonton 100 cms is a minimal flow. BUT with: 40 cms in the Wildhay, Belly or Sheep rivers, 200 cms in the Red Deer or 1000 cms in the North Saskatchewan at Edmonton, these streams all become dangerous even for experienced paddlers.

Flow reports are published on-line by the Alberta Environment River Forecast Center and are available at: <http://www3.gov.ab.ca/env/water/basins/BasinForm.cfm> . These on-line flow reports are up-to-date, often within the last three to four hours! One can get a pretty good feel for what is happening, or likely to happen to stream flows by checking both the reports for the monitoring stations on the reach you hope to paddle, and the stations upstream of where you hope to paddle.

In addition Alberta Environment publishes a flow forecast each week at: <http://www3.gov.ab.ca/env/water/WS/ForecastersComments/forecasternotes.pdf>.

The River forecast Centre also tracks and reports on precipitation and storm events at: <http://www3.gov.ab.ca/env/water/ws/data/precipmaps/precipmaps.html>

Environment Canada flow reports can be found online at: <http://scitech.pyr.ec.gc.ca/waterweb/main.asp?lang=0>

## **Maps (& Guides)**

Next is a listing of recommended maps, and the requisite National Topographic System maps for the reach. Suggested NTS scale is reach appropriate, only 1:250,000 sheets for the big northern rivers, both 1:250,000 and 1:50,000 sheets for the middle size rivers of central and southern Alberta and just the 1:50,000 sheets for the foothills and mountain streams. Where appropriate and available I have also provided reference to other useful guides and supporting materials.

## **Camping**

For most reaches I list, locate and provide a contact phone number for the popular public and commercial campgrounds on or near the reach. Also indicated is whether the reach is appropriate for wilderness or “random” camping on crown land.

## **Wildlife**

In a paragraph or two I highlight likely wildlife sightings, locations for, and past experiences with wildlife along the reported reach.

## **Trip Notes**

This section may be a brief paragraph highlighting the pleasures of the reach, other interesting facts, or for some foothill's whitewater streams a fairly lengthy report on the difficulties, hazards and options.

## **Other Reaches**

I have given up trying to write a comprehensive paddling guide to all reaches, for every river or lake in Alberta. These two paragraphs, one for the upstream reach, and one for the next downstream reach, are either a “teaser” for the next run, or a warning. Some brief information is provided: distance, and character of the adjacent reaches, and maybe the prime reason to paddle on, or start higher. BUT you will have to do some additional research before paddling these reaches. Yes, I do truly believe that all fully competent paddlers should be able to research and plan their own trips. Heck, half the fun of paddling is doing the research and planning! This is what winter is for, if not for skiing!

## **Other local Activities or Destinations**

Over the years as a father, club trip leader and troop scouter, not everyone shares my enthusiasm for paddling, even in “ugly” conditions. Crews have mutinied, revolted, even refused to paddle. Then the question becomes what else may you do? I try to answer that question in this section.

## Rentals and Shuttles

Where available and known, I have tried to list the available canoe and paddling rental agencies that are handy to the reach, and then the various available shuttle services. I was once told I should write a PhD. thesis on the organizing of canoe trip shuttles, but as I've grown older I've come to see the wisdom of contracting out, and I have in recent years made good use of local taxi services. Not too many years ago a shuttle from Drayton back to Rocky Mtn. House in the "town limo" worked out to less than \$10 per paddler who benefitted – cheap for a long weekend of paddling! And it saved everyone the extra 3 hour wait of a "double shuttle."

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This guide has been written conservatively, both with consideration to classification of rapids, recommendation for paddling skills required and to the time-distance estimates. A paddler new to the rivers and lakes of this guide, or a new novice paddler should start with the less difficult, the smaller, low gradient streams, and then work one's way up in both gradient, volume and difficulty. Each reach report lists gradients and volumes and you will soon come to recognize those that match your skill and experience. In addition, each report suggests the required level of skill and experience. How do your skills and experience measure up? Complete the *Paddler's Self-Rating Guide* in the next section.

One of the hardest thing to consider is when should a river trip be cancelled because of high water. For this 2007 version of my guide I have chosen to use the federal government calculation of plus or minus one standard deviation to define normal flow, these flow numbers are very similar to our provincial governments definition of normal flow as being between the 25 and 75 percentile of flows on record. Once stream volumes exceed about the 75<sup>th</sup> percentile, or +1 Std for early summer (June through July), or the stream is brimming, overflowing the normal banks, and is running through the willows on the inside of most corners, the hydraulics within the stream become chaotic, dangerous, even on small rivers and creeks. Paddlers should consider cancelling or changing their trip to another run, or even staying home! In June 2005 I cancelled Ceyana Canoe Club trips three weekends in a row! We stayed home, the province suffered through three major "storm events" that year, and all streams within a reasonable weekend distance of Edmonton suffered multiple floods!

But do remember, that there is good chance (50% of the time by the Alberta government definition) that the river volumes will be reported as below or above normal -- the key is the early summer (flood season - June to July on most Alberta streams) "normal" volumes. At the other end of the volume spectrum I have consulted a variety of sources beyond my own experience in trying to determine minimal flows. Again for some streams and some paddlers the provincial 25 percentile for late summer flows on many streams is considered low, other paddlers are prepared to go slower, walk more often and paddle with less water flow. For each run I have provided a guideline for optimal water flows; they are just that, a guideline.