Welcome New Observers

Kiugmek

One who watches river

October 2005

A newsletter for Alaska river and ice observers

Please Note. . . .

RFC will not be staffed weekends beginning !!!!!!!

Inside This Issue…

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Welcome New Observers

Rachel Hanft
Koyukuk River at Bettles
May 2005

Sharon Yatlin
Koyukuk River at Huslia
June 2005

Elmer Ward
Kobuk River at Kobuk
June 2005

Cathy Leonard
Gulkana River at Sourdough
June 2005

Tracy Ansell
Tazlina River at Tazlina
June 2005

Connie Scott
Glacier Creek at Girdwood
June 2005

Susie Echols
Maclaren River at Denali Hwy
June 2005

Julie Williamson
Chistochina River
August 2005

Julie Mishler
Copper River near Chitina
August 2005

We would like to take this opportunity to thank each of you

A Note About Freeze-up Information:

We request your assistance in obtaining information on freeze-up on rivers and lakes in your area for the 2005 season. We would appreciate it if you would complete the enclosed River and Lake Freeze-up Information Form to the best of your knowledge and return the form to us. If you have any comments, please put them in remarks. Your help contributes to a more complete record of freeze-up data for Alaska and is greatly appreciated.

Please Get Crest Stage Readings

by Larry Rundquist

We frequently get requests for the stage data that you collect for us on Alaskan rivers. One of the standard analyses that hydrologists perform is called a flood frequency analysis, which results in a statistical distribution of flood data for the design of airports and other facilities. For example, designers may set the level of the lowest part of the runway at the 50-year flood level, which means that there is a 2 percent (1/50) chance each year that the runway will be flooded.

The data that are needed to perform a flood frequency analysis at a given location are the highest flow or stage that is reached in each year that records are available. The minimum number of years of data for an acceptable statistical analysis is 10 years. If we do not have the peak stage of the year in our records, then the entire year will not be available for inclusion in the flood frequency analysis. Thus it is very important to try to capture the highest stage each year. However, it is more important that you take all necessary precautions to protect your safety when collecting observations during periods of high water. Two issues complicate the ability of our observers to record the peak stage - missing the peak and the presence of ice.

Since few of our observers have the ability to sit at the measurement point for 24 hours per day waiting for the river to crest, it is not uncommon for the crest to occur between readings. The best way to document the crest in this situation is to be very observant when the water levels are high. What you should be looking for is evidence of high water marks that indicate that the water level was recently higher than its current level. The most obvious high water mark is wet soil, but other indications include leaves, seeds, small sticks, or any other materials that were floating on the surface at the waters edge that were left behind when the water level dropped. You should take into account any expected wave action that might occur at your site that may have caused higher marks and then estimate the vertical distance above your current reading. This would be your estimate of the peak stage for the event. If you are taking *continued on Page 5*

Spring Breakup Outlook for Alaska

The flood potential from snowmelt and ice jams this spring breakup season is currently rated as moderate to high except for the Kenai Peninsula, where the flood potential is low. This forecast is based on observed snowpack and ice thickness reports and long range temperature forecasts.

Ice - April 1 ice thickness data is available for a limited number of observing sites in Alaska. Measurements indicate that ice thickness is normal or below normal at most locations. The noted exception is the Upper Yukon River where ice thickness is 120% - 130% of normal at Eagle and Fort Yukon.

Snow - An analysis of the April 1 snowpack indicates above normal snowpack throughout much of mainland Alaska and Yukon Territory and a below normal snowpack for the Kenai Peninsula. The Alaska Range, Talkeetna Mountains, Susitna Valley, and portions of the central and western Interior have snowpacks over 150% of normal. There is enough snow in most areas to produce significant snowmelt runoff peaks if subjected to a rapid warming pattern.

For more details on the April 1 snowpack, please refer to the various snow graph options at the APRFC web site at http://aprfc.arh.noaa.gov, or on the NRCS web site at http://ambcs.org by selecting snowpack reports or snowpack maps.

Weather - The greatest factor in determining the severity of breakup remains the weather during April and May. The temperature in western Alaska during early April has been well below normal. The 30-day outlook for April depicts a greater likelihood of below normal temperatures persisting in western Alaska and climatological temperatures elsewhere in Alaska. Colder than normal temperatures could delay the melting of the snowpack and the decay of the river ice. The 90-day outlook for April through June calls for a greater likelihood of above normal temperatures and precipitation throughout Alaska. The threat of snowmelt and ice jam flooding will depend on the timing and rate of change from below normal to above normal temperatures. For more information on the outlooks for this spring, please refer to the Climate Prediction Center website at:

http://www.cpc.ncep.noaa.gov/products/forecasts

The following table gives an estimate of flood potential for various locations around the state.
The table was created from our Spring Breakup Outlook dated April 8, 2005. Check our web site for most current product.
Snowmelt Runoff Volume….expected water volume from snowmelt during the melt season.
Flood Potential….the likelihood of flooding from snowmelt and/or ice jams.
The potential for minor flooding is not reflected in the table.
Average Breakup Dates are for the period 1970 through 2003 and are calculated for locations with at least five years of data.

River - Reach	Snowmelt Runoff Volume	Flood Potential	Average Breakup Date	No. of Years Record	Forecast Breakup Dates
Southeast Panhandle	Average				
Kenai River	Below				
Matanuska River	Average	Low			
Susitna River at Gold Creek at Sunshine	Above	 High Low	 05/03	 14	 05/01 - 05/06
Yentna River	Above	High			
Copper River Basin Gakona River at Hwy Gulkana River at Hwy	Above	 Low Low	 04/29 04/28	 17 16	 04/25 - 05/03 04/24 - 05/02
Chena River at Chena Lakes Project at Fairbanks	Above	 Moderate Low	 04/29	 8	 04/27 - 05/04
Tanana River Basin Chisana River at Northway Tanana River at Salcha Tanana River at Fairbanks Tanana River at Nenana Tanana River at Manley Hot Springs	Above	 Low High Low Low Low	 04/22 04/29 05/02 05/04	 17 6 29 11	 04/20 - 04/26 04/26 - 05/03 04/30 - 05/06 05/02 - 05/08

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River - Reach	Snowmelt Runoff Volume	Flood Potential	Average Breakup Date	No. of Years Record	Forecast Breakup Dates
Kuskokwim River (Upper)	Above				
at Nikolai		Low-Moderate	04/24	18	04/24 - 04/30
at McGrath		Moderate	05/08	29	05/08 - 05/14
Kuskokwim River (Lower)	Above				
at Stony River		Low-Moderate	05/07	15	05/07 - 05/13
at Sleetmute		Moderate	05/05	15	05/06 - 05/12
at Red Devil		Moderate	05/07	17	05/07 - 05/13
at Crooked Creek		Moderate	05/07	18	05/07 - 05/13
at Aniak		Moderate	05/08	20	05/08 - 05/14
at Kalskag		Low-Moderate	05/08	14	05/08 - 05/14
at Tuluksak		Low-Moderate	05/10	11	05/10 - 05/16
at Aniak		Low-Moderate	05/11	17	05/11 - 05/17
at Bethel		Low-Moderate	05/13	32	05/12 - 05/19
Yukon River (Upper)	Above				
at Eagle		Moderate	05/06	24	05/05 - 05/11
at Circle		Moderate-High	05/10	21	05/09 - 05/15
at Fort Yukon		Moderate	05/11	21	05/10 - 05/16
at Beaver		Low-Moderate	05/13	9	05/12 - 05/18
at Stevens Village		Low-Moderate	05/15	8	05/14 - 05/20
at Rampart		Low	05/15	9	05/14 - 05/20
Yukon River (Middle)	Above				
at Tanana		Low	05/11	18	05/11 - 05/17
at Ruby		Low	05/13	20	05/13 - 05/19
at Galena		Moderate	05/13	20	05/13 - 05/19
at Koyukuk		Moderate	05/14	11	05/14 - 05/20
at Nulato		Moderate	05/15	6	05/15 - 05/21
at Kaltag		Low	05/15	27	05/15 - 05/21
at Anvik		Low-Moderate	05/18	16	05/18 - 05/24
Yukon River (Lower)	Above				
at Holy Cross		Low	05/17	16	05/17 - 05/23
at Russian Mission		Low-Moderate	05/16	18	05/16 - 05/22
at Pilot Station		Low-Moderate	05/19	6	05/19 - 05/25
at Mountain Village		Low	05/20	16	05/20 - 05/26
at Alakanuk/Emmonak		Low-Moderate	05/23	19	05/23 - 05/29
Koyukuk River	Above				
at Bettles		Low	05/11	23	05/11 - 05/19
at Allakaket		Low-Moderate	05/12	17	05/12 - 05/18
at Hughes		Low-Moderate	05/12	16	05/12 - 05/18
Seward Peninsula	Above				
Buckland River	Above				
at Buckland		Moderate	05/19	13	05/17 - 05/27
Kobuk River	Above				
at Kobuk		Moderate-High	05/17	24	05/17 - 05/23
at Shungnak		Low	05/20	13	05/20 - 05/26
at Ambler		Low	05/19	20	05/19 - 05/25
Noatak River	Average				
at Noatak		Low	05/21	10	05/20 - 05/28
Brooks Range (North)	Below				
Colville River at Colville		Low	05/30	5	05/29 - 06/06
Colville River at Umiat		Low	05/24	9	05/23 - 05/31
Arctic Coastal	Below				

Please Get Crest Stage Readings...

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readings one or more times per day, the vertical distance to the high water marks should be quite small. Remember that you will usually be asked to collect additional paid readings when the water is high, but do not hesitate to ask us if we want additional readings, since we may not think of it when you call.

A tougher condition for capturing the crest stage is when it occurs during breakup when there is ice in the river or on the banks. Our general guidance is to do the best that you can to estimate the peak water level as long as you do so safely. Most likely, this will require marking and making notes on high water marks for tying into the stage measurements after the ice has gone away. One common and very difficult situation occurs at slope profile gauge sites on our large rivers when ice chunks get pushed up onto the bank during breakup and the peak water level occurs when the breakup front passes the village. Try to observe and take notes of the maximum water level near the slope profile location by looking into gaps between ice chunks or how far down below the top of the ice the water level reaches. After the water level drops below the ice pushed up on the bank, measure and record the vertical distance from the estimated peak water level to the bank at that location and mark the bank with a nail or large rock. After the ice chunks melt away, measure down the slope profile to the point on the profile that corresponds to the level of the nail or rock that marked the bank. Report that slope profile value and the estimated distance above that value for the high water level. Each situation will be different and you will have to adapt to the conditions that you have at your location. If you need to mark the high water levels at a location upstream or downstream of your gauge site, try to ensure that the mark will remain until we can survey the mark in on our next site visit. This high water mark should be documented on the flood data sheet that can be found on our web page at:

http://aprfc.arh.noaa.gov/forms/flood_data_sheet.pdf

We would appreciate any efforts that you can make to gather annual peak water levels, but we repeat that your safety is more important than this measurement.

Hydrologic Service Area Reports

Anchorage Hydrologic Service Area
by John Papineau

Winter 2004/2005 Climate Summary

It was another warm winter across the state of Alaska for 2004/2005.

Temperature anomalies were not extreme; however they were persistent throughout the winter. Almost every weather station indicated that the warmest temperature anomalies occurred at night. This was a result of enhanced air flow from lower latitudes that limited the strength of temperature inversions (where the coolest air is near the ground and the air continues to warm for several thousand feet). In addition, many parts of the state received above normal rain and snow - this additional cloud cover restricted the amount of cooling that occurred at night.

Enhanced flow from the south was most likely a result of increased convection over the central Pacific resulting from warmer than normal water temperatures (weak El Nino). This large area of increased clouds, rain and thunderstorms modifies the upper level winds (jet stream) that blow from west-to-east across the Pacific. An area of high pressure over the eastern Pacific (centered at 55^{o}N 150^{o}W) increased the number of storms that moved north into the Gulf of Alaska and eastern Bering Sea.

Fairbanks Hydrologic Service Area
by Ron Stuvek

Weather Forecast Office Fairbanks Meteorologist-in-Charge John Dragomir, Service Hydrologist Ed Plumb, and Observing Program Leader Ron Stuvek completed the 6th annual ice and snow measurement trip along the Dalton Highway on March 27-30, 2005. Ice thickness and snow depth measurements were taken at numerous pre-selected sites along the highway between Fairbanks and Prudhoe Bay. The measurements went well due to the pre-freezeup trip taken by Ed, Ron, and Hydrologic Technician Becky Perry of the River Forecast Center in October of 2003. River bottom gravel was not a problem as it was prior to their mapping of the main river channels at the ice measurement sites. At one new site, Atigun River #2 just north of Pump Station #4, ice and auger problems were encountered. While drilling at Atigun #2, the crew encountered wind driven sand in the ice which dulled and damaged the auger blade and tip, requiring a repair stop at Sag River Department of Transportation (DOT). The State of Alaska DOT maintains many camps along the Dalton Highway, and most are cooperative weather reporting locations. Numerous other cooperative observers were visited along the way.

The highlight of the trip was the cooperative station visit at the residence of Jim and Teena Helmericks. Jim and Teena live in Colville Village, an island in the Colville River delta just 1.5 miles from the Beaufort Sea. Prior to the start of the trip, arrangements were made through Jim to gain permission to drive through the Prudhoe Bay and Kuparuk oil fields to conduct an annual site visit. John,

Ed, and Ron checked in at the British Petroleum Security checkpoint near Deadhorse where they obtained a roadmap, safety goggles, and clearance to drive. They drove approximately 60 miles through the oil fields on "Spine Road" to drill site (DS) #3. This particular site is the farthest west drilling site in the Kuparuk oil field. Teena's snowmachine and freight sled was the mode of transportation from DS #3 to Colville Village, another 5.5 miles west of the drill site. Teena has a job in Deadhorse so she leaves a snowmachine at this location for her use when she returns home weekly after work.

Since Ron is an experienced snowmachiner he took the lead as driver while John and Ed settled into the freight sled. They ventured off across the frozen tundra to the Helmericks' residence visible in the clear Arctic air. The ride took about 25 minutes due to rough terrain, with John and Ed bearing the brunt of the bumps. Upon their arrival at Colville Village, they were warmly greeted by Jim and his Chesapeake Bay retriever Toby. The Helmericks also have a what could probably be considered the farthest north living three toed box turtle named Sam.

John, Ed, and Ron enjoyed several hours of great conversation and warm hospitality with Jim. Jim operates a charter air service out of his homestead and was involved with much of the early surveying and development on the Prudhoe Bay oil fields. His father and mother moved to this location in 1946, just after World War II. Jim has lived there ever since. Last August he reached the golden age of 60 and for all but two of those years has been a fixture on Alaska's North Slope.

Cooperative and river observer Jim Helmericks (left) and his dog Toby greet Ron Stuvek in Colville Village.

Jim and Teena share the weather observation duties, while Jim takes river observations and ice thickness measurements for the River Forecast Center. His most recent ice thickness measurement taken the first week of April was 65 inches, with 7 inches of snow on top of the ice.

For a fascinating look at the life "of a unique family living at the edge of the Arctic Ocean in northern Alaska…" visit the website created and maintained by Teena at:

http://users.astacalaska.com/jwhgpa/

Juneau Hydrologic
Service Area
by Michael Mitchell

Southeast Alaska Climate Summary

The fall of 2004 was generally uneventful for the Alaskan Panhandle. Rainfall was a little above normal for Central and Coastal Southeast Alaska, which ranged between 103 and 127 percent of normal, while it was a little below normal across the Northern Panhandle which ended the season with 77 and 97 percent of normal precipitation. Temperatures over the 3 month September through November period were 0.3 to 1.3 degrees above normal in spite of slightly below normal readings in September and October. Snowfall was well below normal area wide.

The winter season also started out on a warm and wet note through December. Dry and cold arctic air descended on Southeast Alaska during the first half of January. This was followed by 2 weeks of snow across Central Southeast Alaska. Temperatures slowly warmed through the end of January and most of February which ended with record warm temperatures. Overall the winter was wetter than normal across the southern two thirds of Southeast Alaska. Most locations received between 105 to 140 percent of normal precipitation to as much as 185 percent of normal precipitation at Juneau. The far north ended with below normal rain and melted snow during the 3 month December through February winter season. Skagway was the driest location receiving 5.84 or 85 percent of normal precipitation. Snowfall caught up to near normal levels across central areas but stayed well below normal for the normally snowier northern panhandle.

Little Port Walter was the wettest location during the 6 month September through February period with 182.7 inches of rain and melted snow while Skagway was the driest location with 15.62 inches for the same period. Annex Creek took top honors in the snowfall department with a total just over 214 inches.