

# **YUKON SNOW SURVEY BULLETIN & WATER SUPPLY FORECAST**

**March 1, 2013**

Prepared and issued by:  
Water Resources Branch  
Environment Yukon



## PREFACE

The Yukon Snow Survey Bulletin and Water Supply Forecast is prepared and issued three times annually - after March 1, April 1 and May 1 - by Environment Yukon's Water Resources Branch. The bulletin provides a summary of winter meteorological and streamflow conditions for Yukon, as well as current snow depth and snow water equivalent observations for 56 locations. This information is used to make projections of total volume runoff for the summer period, and an estimate of peak flow for the main river basins and sub-basins including the: upper and lower Yukon, Pelly, Stewart, Liard, Alsek, Porcupine and Peel Rivers. Information about the bulletin, snowpack conditions or streamflow projections can be obtained by contacting:

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## NETWORK CHANGES for 2013

As of May 2010, snow surveys are no longer conducted at Clay Creek, Profile Mountain, Duke River or Arrowhead Lake. This bulletin can now be accessed on the web at:

[http://environmentyukon.gov.yk.ca/monitoringenvironment/snow\\_survey.php](http://environmentyukon.gov.yk.ca/monitoringenvironment/snow_survey.php)

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It is recommended that reference to this report be made in the following form:

Yukon Snow Survey Bulletin and Water Supply Forecast  
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Department of Environment  
Government of Yukon  
Box 2703, Whitehorse, Yukon Y1A 2C6

## ACKNOWLEDGMENTS

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Other agencies that contribute significantly to the Snow Survey Program by providing data, assistance and information for the bulletin are:

Meteorologist, Wildland Fire Management, Yukon Department of Community Services, Whitehorse

Officer in Charge, Water Survey of Canada, Whitehorse.

Agencies cooperating with Environment Yukon in the Snow Survey Program are:

Client Service and Inspections Branch, Yukon Department of Energy Mines and Resources

Information Management and Technology, Yukon Department of Environment

B.C. Ministry of Environment, Water Stewardship Division

USDA Natural Resources Conservation Service

Yukon Department of Highways and Public Works

Parks Canada

Yukon Energy Corporation

# YUKON TERRITORY SNOWPACK CONDITIONS AND RUNOFF PROJECTION

## WEATHER

Winter 2012-13 has so far been defined by an abrupt shift in temperatures at the start of the new year. The October thru December period began with low temperatures that dropped steadily, reaching almost 9°C below normal in central Yukon. Beginning in late December, the weather was dominated by warmer air masses, bringing temperatures up to above-normal throughout the territory. Even with this late warming trend, temperatures throughout the Tintina Trench were generally lower than the 1970 - 2000 average for this period.

Winter precipitation has been variable with the far southwest being generally dry and central regions including Carmacks, Faro and Ross River ending with above-average precipitation.

### October

Mean temperatures for October were three to four degrees lower than normal throughout most of central and southern Yukon and slightly above normal in the far north including Eagle Plains. Precipitation was well below normal in most regions except for Burwash and Beaver Creek where it was near-normal, and Carmacks and Eagle Plains where it was well above normal. It should be noted that “normal” precipitation for most non-coastal stations ranges from 20-40 mm, so large anomalies do not usually represent significant precipitation.

### November

Lower-than-normal temperatures persisted across Yukon during November; areas of the Tintina Trench between Dawson and Mayo were as much as 9°C below normal for the month while all other stations with the exception of Eagle Plains were 2-5°C below normal. Carmacks, Faro and Ross River regions recorded above-normal precipitation during this period, while southwestern Yukon from Haines Junction down to Pleasant Camp received well-below-normal precipitation.

### December

December saw lower temperatures continue throughout the entire territory. Regions along the Tintina Trench from Dawson to Ross River recorded the strongest anomalies and lowest temperatures. The far north and southern Yukon were slightly warmer but still several degrees below normal. Central Yukon once again recorded above-average precipitation. Stations along the Haines Highway recorded below to well-below-normal precipitation.

### January

January signaled an abrupt shift in weather patterns with all stations reporting above-normal to well above-normal temperatures, ranging from 1-9°C above normal. Precipitation was also well above average with the exception of a band stretching from Burwash down to the Yukon-Alaska border that remained below to well below average.

### February

Temperatures remained well above normal across the territory with the exception of Eagle Plains which was slightly cooler than normal. Precipitation in northern and central Yukon was above average with the exception of western portions from Beaver Creek down to Haines Junction. Southern Yukon was drier with precipitation ranging from 33-65% of normal.

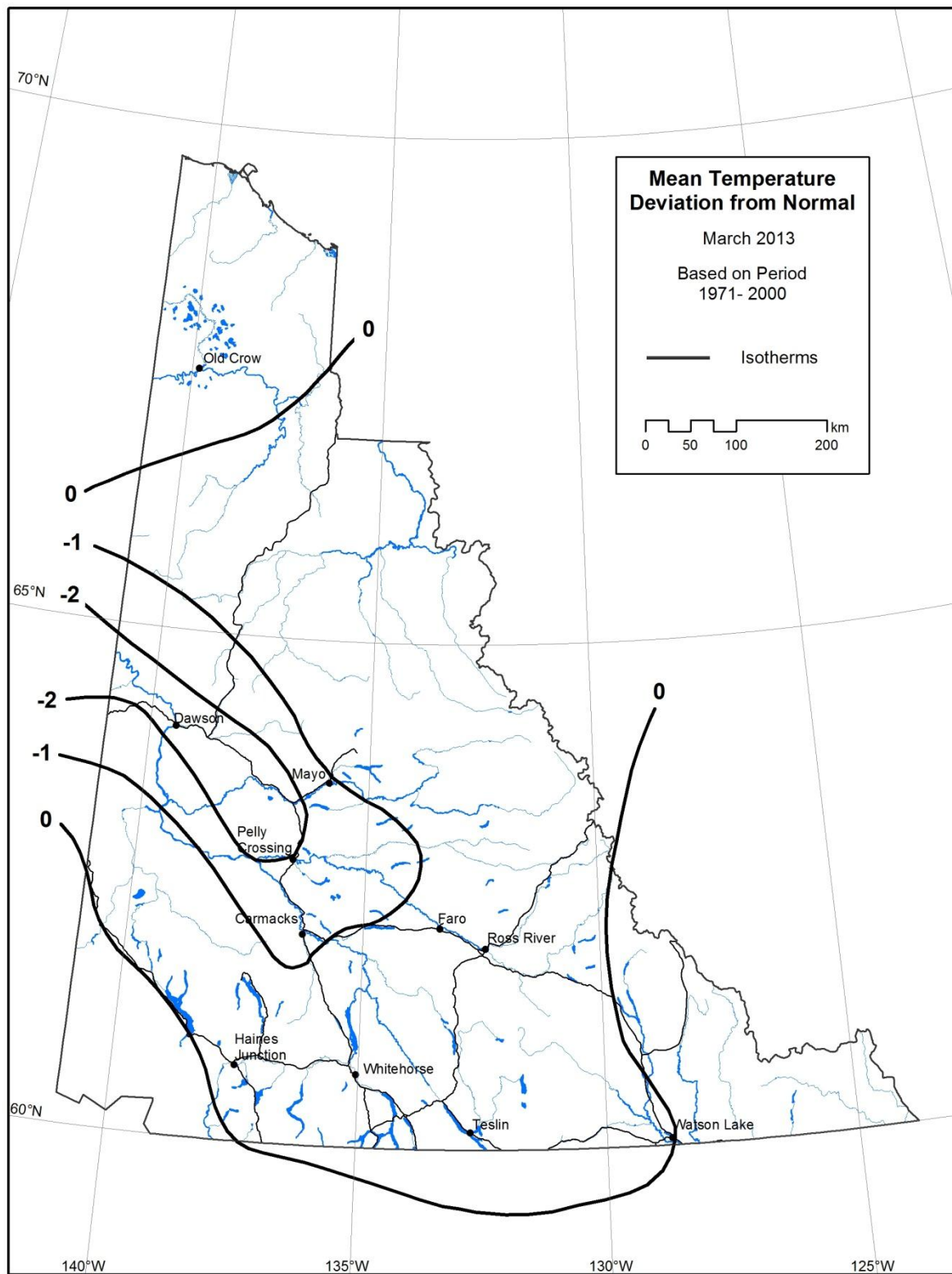
## SNOWPACK

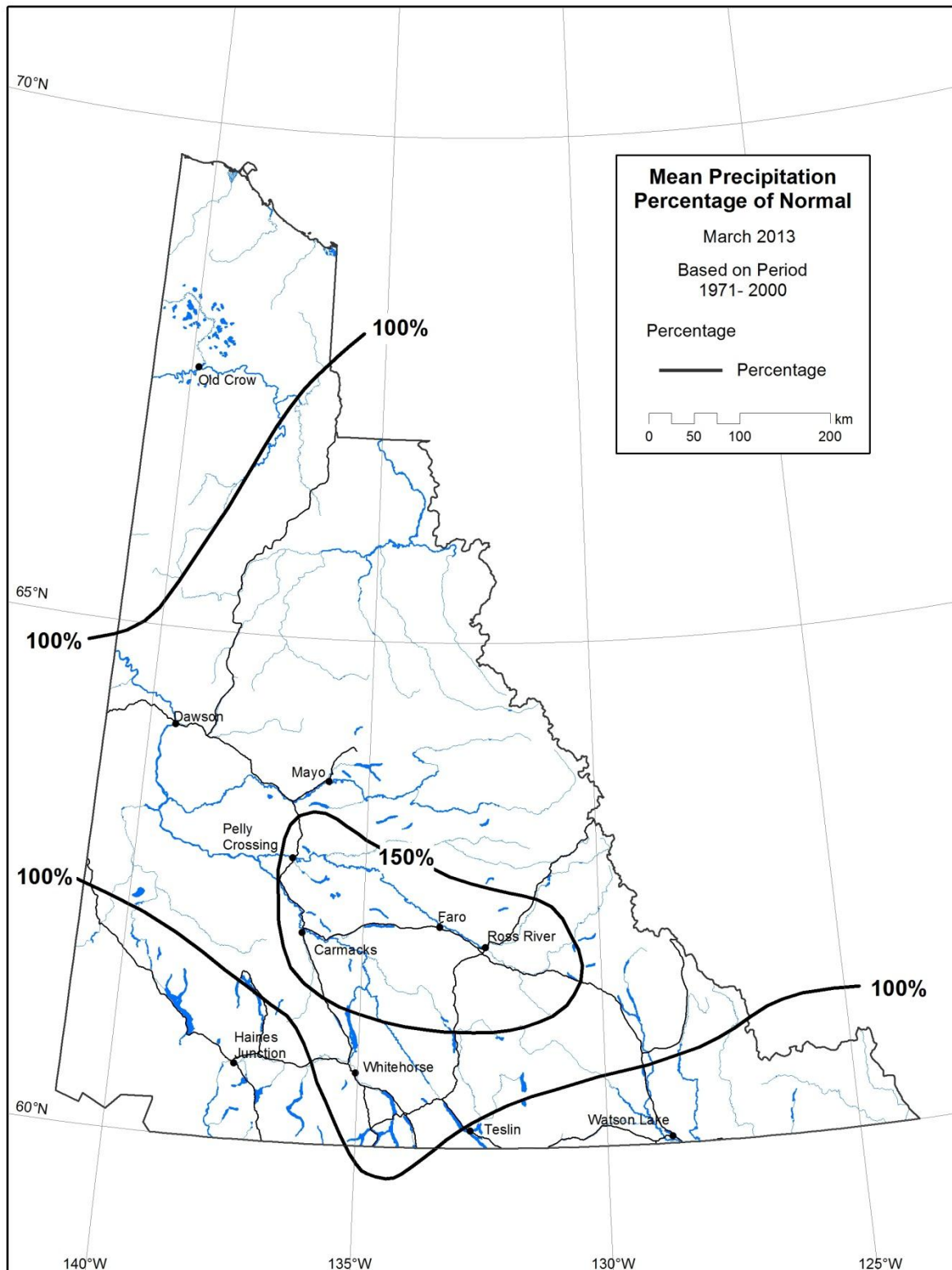
The March 1 Yukon snowpack is quite variable, though a significant portion of the Territory is above normal. Exceptions include a pocket of below-normal snowpack in the Haines Junction area and a pocket of significantly above-normal snowpack in the Ross River area extending south and east to the headwaters of the Liard River.

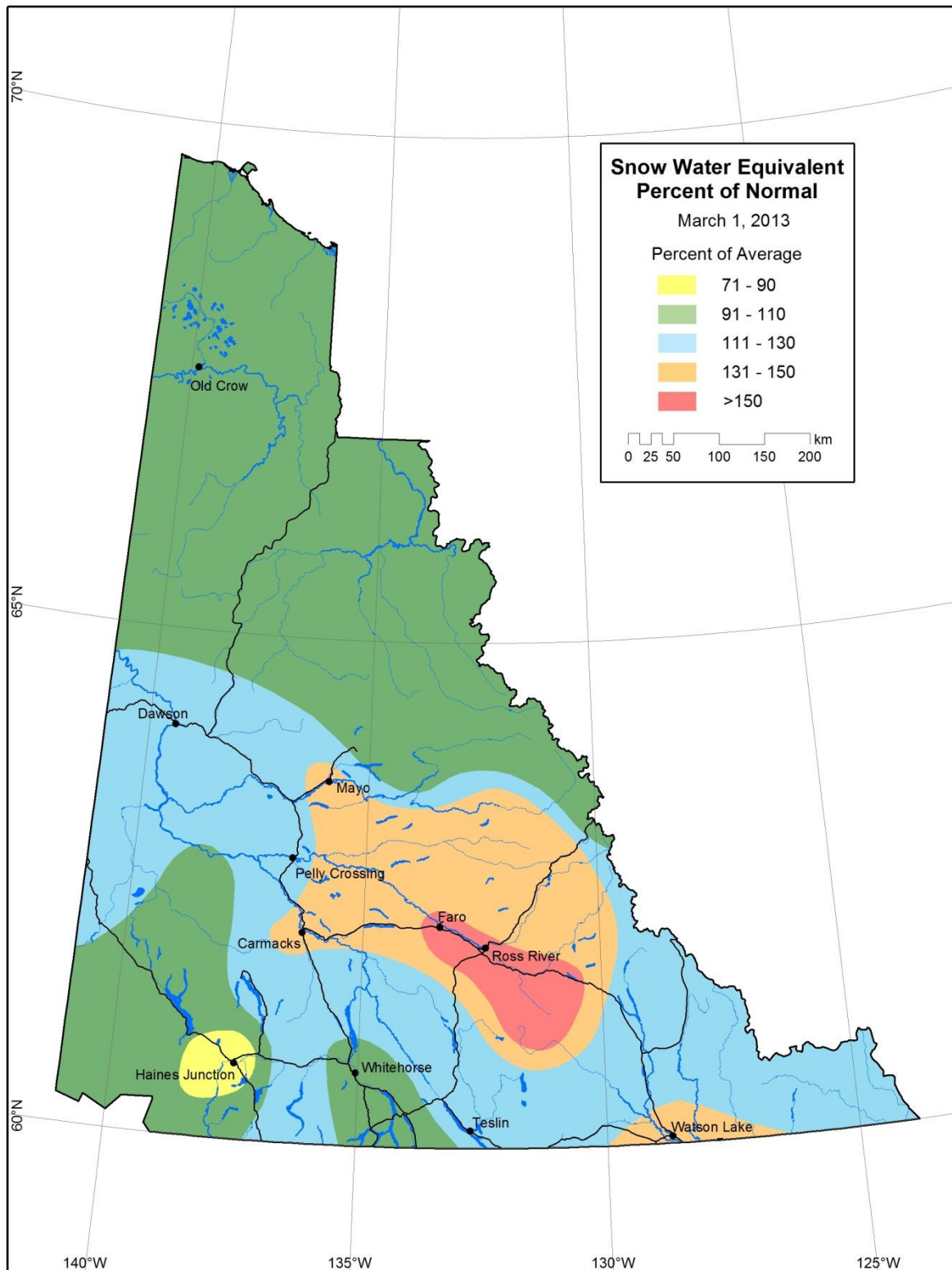
## STREAMFLOW

Streamflow conditions throughout Yukon are generally near normal. Streamflow is variable in

southern Yukon with the Stewart, Pelly and Liard Rivers above normal, the upper Yukon near normal and Alsek River below normal. Streamflow conditions in northern Yukon are near normal for March 1st. Streamflow during this period represents winter baseflow, which provides an indication of winter groundwater contributions.







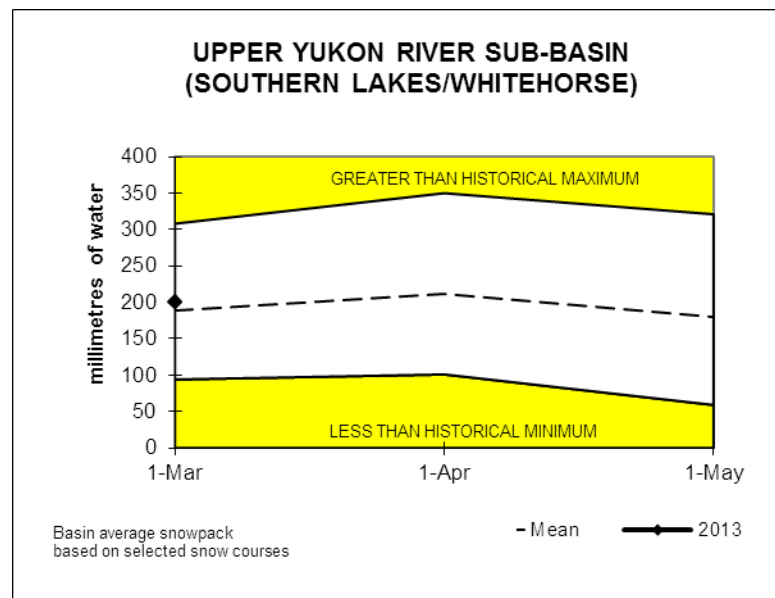


## YUKON RIVER BASIN

Snowpack conditions in the Yukon River Basin range from well above normal in the southeastern portion of the basin to normal in northern and south-central regions. Overall conditions for the Yukon River Basin are near normal.

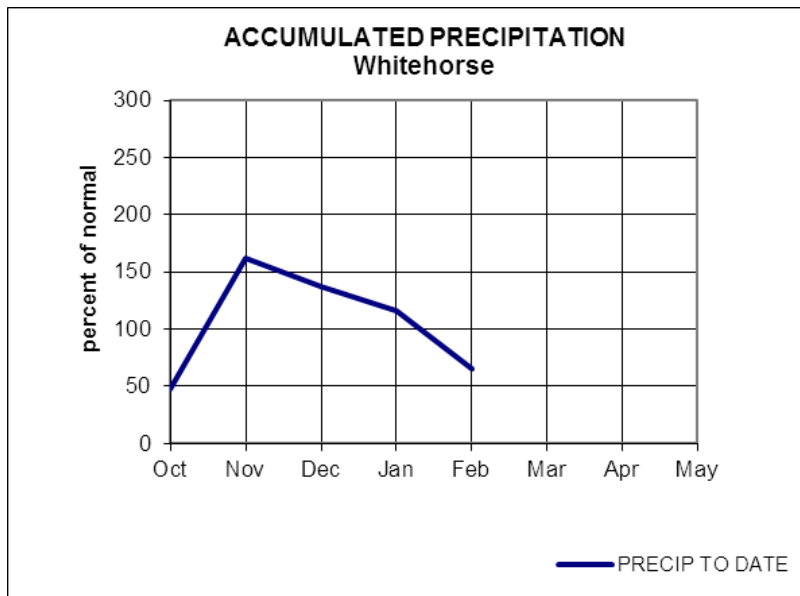
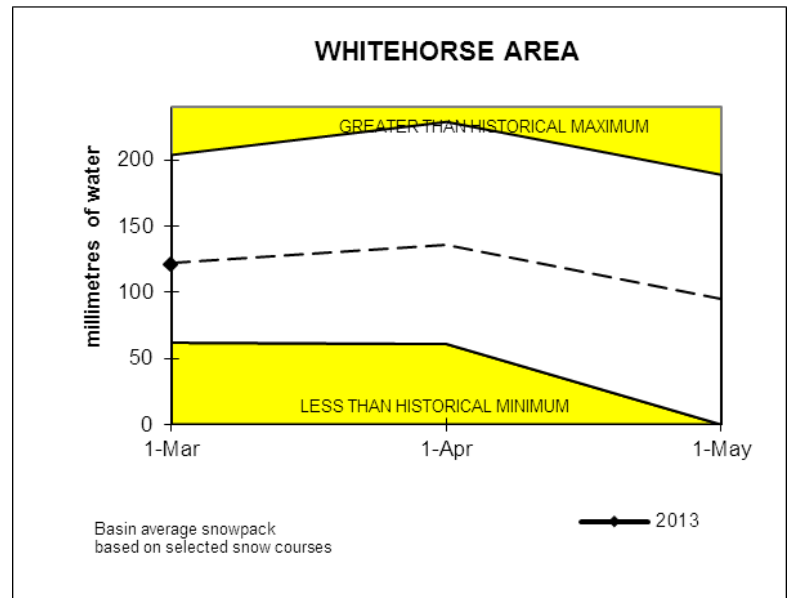
## UPPER YUKON RIVER SUB-BASIN (SOUTHERN LAKES)

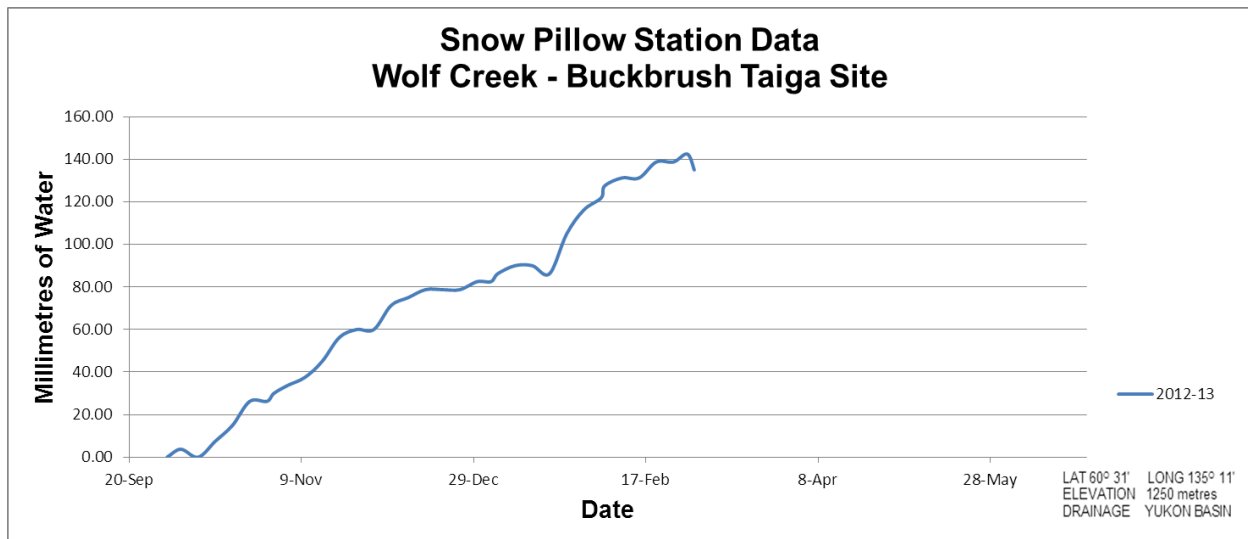
Snowpack conditions in the Upper Yukon River watershed are near or just above normal. Values range from 95 percent of normal at Atlin to 113 percent of normal at Log Cabin. A basin-wide average has been estimated to be 106 percent of normal.



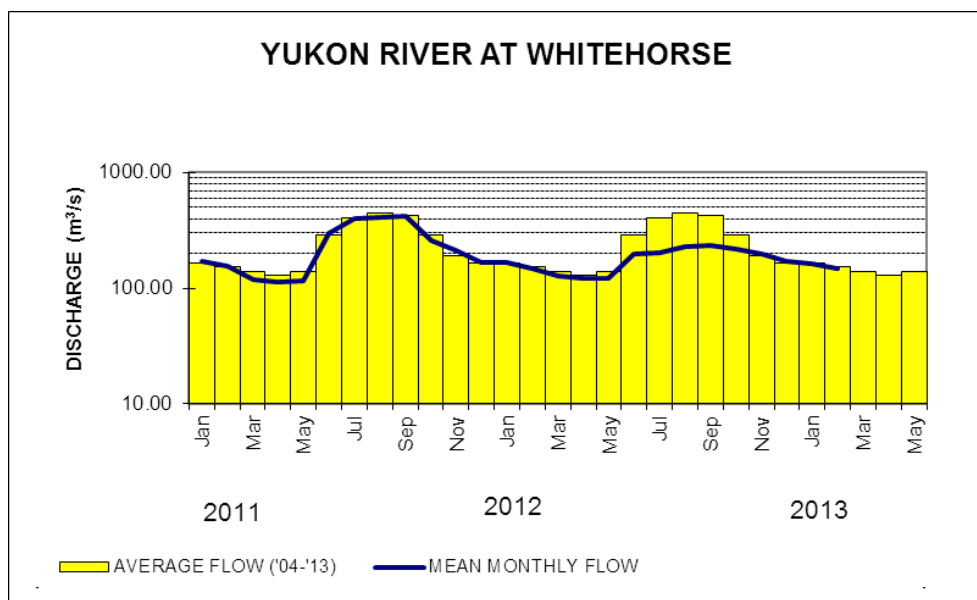
## WHITEHORSE AREA

Snowpack conditions in the Whitehorse area are normal for March 1<sup>st</sup>. Values range from 95 percent of normal at Tagish to 106 percent of normal at Whitehorse Airport. An area-wide average is estimated to be 99 percent of normal.



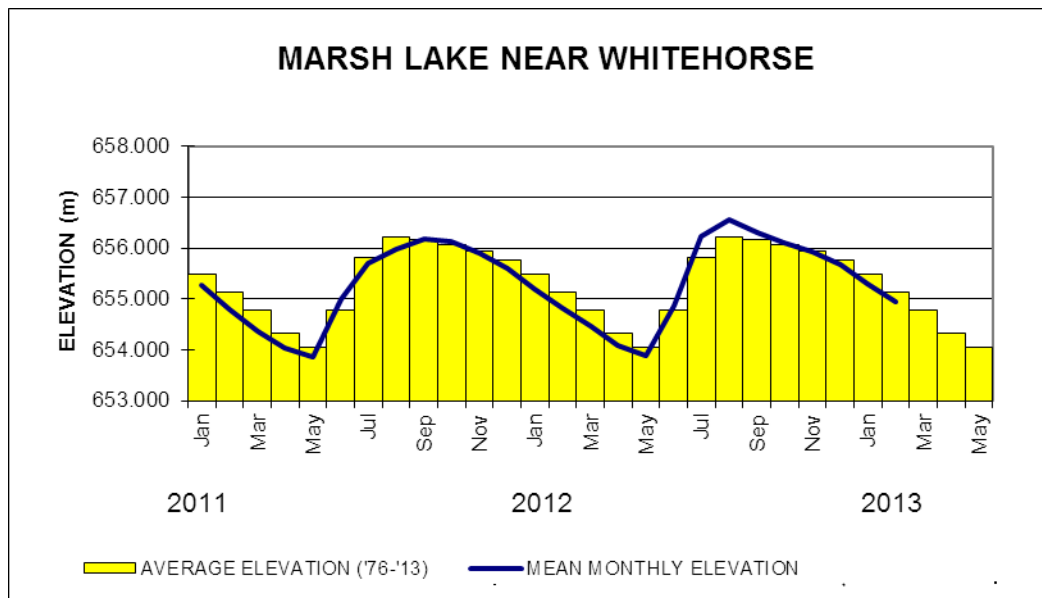


Note: The Tagish snow pillow went offline early in the winter necessitating the use of data provided by Water Resources' Wolf Creek Buckbrush Taiga snow pillow to illustrate build-up of the snow pack in the Whitehorse area.



## YUKON RIVER and MARSH LAKE

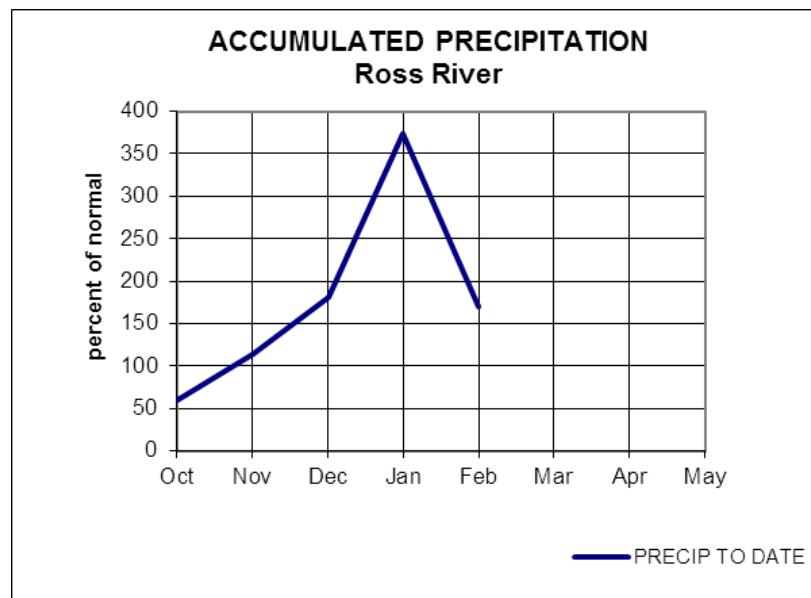
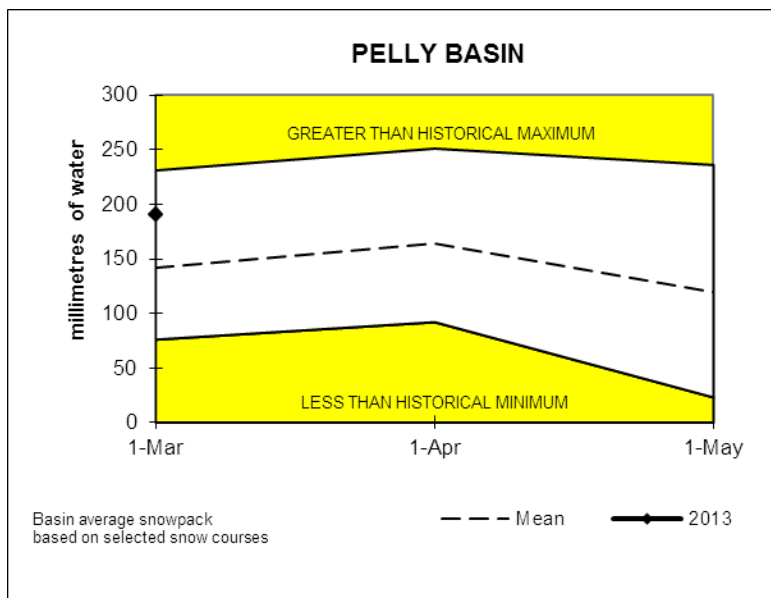
The mean elevation of Marsh Lake during February was 654.947m or 0.185m below normal. Yukon River at Whitehorse mean discharge during February was 96 percent of normal. Given normal summer meteorological conditions, volume runoff and peak flows for the season are each expected to be 105 and 110 percent of normal, respectively.

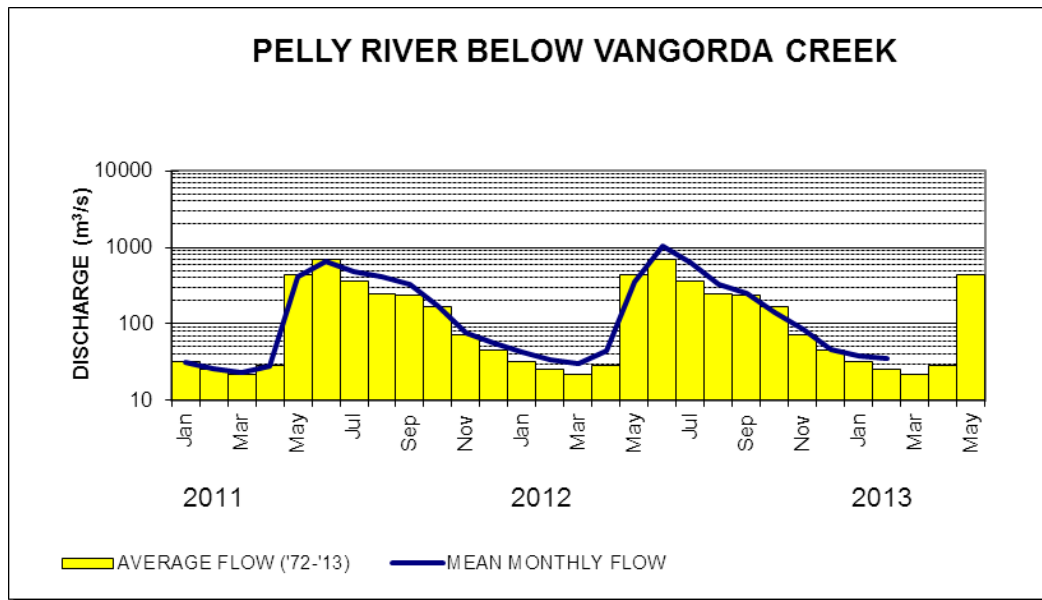


## PELLY RIVER SUB-BASIN

Snowpack conditions in the Pelly River watershed are above normal. Values of snow water equivalent range from 121 percent of normal at Twin Creeks to 153 percent of normal at Hoole River. A basin-wide average has been estimated to be 134 percent of normal.

Mean February streamflow for the watershed was 138 percent of normal as indicated by the Pelly River below Vangorda Creek. Given normal summer meteorological conditions, volume runoff and peak flows are expected to be 130 percent and 140 percent of normal respectively.

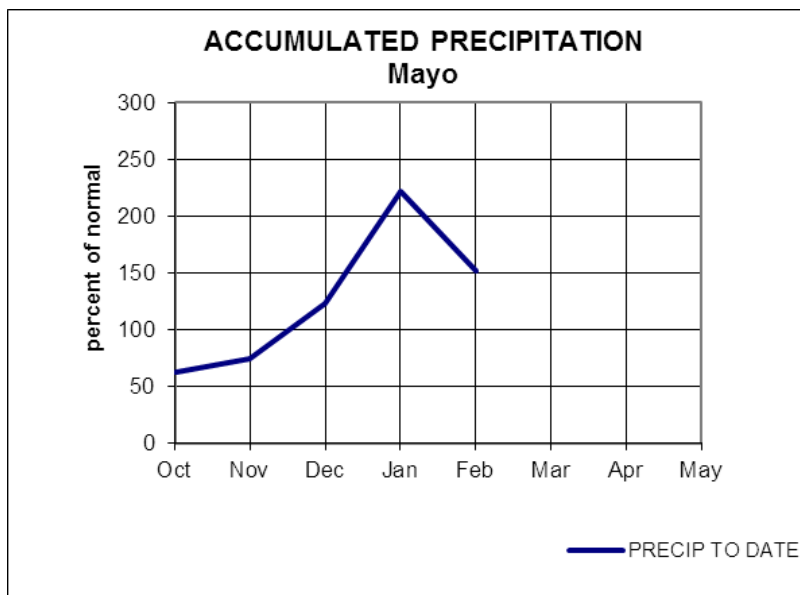
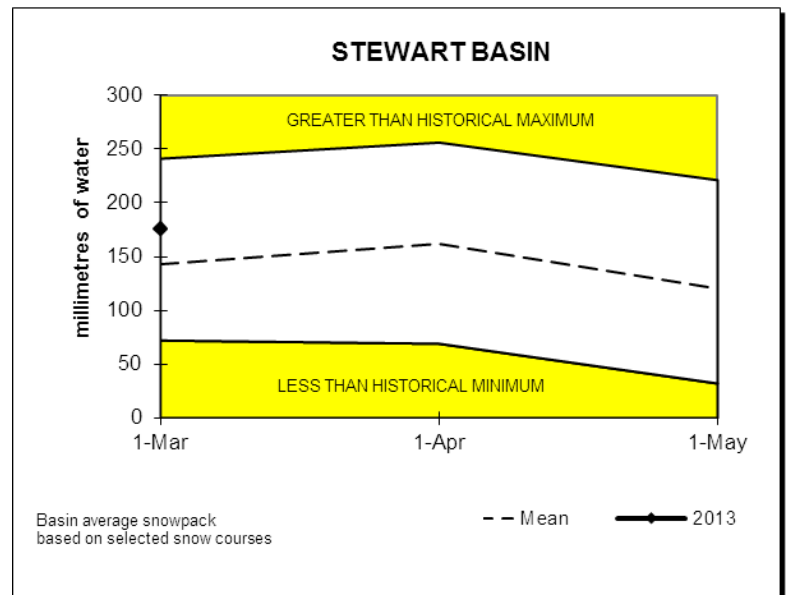


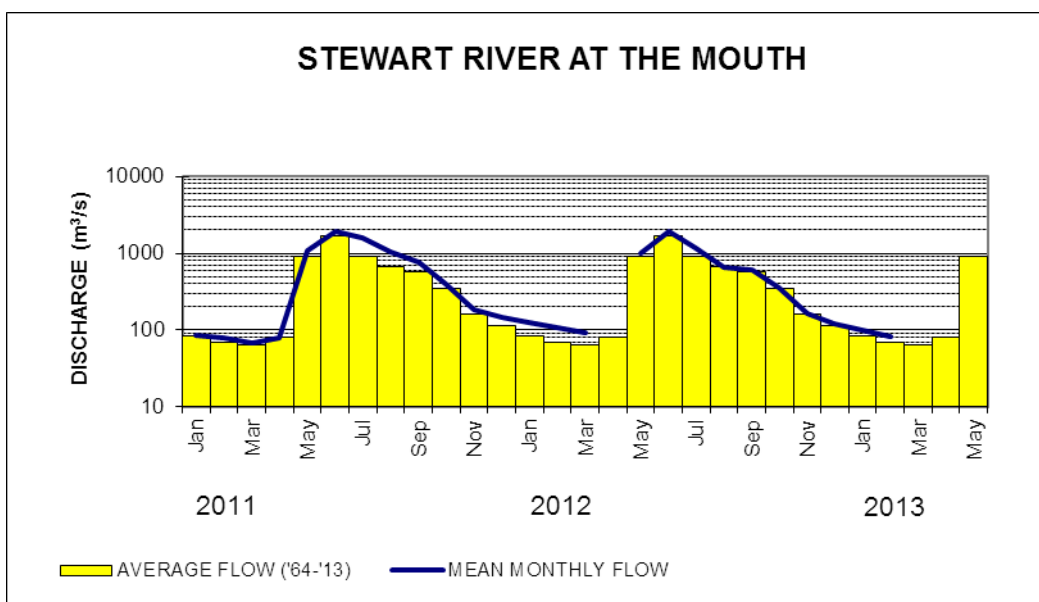
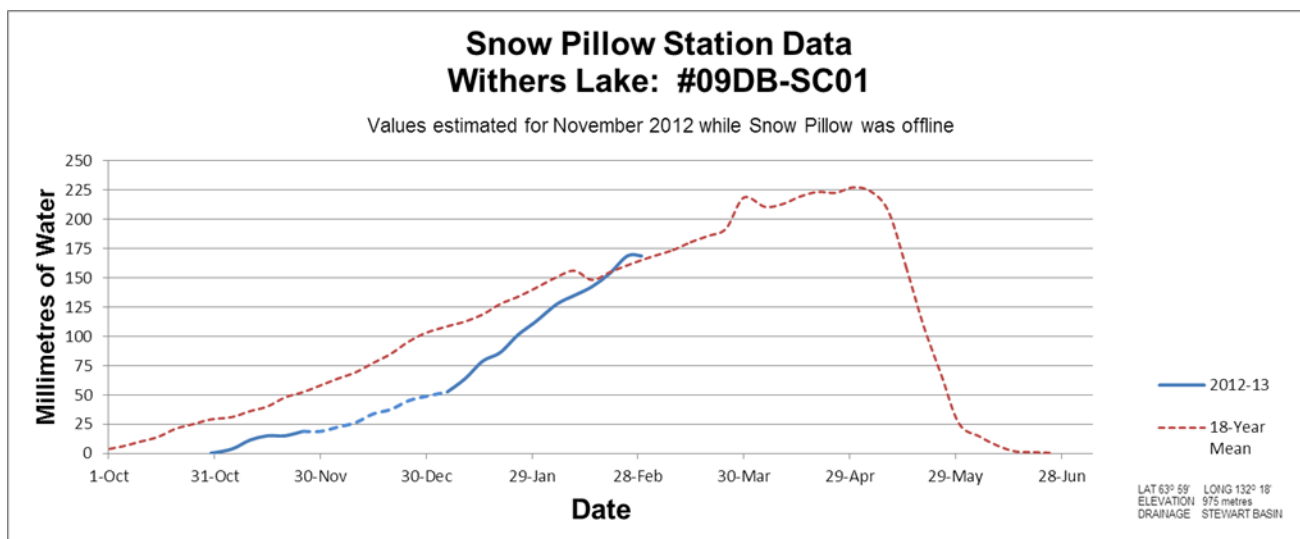


## STEWART RIVER SUB-BASIN

Snowpack conditions in the Stewart River watershed are above normal for March 1<sup>st</sup>. Values of snow water equivalent range from 91 percent of normal at Calumet to 145 percent of normal at Mayo Airport 'A'. A basin-wide average has been estimated to be 123 percent of normal.

Mean February streamflow for the watershed was 118 percent of normal as indicated by the Stewart River at the Mouth. Given normal summer meteorological conditions, volume runoff and peak flows for the season are each expected to be 120 and 125 percent of normal, respectively.

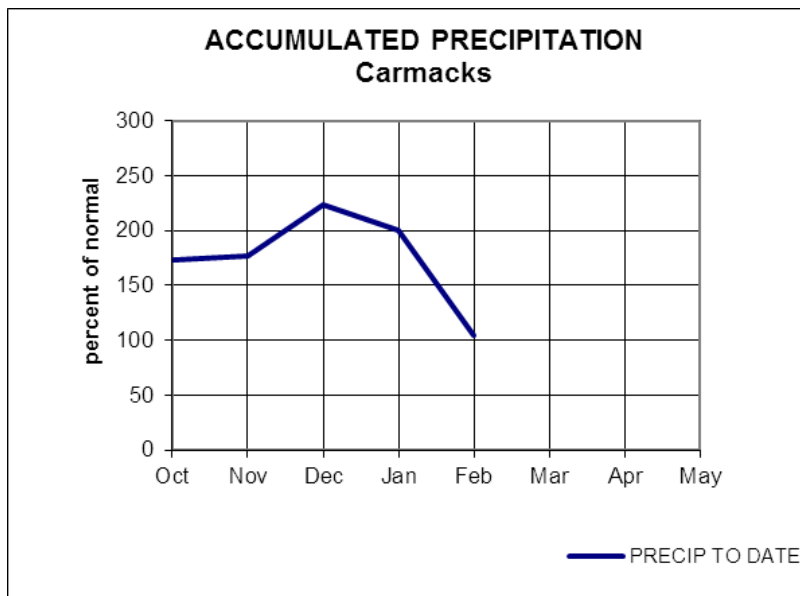
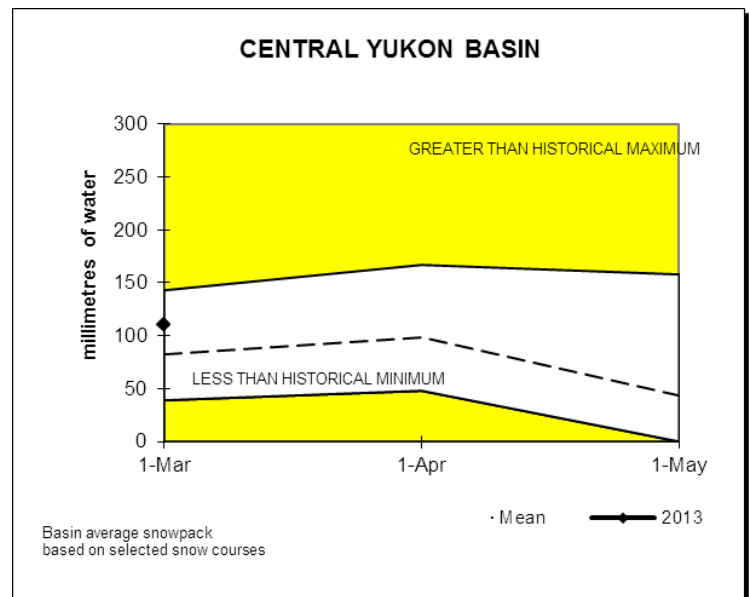






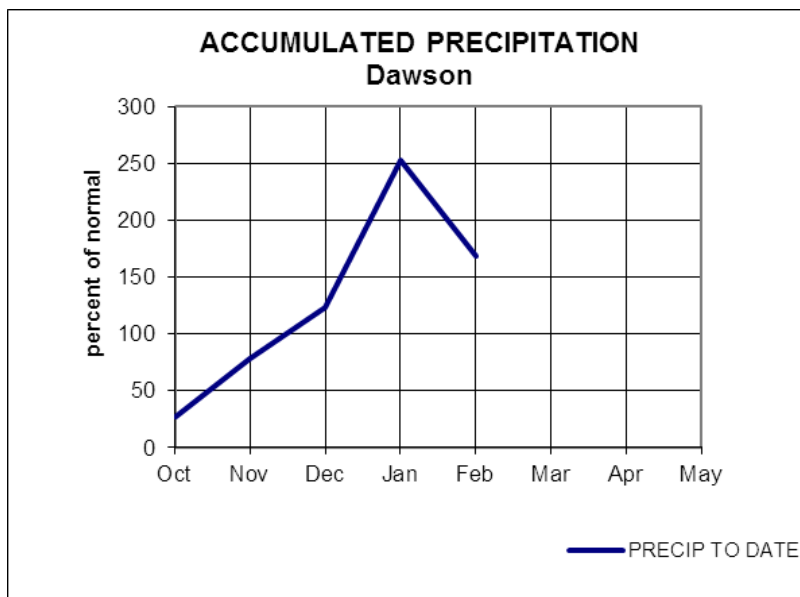
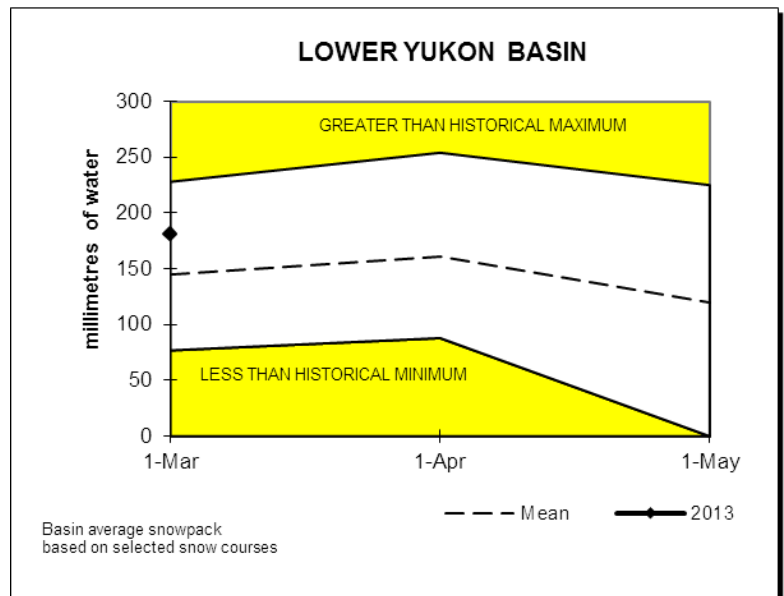
## CENTRAL YUKON RIVER BASIN (CARMACKS AREA)

Snowpack conditions in the Carmacks area are well-above normal for March 1<sup>st</sup>. Values of snow water equivalent range from 120 percent of normal at Williams Creek to 148 percent of normal at Mt. Berdoe. An area-wide average has been estimated to be 133 percent of normal.



## LOWER YUKON RIVER BASIN (DAWSON AREA)

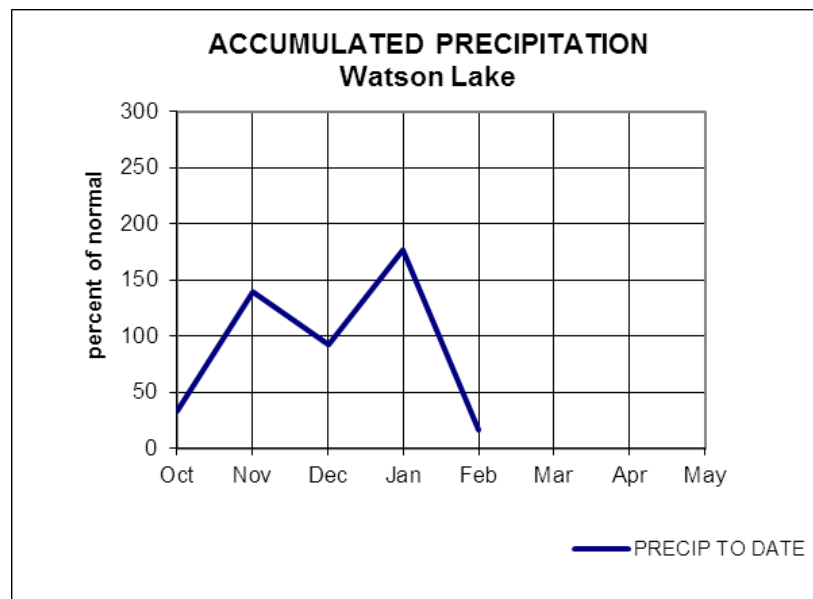
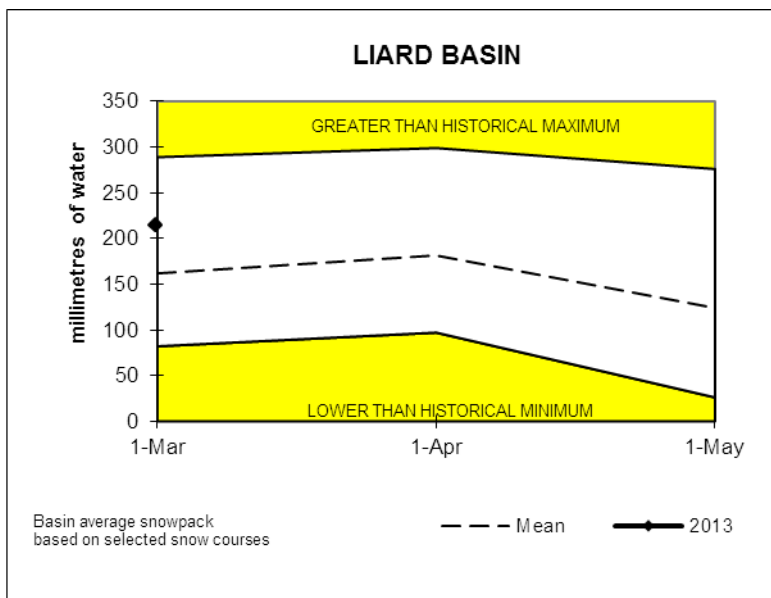
Snowpack conditions in the Dawson area are above normal for March 1<sup>st</sup>. Values of snow water equivalent range from 115 percent of normal at King Solomon Dome to 145 percent of normal at Midnight Dome. An area-wide average has been estimated to be 125 percent of normal.

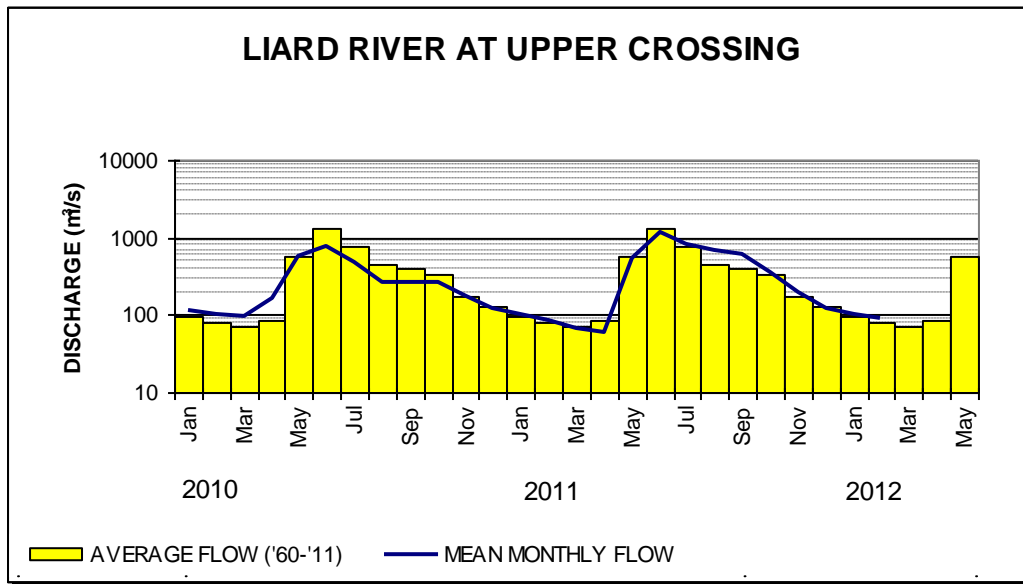


## LIARD RIVER BASIN

Snowpack conditions within the Liard River watershed are above normal. Values of snow water equivalent range from 116 percent of normal at the Hyland River to 155 percent of normal at Tintina Airstrip. A basin-wide average has been estimated to be 132 percent of normal.

Mean February streamflow for the Liard River upstream of Upper Liard was 118 percent of normal. Given normal summer meteorological conditions, volume runoff and peak flows for the season are expected to be 125 percent and 130 percent of normal, respectively.

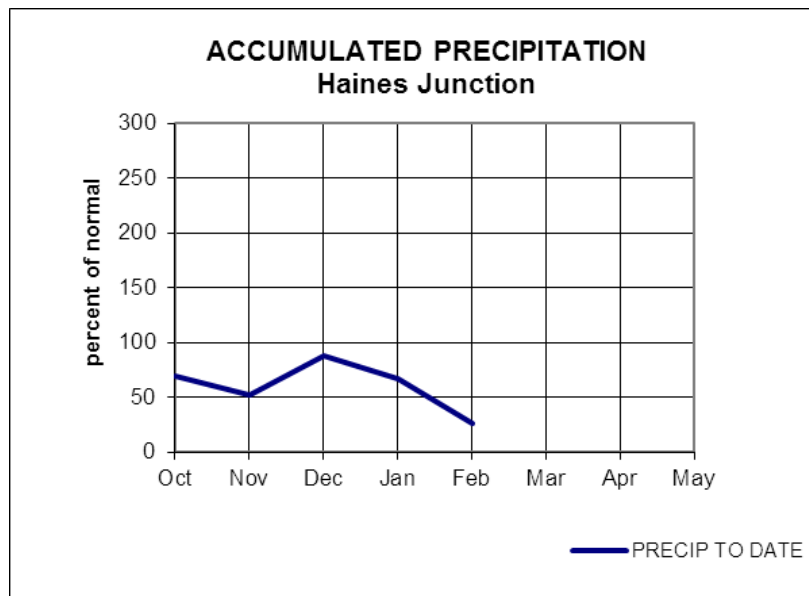
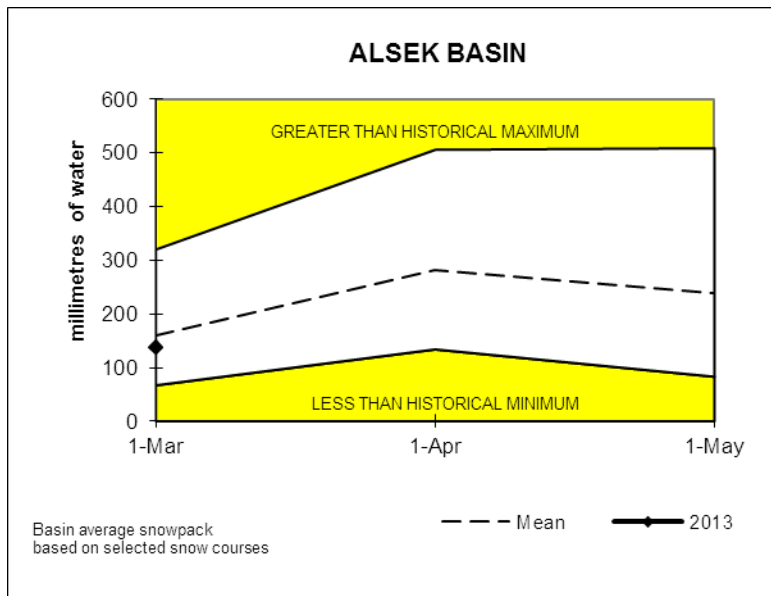


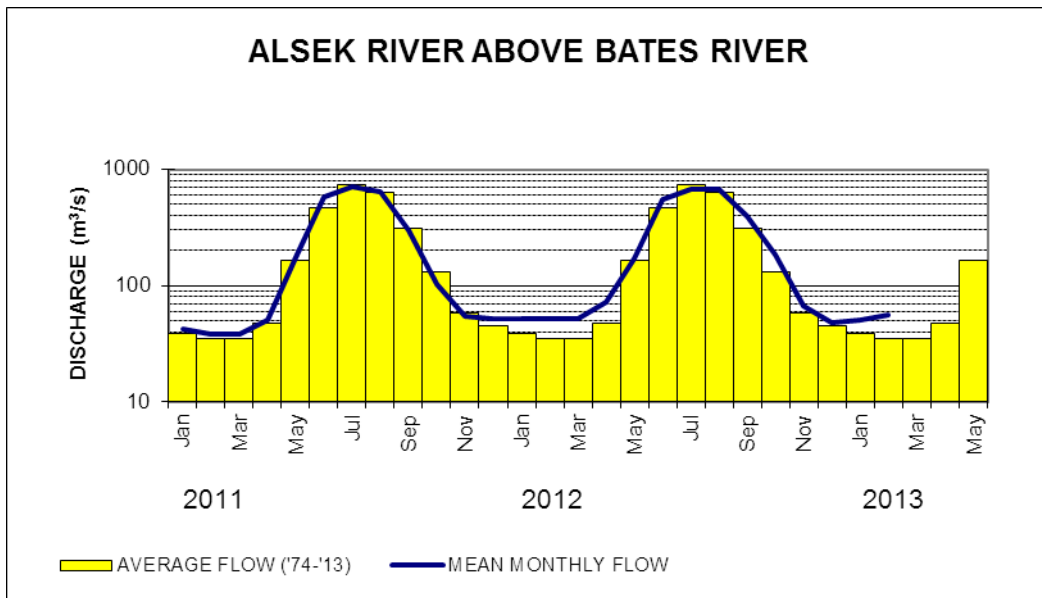


## ALSEK RIVER BASIN

Snowpack conditions within the Alsek River watershed, although variable, are mostly below normal for March 1<sup>st</sup>. Values of snow water equivalent range from 53 percent of normal at Summit to 135 percent of normal at Canyon Lake. A basin-wide average has been estimated to be 86 percent of normal.

Mean monthly streamflow for February as indicated by the Alsek River above Bates River was 160 percent of normal. The Alsek River is primarily a glacial regime type, which is largely dependent on summer temperatures. Given normal summer meteorological conditions however, volume runoff and peak flows for the season are expected to be 85 and 90 percent of normal, respectively.

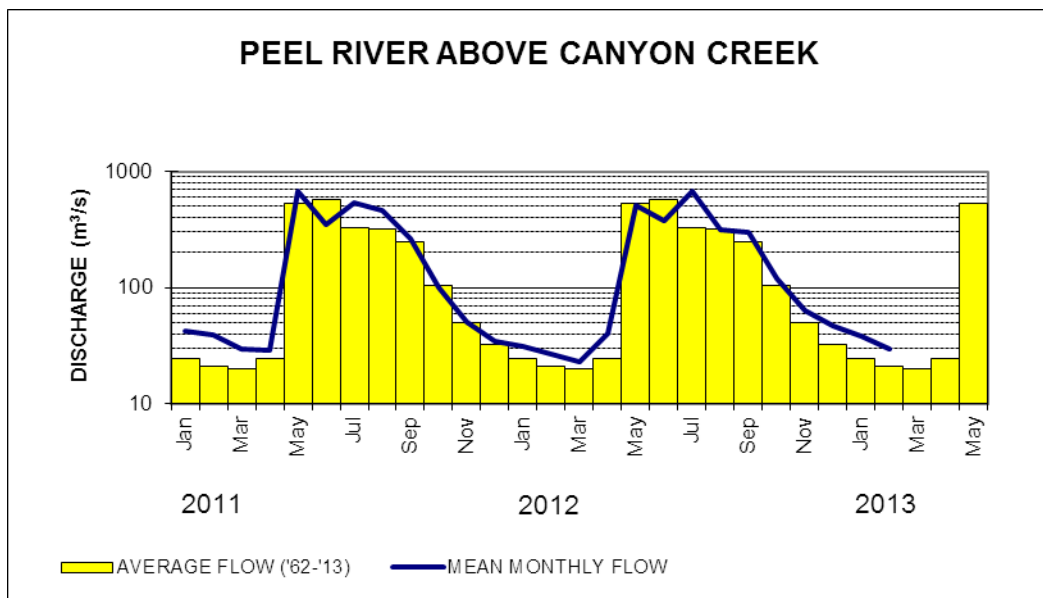
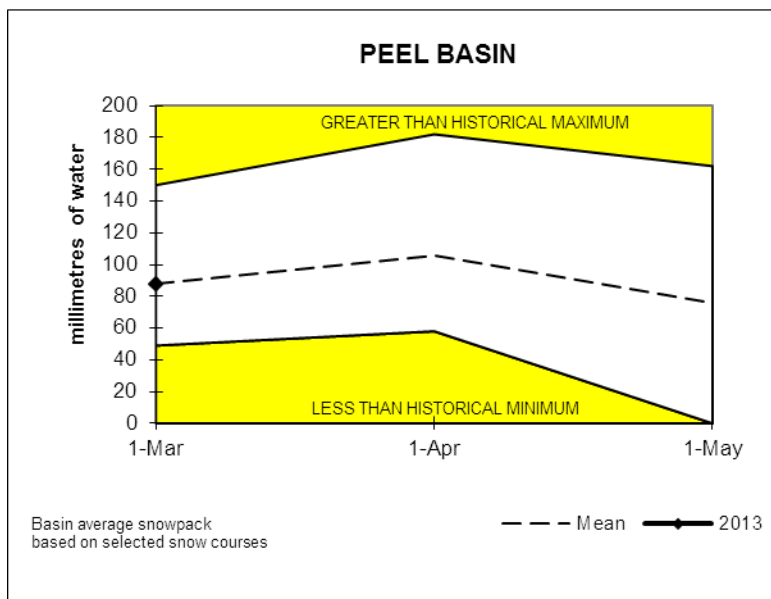




## PEEL RIVER BASIN

Snowpack conditions in the Peel River watershed are normal with values of snow water equivalent ranging from 98 percent of normal at Blackstone to 100 percent of normal at Ogilvie. A basin-wide average has been estimated to be 99 percent of normal.

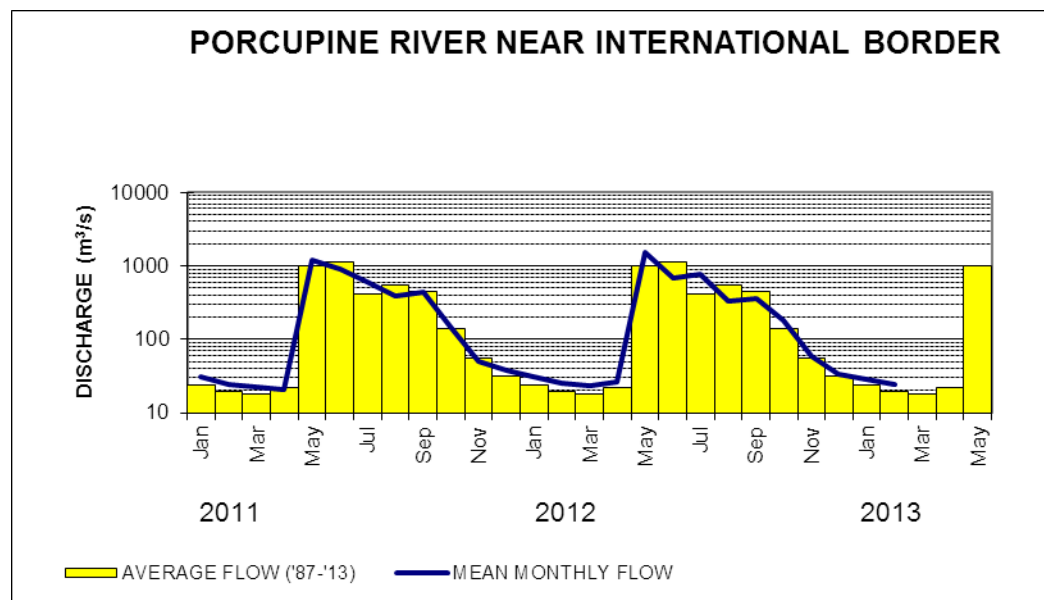
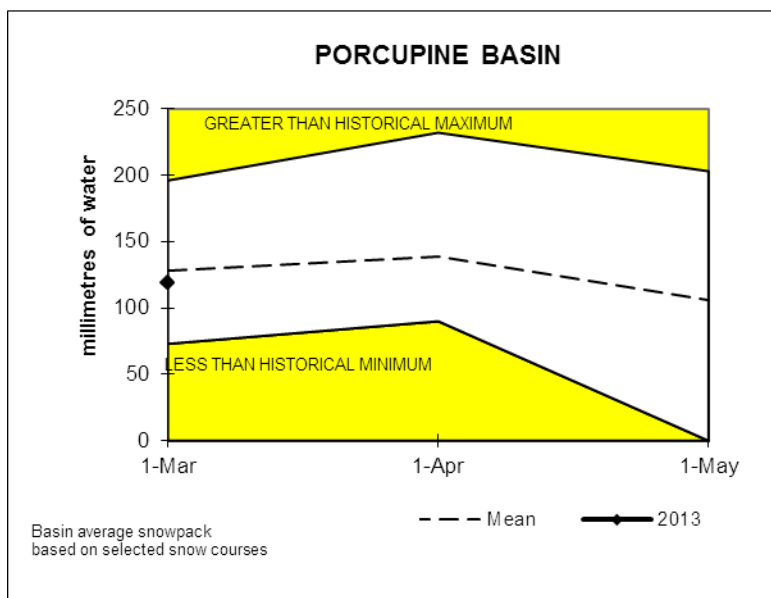
Mean monthly streamflow for February as indicated by the Peel River above Canyon Creek station was 142 percent of normal. Peel River volume and peak flow forecasts are not available at this time.



## PORCUPINE RIVER BASIN

Snowpack conditions in the Porcupine River watershed are near normal with values of snow water equivalent ranging from 87 percent of normal at Eagle River to 97 percent of normal at Eagle Plains. A basin-wide average has been estimated to be 93 percent of normal.

Mean February streamflow for the basin as indicated by the Porcupine River near the International Boundary is 122 percent of normal. Given normal summer meteorological conditions, volume runoff and peak flows for the season are expected to be 95 and 100 percent of normal, respectively.





# Drainage Basin and Snow Course

For Sample Date: 2013-03-01

Name	Number	Elev (m)	Date of Survey	This Year		Water Content		
				Snow Depth (cm)	Water Content (mm)	Last Year (mm)	Average (mm)	Yrs of Rec
Alsek River Basin								
Canyon Lake	08AA-SC01	1160	3/2/2013	46	111	99	82	35
Alder Creek	08AA-SC02	768	2/28/2013	74	170	248	148	32
Aishihik Lake	08AA-SC03	945	3/2/2013	45	120	87	75	19
Haines Junction Farm	08AA-SC04	610	2/28/2013	32	46	129	98	13
Summit	08AB-SC03	1000	2/25/2013	69	134	320	251	33
Profile Mountain	08AB-SC04	900	No Surv			N.S.	285	24
Yukon River Basin								
Tagish	09AA-SC01	1080	2/27/2013	65	122	130	129	38
Montana Mountain	09AA-SC02	1020	2/27/2013	63	130	164	131	37
Log Cabin (B.C.)	09AA-SC03	884	2/27/2013	121	372	529	330	52
Atlin (B.C)	09AA-SC04	730	2/25/2013	47	106	91	111	48
Mt McIntyre B	09AB-SC01B	1097	2/25/2013	68	134	212	136	37
Whitehorse Airport	09AB-SC02	700	2/25/2013	53	99	134	93	48
Meadow Creek	09AD-SC01	1235	2/26/2013	110	276	351	246	36
Jordan Lake	09AD-SC02	930	3/2/2013	67	142	116	126	25
Morley Lake	09AE-SC01	824	2/26/2013	62	156	152	143	24
Mount Berdoe	09AH-SC01	1035	2/25/2013	72	142	126	96	37
Satasha Lake	09AH-SC03	1106	2/25/2013	53	102 E	104	86	26
Williams Creek	09AH-SC04	914	2/25/2013	61	104 E	N.S.	87	17
Twin Creeks	09BA-SC02	900	3/1/2013	99	200	191	165	35
Hoole River	09BA-SC03	1036	3/2/2013	80	180	153	118	36
Burns Lake	09BA-SC04	1112	3/2/2013	105	261	239	194	26
Finlayson Airstrip	09BA-SC05	988	3/2/2013	67	158	60	91	26
Fuller Lake	09BB-SC03	1126	3/1/2013	91	174	230	172	26
Russell Lake	09BB-SC04	1060	3/1/2013	97	204	283	204	26
Rose Creek	09BC-SC01	1080	2/26/2013	82	154	107	95	18
Mount Nansen	09CA-SC01	1021	2/25/2013	61	100 E	68	68	37
MacIntosh	09CA-SC02	1160	2/25/2013	62	98 E	98	82	37
Burwash Airstrip	09CA-SC03	810	2/28/2013	31	48	53	41	36
Duke River	09CA-SC05	1310	No Surv			N.S.	91	24
Burwash Uplands	09CA-SC06	1080	No Surv			N.S.	70	4
Beaver Creek	09CB-SC01	655	2/25/2013	53	91	103	74	38
Chair Mountain	09CB-SC02	1067	2/26/2013	59	107	76	82	19
White River	09CB-SC03	823	No Surv			N.S.	61	5
Casino Creek	09CD-SC01	1065	2/25/2013	62	100 E	154	107	35
Pelly Farm	09CD-SC03	472	3/1/2013	51	90	98	75	26

Code "E" - Estimate

# Drainage Basin and Snow Course

For Sample Date: 2013-03-01

Name	Number	Elev (m)	Date of Survey	This Year		Water Content		
				Snow Depth (cm)	Water Content (mm)	Last Year (mm)	Average (mm)	Yrs of Rec
Yukon River Basin								
Plata Airstrip	09DA-SC01	830	3/1/2013	96	239	240	167	33
Arrowhead Lake	09DA-SC02	1120	No Surv			N.S.	159	15
Withers Lake	09DB-SC01	975	3/1/2013	85	172	281	202	26
Rackla Lake	09DB-SC02	1040	3/1/2013	81	158	232	168	23
Mayo Airport A	09DC-SC01A	540	2/25/2013	62	129	78	89	43
Mayo Airport B	09DC-SC01B	540	2/27/2013	60	80	100	94	25
Edwards Lake	09DC-SC02	830	3/1/2013	80	156	197	148	25
Calumet	09DD-SC01	1310	2/25/2013	87	158	151	173	35
King Solomon Dome	09EA-SC01	1080	2/27/2013	92	170	177	148	38
Grizzly Creek	09EA-SC02	975	2/28/2013	80	182	225	154	37
Midnight Dome	09EB-SC01	855	2/26/2013	100	192	153	132	37
Boundary (Alaska)	09EC-SC02	1005	3/1/2013	56	142	86	114	38
Porcupine River Basin								
Riff's Ridge	09FA-SC01	650	2/28/2013	88	150	134	125	26
Eagle Plains	09FB-SC01	710	2/28/2013	77	142	140	146	30
Eagle River	09FB-SC02	340	2/28/2013	78	96	123	110	30
Old Crow	09FD-SC01	299	No Surv			N.S.	103	25
Liard River Basin								
Watson Lake Airport	10AA-SC01	685	2/27/2013	95	197	157	132	48
Tintina Airstrip	10AA-SC02	1067	3/2/2013	105	282	177	182	34
Pine Lake Airstrip	10AA-SC03	995	2/27/2013	95	240	207	201	36
Ford Lake	10AA-SC04	1110	3/2/2013	86	202	149	167	25
Frances River	10AB-SC01	730	2/26/2013	79	176	172	143	37
Hyland River	10AD-SC01	855	2/28/2013	76	178	269	153	37
Peel River Basin								
Blackstone River	10MA-SC01	920	2/28/2013	56	84	80	86	37
Ogilvie River	10MA-SC02	595	2/28/2013	58	89	79	89	37
Bonnet Plume Lake	10MB-SC01	1120	3/1/2013	80	154	N.S.	151	23
Alaska Snow Courses								
Eaglecrest	08AK-SC01	305	3/1/2013	191	594	874	456	31
Moore Creek Bridge	08AK-SC02	700	3/1/2013	175	533	528	475	20

Code "E" - Estimate

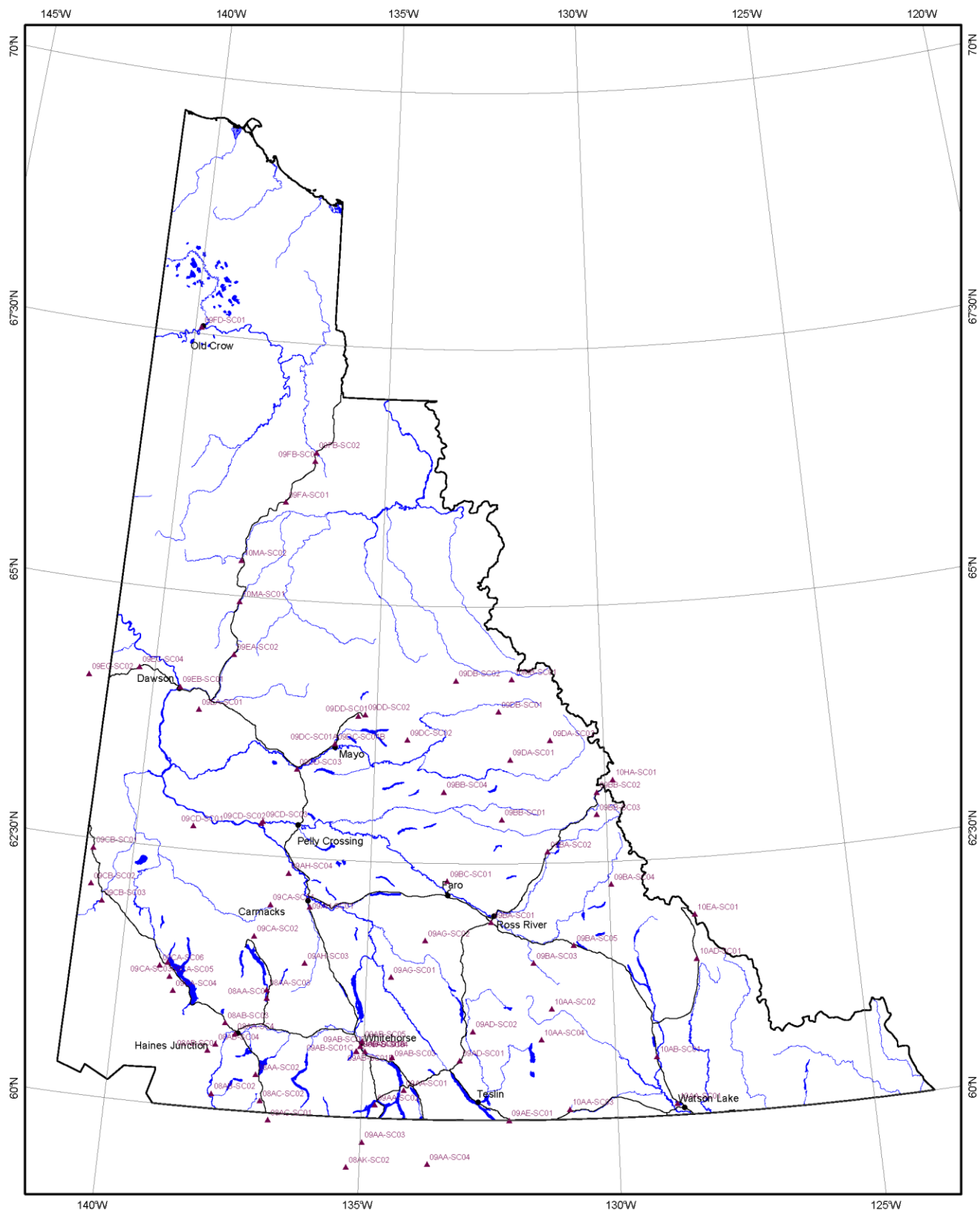
## INDEX OF YUKON SNOW COURSES

NAME	NUMBER	ELEVATION (m)	LATITUDE	LONGITUDE	AGENCY
<b>YUKON RIVER BASIN</b>					
Tagish	09AA-SC1	1080	60°17'	134°11'	2
Montana Mountain	09AA-SC2	1020	60°08'	134°44'	2
Log Cabin (B.C.)	09AA-SC3	884	59°46'	134°58'	2
Atlin (B.C.)	09AA-SC4	730	59°34'	133°42'	3
Mt. McIntyre (B)	09AB-SC1B	1097	60°39'	135°08'	1
Whitehorse Airport	09AB-SC2	700	60°42'	135°04'	1
Meadow Creek	09AD-SC1	1235	60°35'	133°05'	2
Jordan Lake	09AD-SC2	930	60°52'	132°50'	2
Morley Lake	09AE-SC1	824	60°00'	132°07'	2
Mount Berdoe	09AH-SC1	1035	62°02'	136°14'	2
Satasha Lake	09AH-SC3	1106	61°29'	136°16'	2
Williams Creek	09AH-SC4	914	60°21'	136°43'	2
Twin Creeks	09BA-SC2	900	62°37'	131°16'	2
Hoole River	09BA-SC3	1036	61°32'	131°36'	2
Burns Lake	09BA-SC4	1112	62°17'	129°57'	2
Finlayson Airstrip	09BA-SC5	988	61°42'	130°46'	2
Fuller Lake	09BB-SC3	1126	62°58'	130°46'	2
Rose Creek	09BC-SC01	1080	62°20'	133°23'	2
Russell Lake	09BB-SC4	1060	63°12'	133°29'	2
Mount Nansen	09CA-SC1	1021	62°02'	137°03'	2
Macintosh	09CA-SC2	1160	61°43'	137°20'	2
Burwash Airstrip	09CA-SC3	810	61°23'	139°03'	2
Duke River	09CA-SC5	1310	61°15'	138°59'	6
Beaver Creek	09CB-SC1	655	62°25'	140°51'	2
Chair Mountain	09CB-SC2	1067	62°04'	140°48'	2
White River	09CB-SC3	823	61°55'	140°32'	2
Casino Creek	09CD-SC1	1065	62°44'	138°48'	2
Pelly Farm	09CD-SC3	472	62°50'	137°20'	8
Plata Airstrip	09DA-SC1	830	63°31'	132°03'	2
Arrowhead Lake	09DA-SC2	1120	63°42'	131°10'	2
Withers Lake	09DB-SC1	975	63°59'	132°18'	2
Rackla Lake	09DB-SC2	1040	64°17'	133°15'	2
Mayo Airport (A)	09DC-SC1A	540	63°38'	135°53'	2
Mayo Airport (B)	09DC-SC1B	540	63°38'	135°53'	2
Edwards Lake	09DC-SC2	830	63°42'	134°18'	2
Calumet	09DD-SC1	1310	63°55'	135°24'	2
King Solomon Dome	09EA-SC1	1080	63°52'	138°56'	2
Grizzly Creek	09EA-SC2	975	64°26'	138°16'	2
Boundary (Alaska)	09EC-SC2	1005	64°05'	141°27'	4
Midnight Dome	09EB-SC1	855	64°04'	139°24'	2

NAME	NUMBER	ELEVATION (m)	LATITUDE	LONGITUDE	AGENCY
<b>LIARD RIVER BASIN</b>					
Watson Lake Airport	10AA-SC1	685	60°07'	128°50'	2
Tintina Airstrip	10AA-SC2	1067	61°05'	131°15'	2
Pine Lake Airstrip	10AA-SC3	995	60°06'	130°56'	2
Ford Lake	10AA-SC4	1110	60°47'	131°28'	2
Frances River	10AB-SC1	730	60°35'	129°11'	2
Hyland River	10AD-SC1	855	61°31'	128°16'	2
<b>ALSEK RIVER BASIN</b>					
Canyon Lake	08AA-SC1	1160	61°07'	136°59'	7
Alder Creek	08AA-SC2	768	60°22'	137°06'	2
Aishihik Lake	08AA-SC3	945	61°12'	137°00'	7
Haines Junction Farm	08AA-SC4	610	60°45'	137°34'	2
Clay Creek	08AB-SC2	670	60°09'	137°56'	6
Summit	08AB-SC3	1000	60°51'	137°47'	2
Profile Mountain	08AB-SC4	900	60°38'	137°56'	6
<b>PEEL RIVER BASIN</b>					
Blackstone River	10MA-SC1	920	64°57'	138°15'	2
Ogilvie River	10MA-SC2	595	65°21'	138°18'	2
Bonnet Plume Lake	10MB-SC1	1120	64°18'	132°00'	2
<b>PORCUPINE RIVER BASIN</b>					
Riff's Ridge	09FA-SC1	650	65°57'	137°22'	2
Eagle Plains	09FB-SC1	710	66°22'	136°44'	2
Eagle River	09FB-SC2	340	66°27'	136°43'	2
Old Crow	09FD-SC1	299	67°34'	139°51'	6
<b>ALASKA SNOW COURSES</b>					
Eaglecrest	34J03	305	58°17'	134°32'	4
Moore Creek Bridge	34K02	701	59°31'	135°15'	4

Numbers refer to Agencies cooperating in the Yukon Snow Surveys:

1. Department of Environment, Government of Yukon
2. Dept of Energy Mines and Resources Yukon
3. British Columbia Ministry of Environment
4. USDA Natural Resources Conservation Service
5. Yukon Transportation and Highways
6. Parks Canada
7. Yukon Energy Corp.
8. Private Contract



**Location of Water Resource Snow Courses**