YUKON SNOW SURVEY BULLETIN & WATER SUPPLY FORECAST

April 1, 2013

Prepared and issued by:
Water Resources Branch
Environment Yukon

Yukon
Environment

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 as well as earlier editions is available online at:
www.env.gov.yk.ca/air-water-waste/snow_survey.php

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

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Box 2703, Whitehorse, Yukon Y1A 2C6

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The Yukon Snow Survey Bulletin and Water Supply Forecast is published three times annually: after March 1st, April 1st, and May 1st. The Bulletin forms part of the Yukon Snow Survey Program administered by the Water Resources Branch, Department of Environment, Government of Yukon.

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 Branch, 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

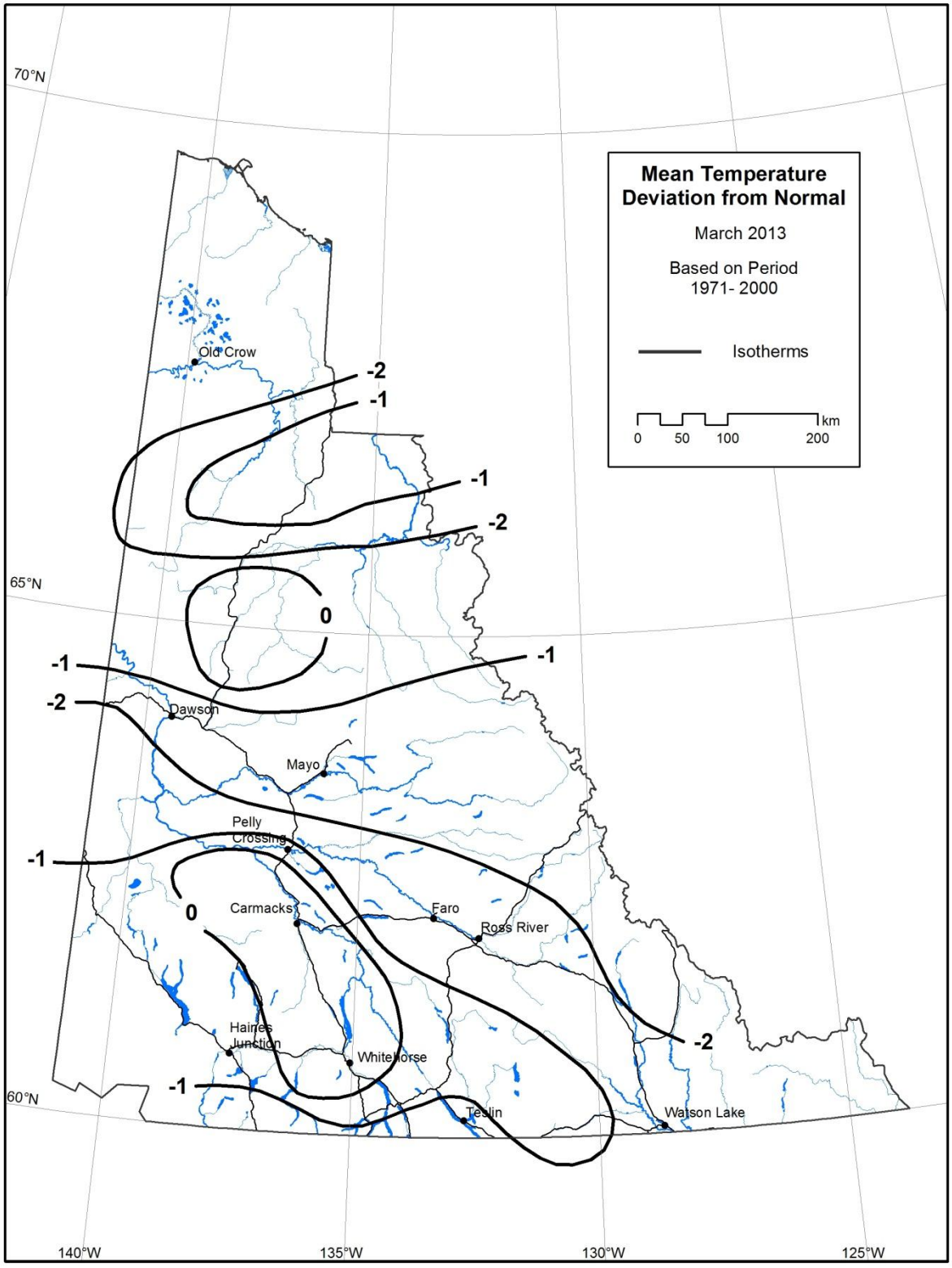
Temperatures were variable across the territory, with most stations along both the Tintina Trench and the Dempster Highway ending the month 1 to 2 degrees Celsius below normal due primarily to a series of persistent Arctic low-pressure systems. These same patterns resulted in below-normal to well-below-normal precipitation throughout most of the territory. These precipitation anomalies are not especially remarkable since normal March precipitation is 10 to 20 mm with the exception of coastal areas near Fraser and Pleasant Camp.

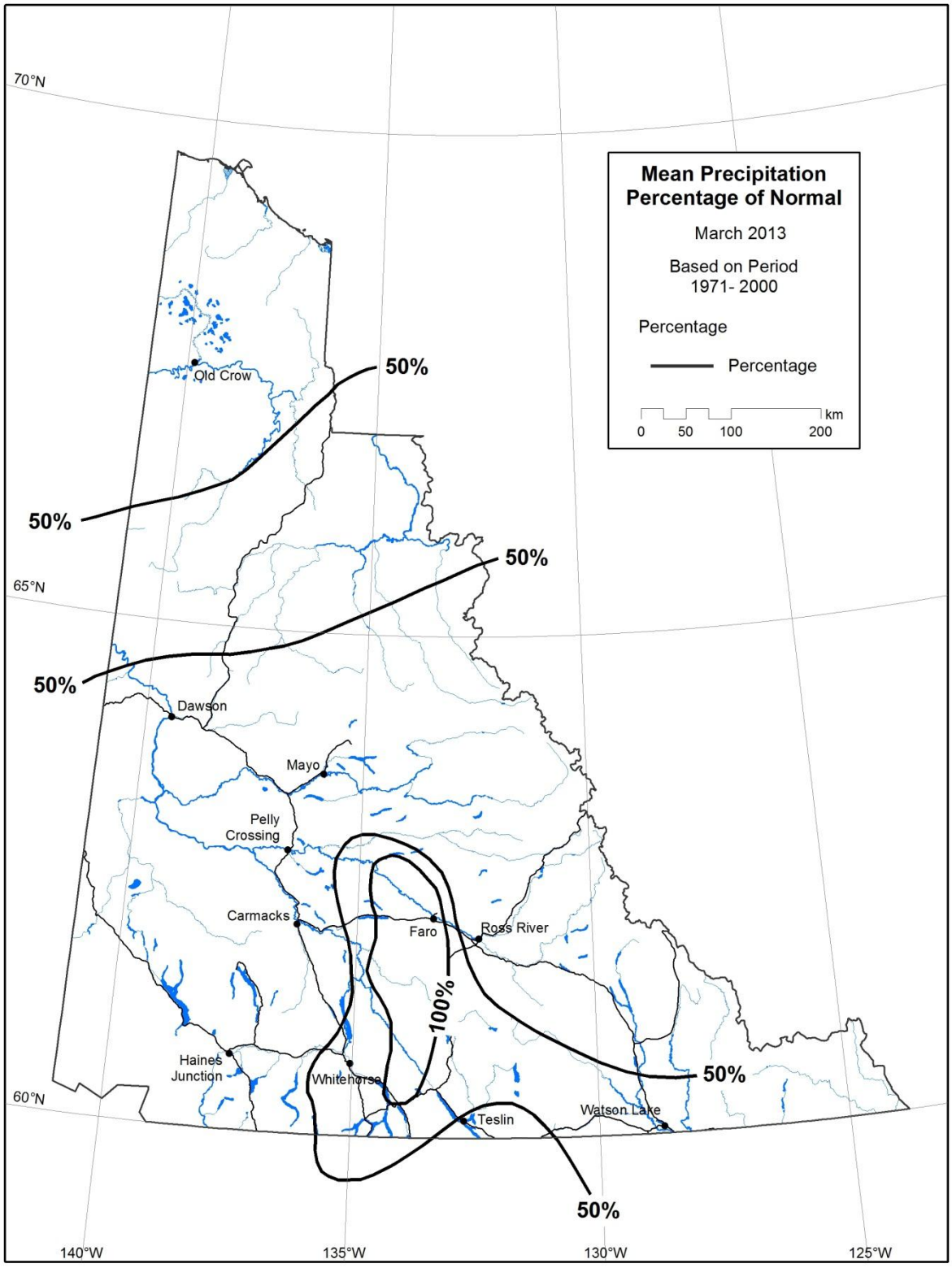
SNOWPACK

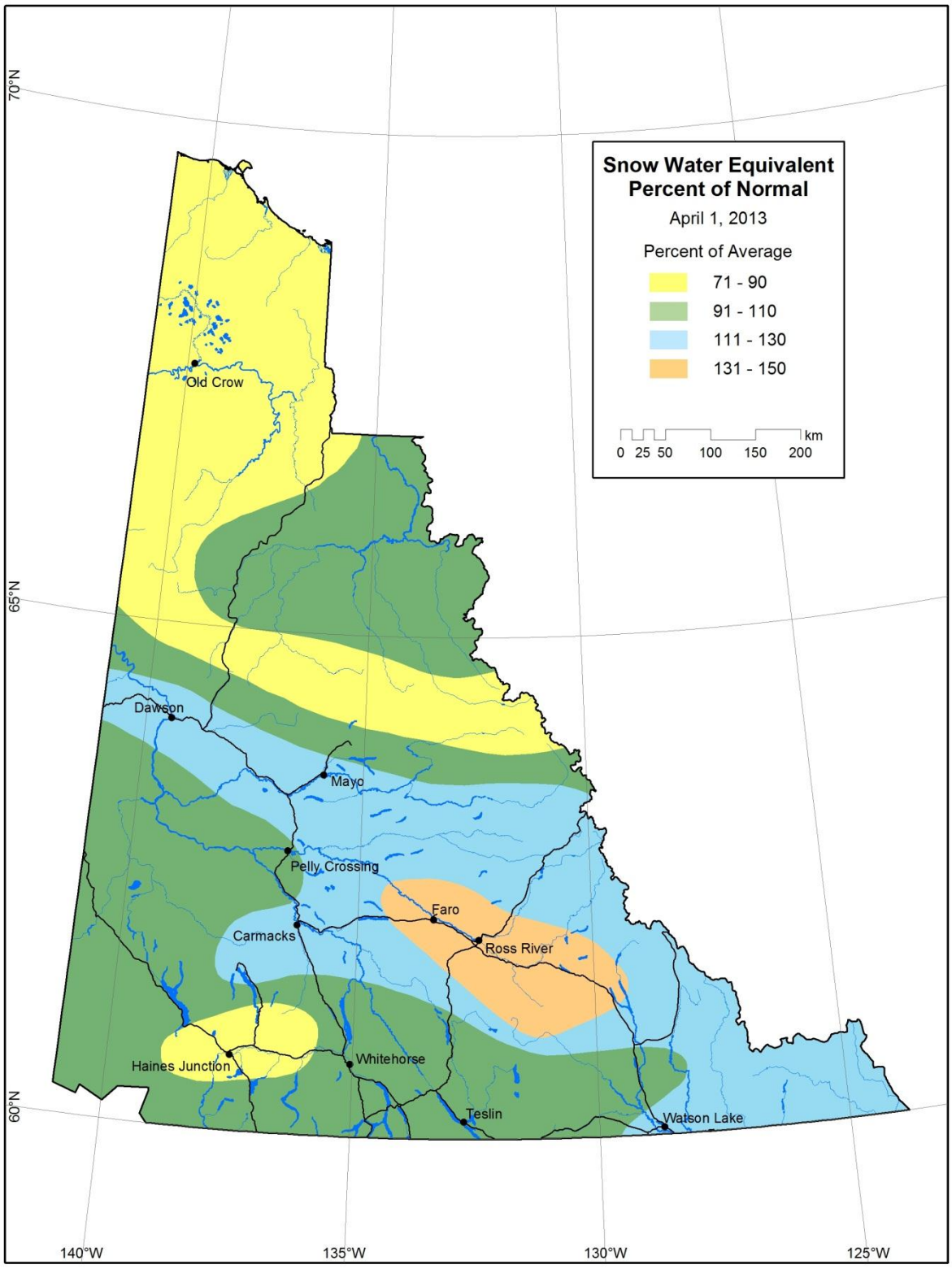
The April 1st Yukon snowpack is quite variable, ranging from below to well above normal. The Southern Lakes region and Peel River watershed are near normal, whereas more northern areas and the vicinity of Haines Junction are below normal. By contrast, there is an above-normal snowpack in the Ross River area extending south and east to the headwaters of the Liard River.

STREAMFLOW

Streamflow conditions throughout Yukon are somewhat above normal. Streamflow is variable in southern Yukon with the upper Yukon near normal, the Stewart, Pelly and Liard Rivers above normal, and the Alsek River well above normal. Streamflow conditions in northern Yukon are near normal for March 1st. Streamflow during this period represents winter base-flow, which provides an indication of winter groundwater contribution.


Mean Temperature
Deviation from Normal
March 2013
Based on Period
1971- 2000
Isotherms
km
0 50 100 200
70°N
65°N
60°N
140°W
135°W
130°W
125°W
Old Crow
Dawson
Mayo
Pelly
Crossing
Carmacks
Faro
Ross River
Haines
Junction
Whitehorse
Teslin
Watson Lake
-2
-1
-1
-2
0
-1
-1
-2
-1
0
-2
-1


Mean Precipitation
Percentage of Normal
March 2013
Based on Period
1971- 2000
Percentage
Percentage
km
0 50 100 200
70°N
65°N
60°N
140°W
135°W
130°W
125°W
Old Crow
Dawson
Mayo
Pelly
Crossing
Carmacks
Faro
Ross River
Haines
Junction
Whitehorse
Teslin
Watson Lake
50%
50%
50%
50%
100%
50%
50%

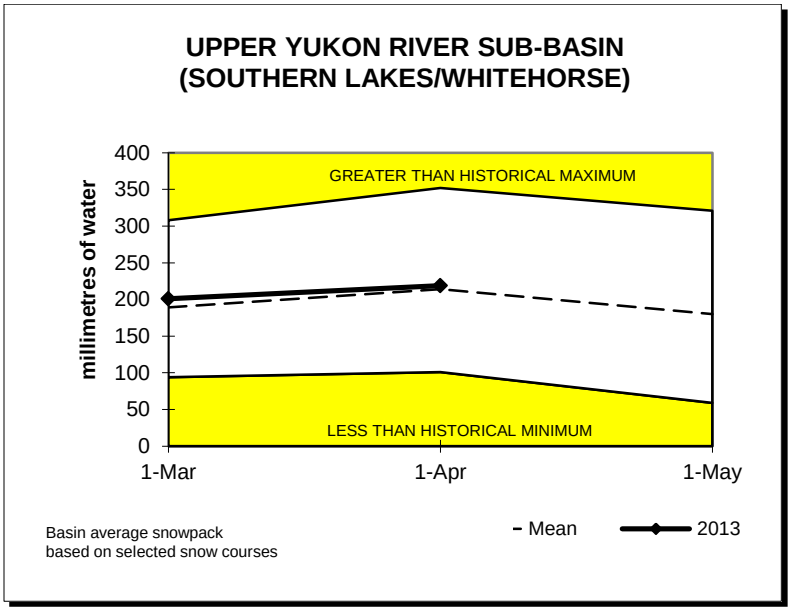

Snow Water Equivalent
Percent of Normal
April 1, 2013
Percent of Average
71 - 90
91 - 110
111 - 130
131 - 150
km
0 25 50 100 150 200
70°N
65°N
60°N
140°W
135°W
130°W
125°W
Old Crow
Dawson
Mayo
Pelly Crossing
Carmacks
Faro
Ross River
Haines Junction
Whitehorse
Teslin
Watson Lake

YUKON RIVER BASIN

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

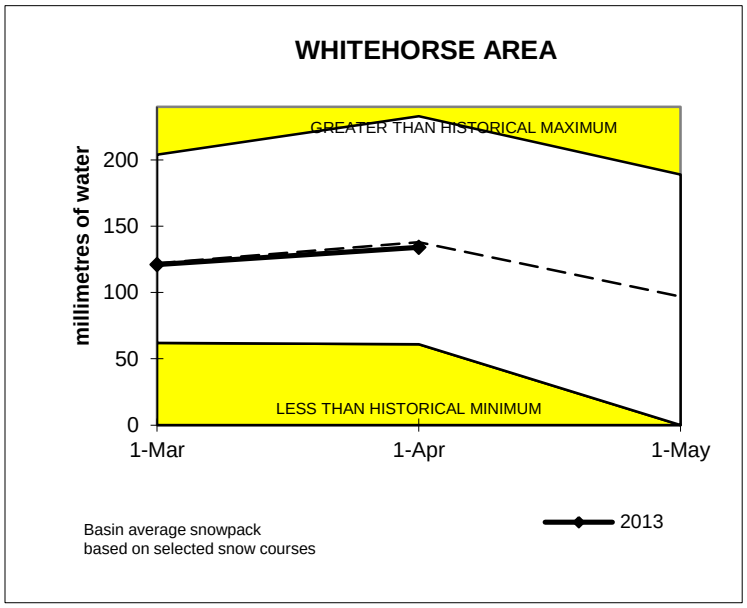
UPPER YUKON RIVER SUB-BASIN (SOUTHERN LAKES)

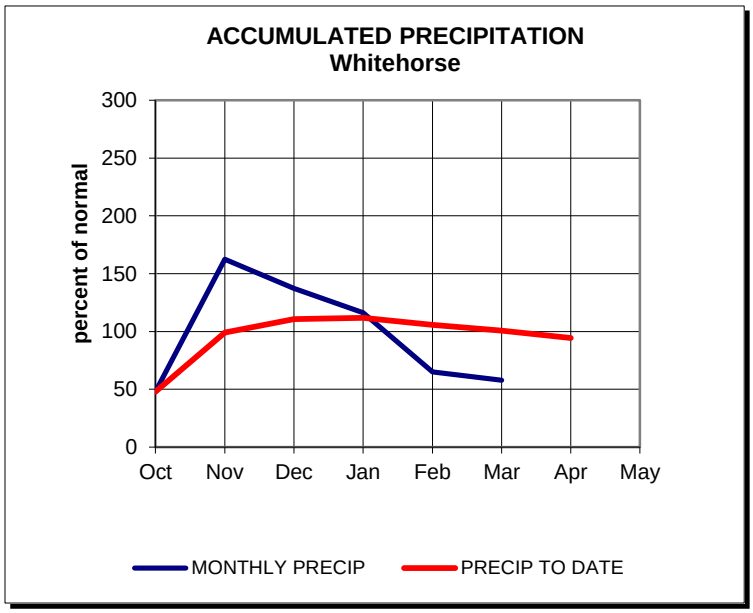
Snowpack conditions in the Upper Yukon River watershed are near normal. Values range from 85 percent of normal at Atlin to 106 percent of normal at Log Cabin. A basin-wide average has been estimated to be 102 percent of normal.

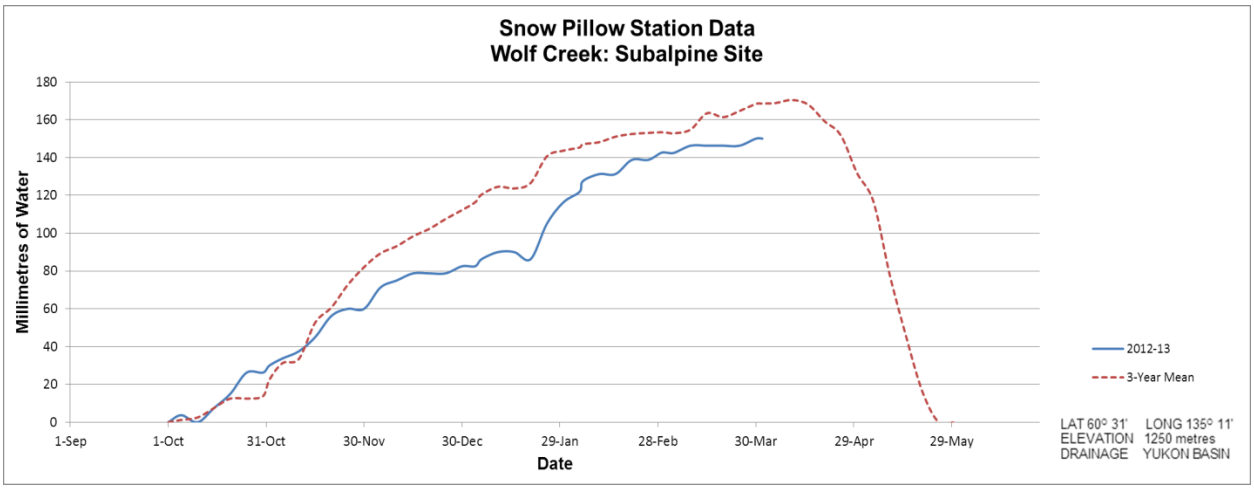


WHITEHORSE AREA

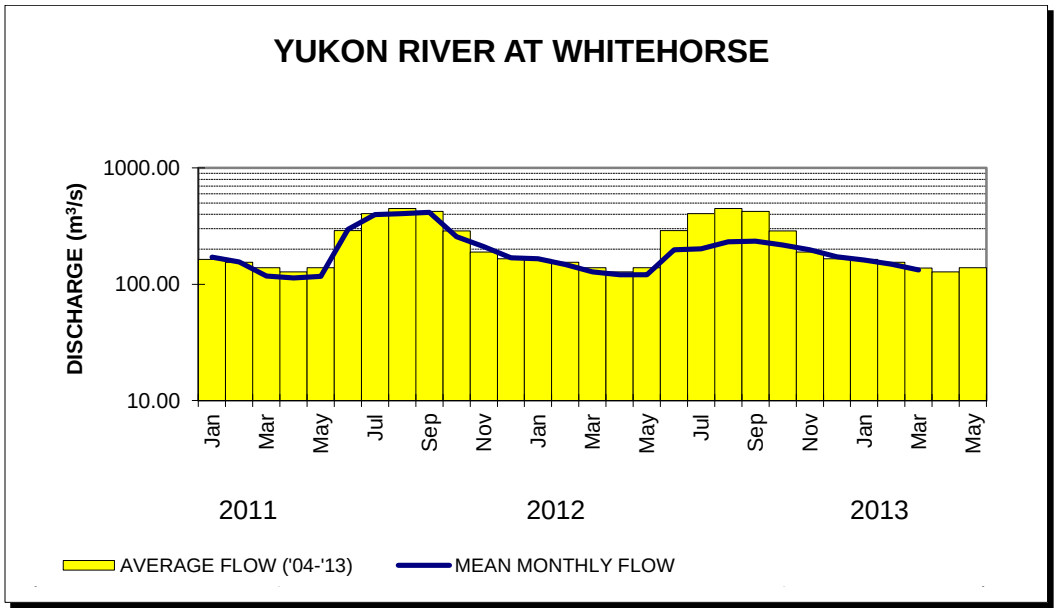
Snowpack conditions in the Whitehorse area are normal for April 1st. Values range from 88 percent of normal at Whitehorse Airport to 105 percent of normal at Montana Mountain. An area-wide average is estimated to be 97 percent of normal.





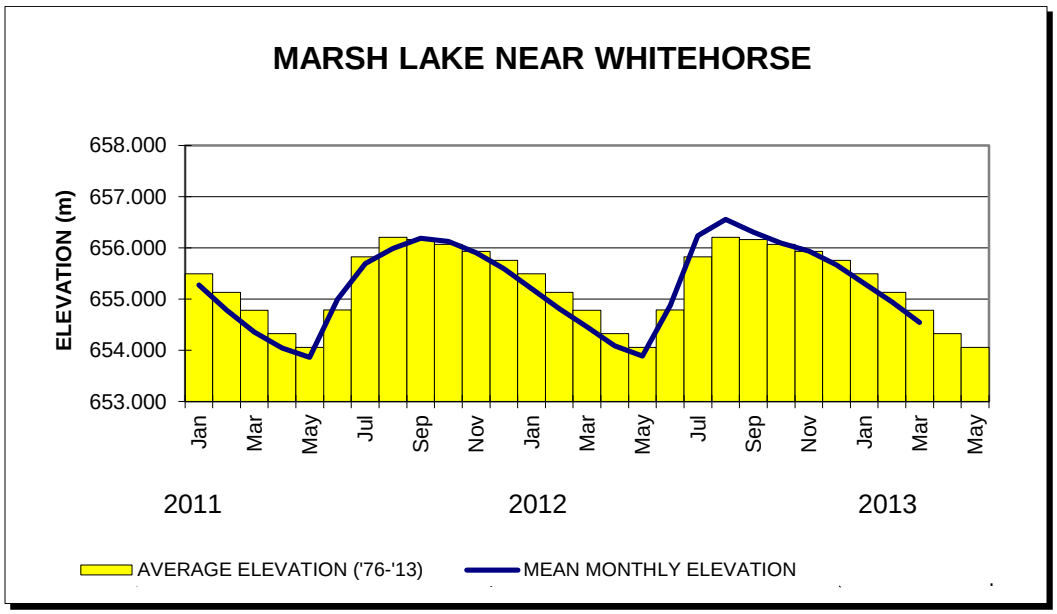


Note: The Tagish snow pillow went offline early in the winter necessitating the use of data provided by Water Resources' Wolf Creek Subalpine snow pillow to illustrate build-up of the snow pack in the Whitehorse area. The three-year mean was developed using data from 2009-2012.



YUKON RIVER and MARSH LAKE

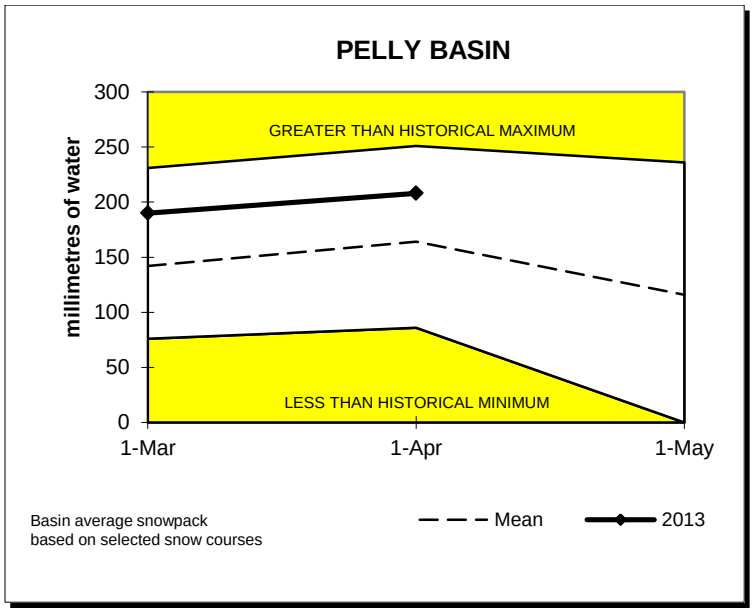
The mean elevation of Marsh Lake during March was 654.547m or 0.235m below normal. Yukon River at Whitehorse mean discharge during March was 97 percent of normal. Given normal summer meteorological conditions, volume runoff and peak flows for the season are each expected to be 105 and 110 percent of normal, respectively.

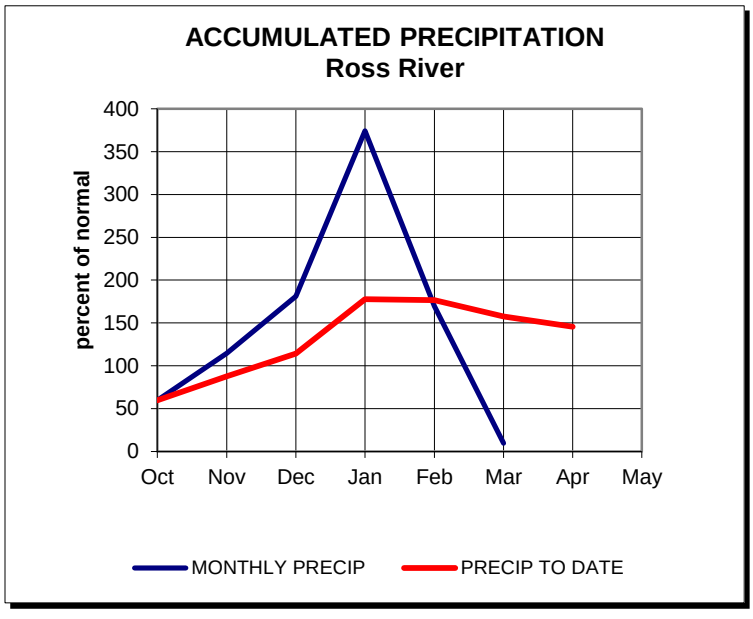


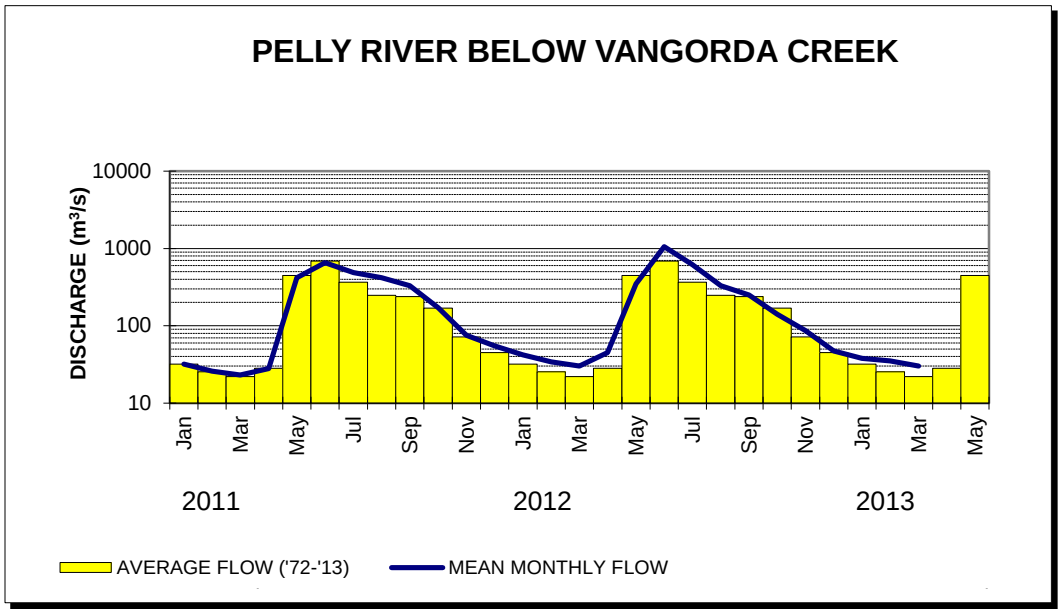
PELLY RIVER SUB-BASIN

Snowpack conditions in the Pelly River watershed are above normal. Values of snow water equivalent range from 123 percent of normal at Twin Creeks to 132 percent of normal at Hoole River. A basin-wide average has been estimated to be 127 percent of normal.

Mean March streamflow for the watershed was 136 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 135 percent of normal respectively.



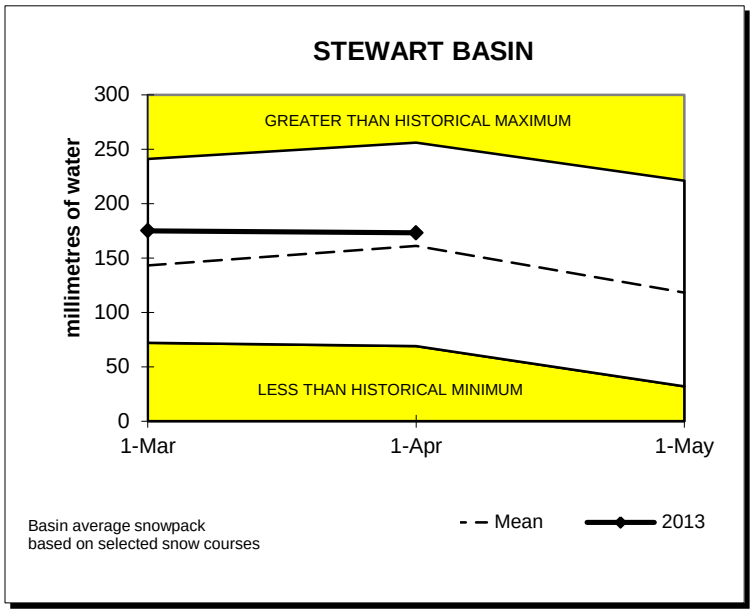


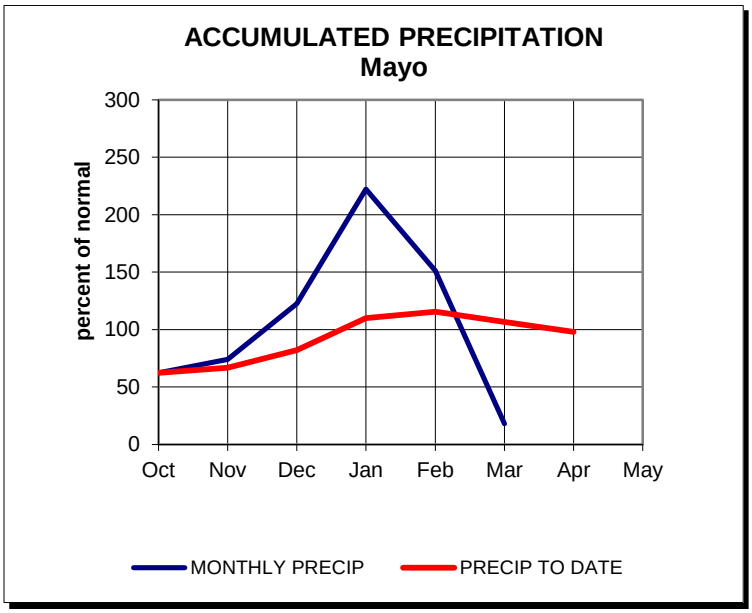

PELLY RIVER BELOW VANGORDA CREEK
DISCHARGE (m³/s)
10000
1000
100
10
Jan
Mar
May
Jul
Sep
Nov
Jan
Mar
May
Jul
Sep
Nov
Jan
Mar
May
2011
2012
2013
AVERAGE FLOW ('72-'13)
MEAN MONTHLY FLOW

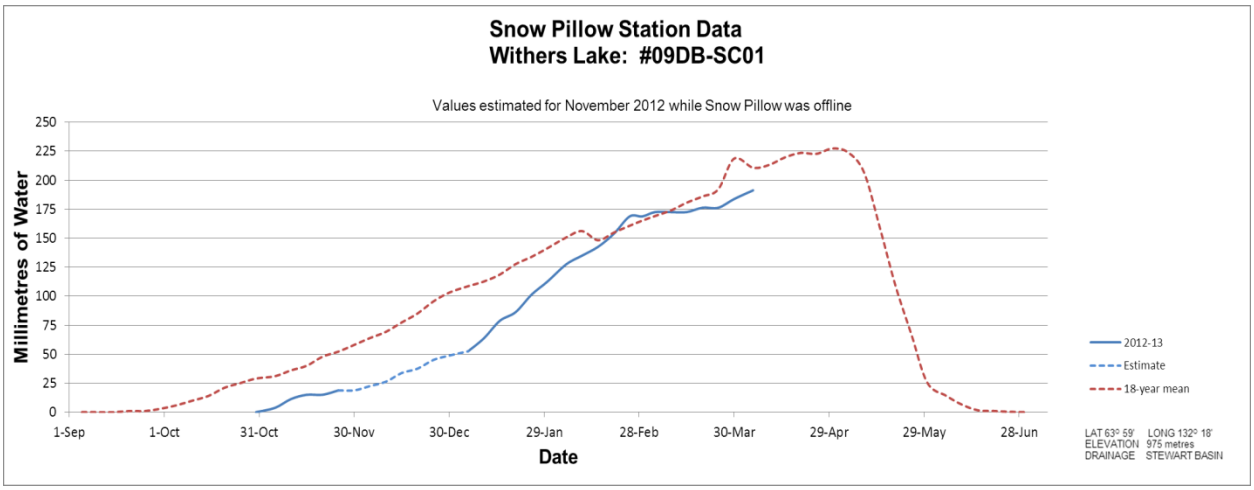
STEWART RIVER SUB-BASIN

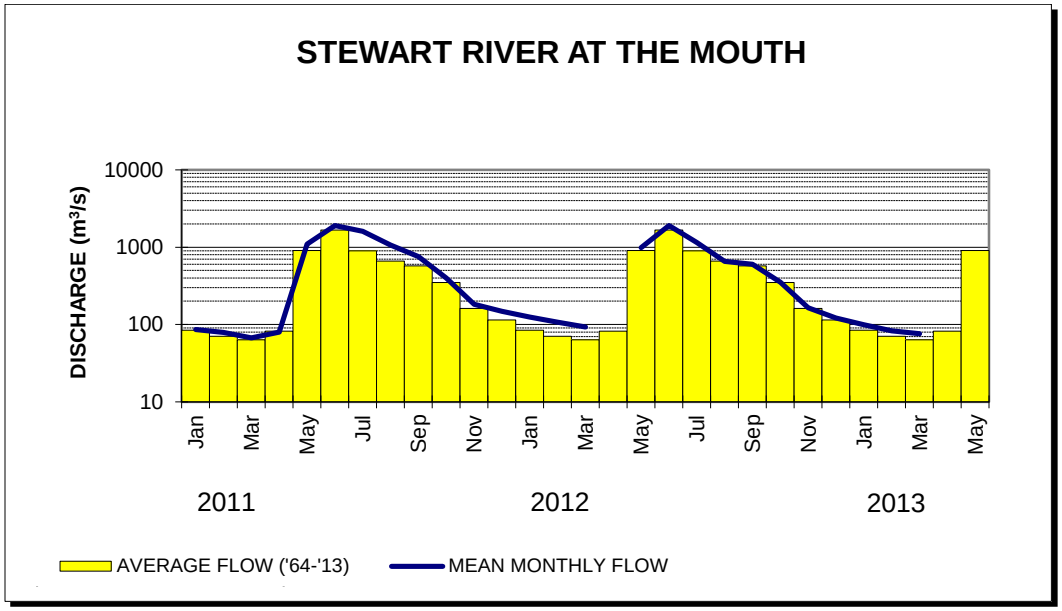
Snowpack conditions in the Stewart River watershed are slightly above normal for April 1st. Values of snow water equivalent range from 95 percent of normal at Calumet to 125 percent of normal at Mayo Airport 'A'. A basin-wide average has been estimated to be 107 percent of normal.

Mean March streamflow for the watershed was 120 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 110 and 115 percent of normal, respectively.



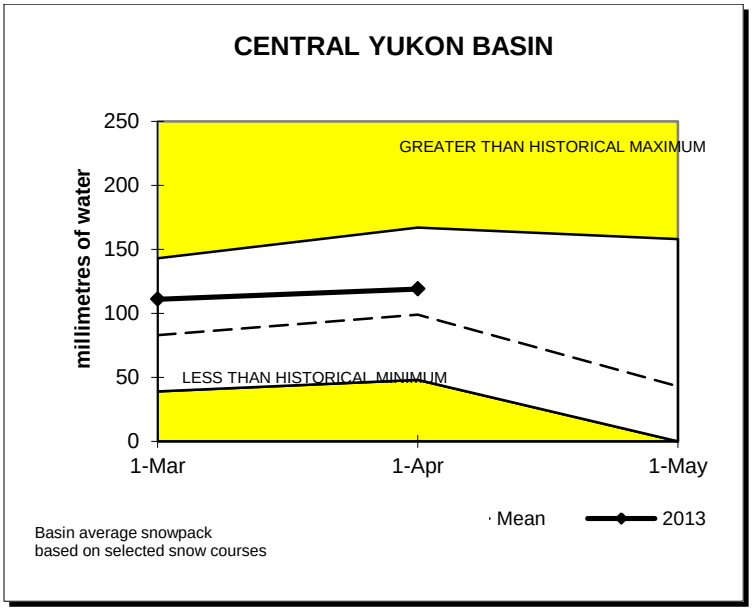


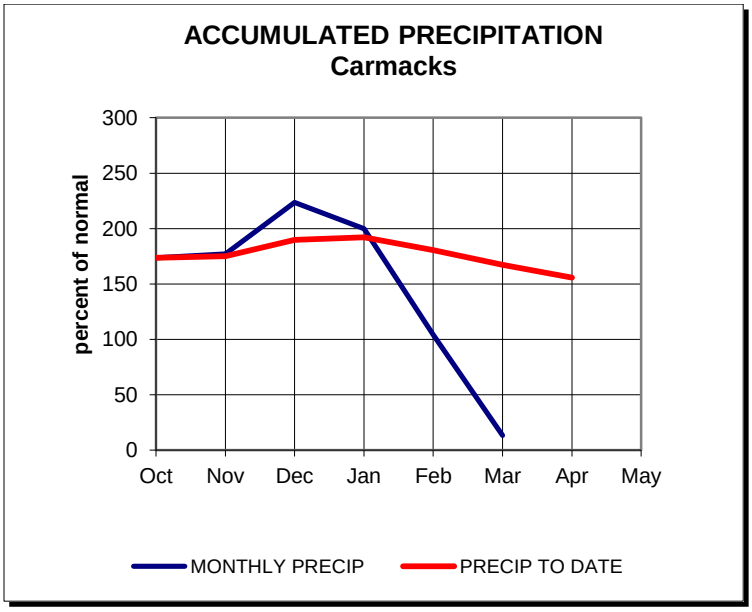

Snow Pillow Station Data
Withers Lake: #09DB-SC01
Values estimated for November 2012 while Snow Pillow was offline
Millimetres of Water
250
225
200
175
150
125
100
75
50
25
0
1-Sep
1-Oct
31-Oct
30-Nov
30-Dec
29-Jan
28-Feb
30-Mar
29-Apr
29-May
28-Jun
Date
2012-13
Estimate
18-year mean
LAT 63° 59' LONG 132° 18'
ELEVATION 975 metres
DRAINAGE STEWART BASIN


STEWART RIVER AT THE MOUTH
DISCHARGE (m³/s)
10000
1000
100
10
Jan
Mar
May
Jul
Sep
Nov
Jan
Mar
May
Jul
Sep
Nov
Jan
Mar
May
2011
2012
2013
AVERAGE FLOW ('64-'13)
MEAN MONTHLY FLOW

CENTRAL YUKON RIVER BASIN
(CARMACKS AREA)

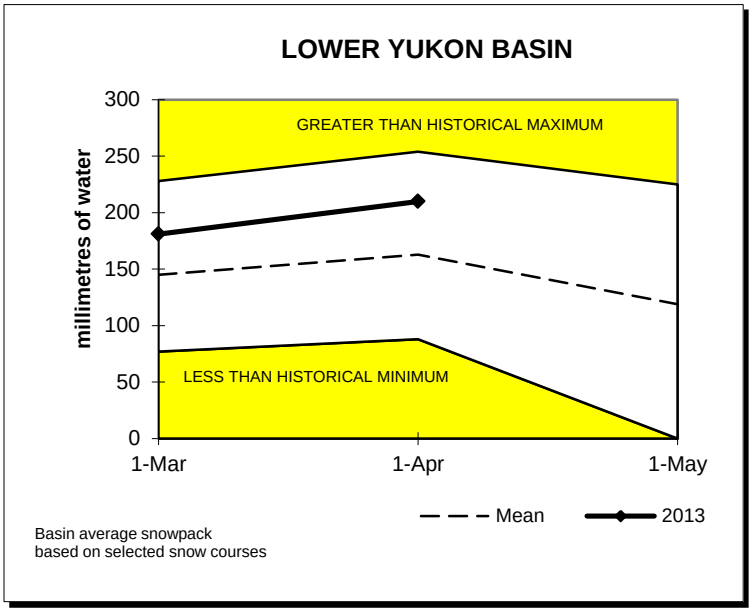
Snowpack conditions in the Carmacks area are above normal for April 1st. Values of snow water equivalent range from 108 percent of normal at Williams Creek to 130 percent of normal at Mt. Nansen. An area-wide average has been estimated to be 121 percent of normal.

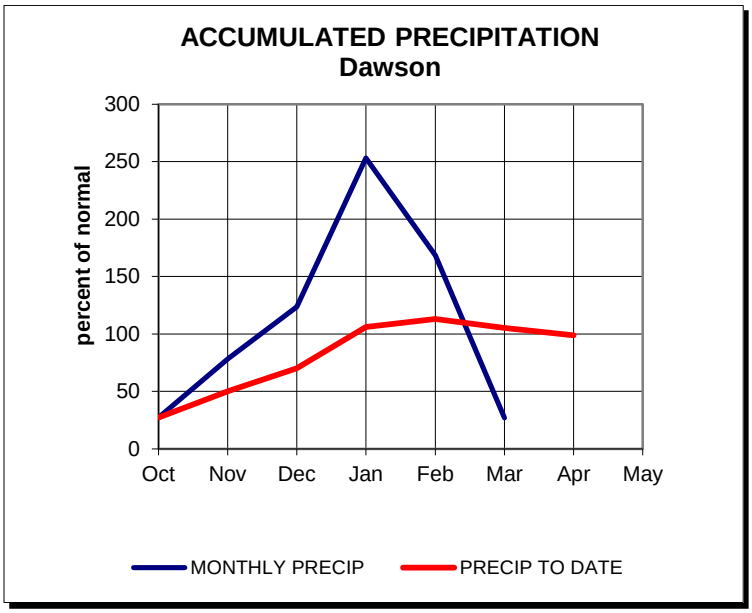




LOWER YUKON RIVER BASIN
(DAWSON AREA)

Snowpack conditions in the Dawson area are well above normal for April 1st. Values of snow water equivalent range from 108 percent of normal at Grizzly Creek to a record of 160 percent of normal at Midnight Dome. An area-wide average has been estimated to be 129 percent of normal.

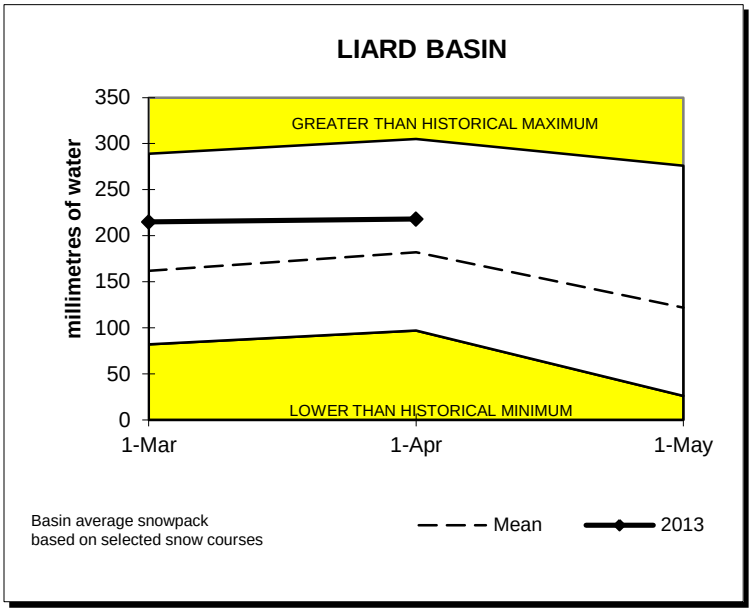


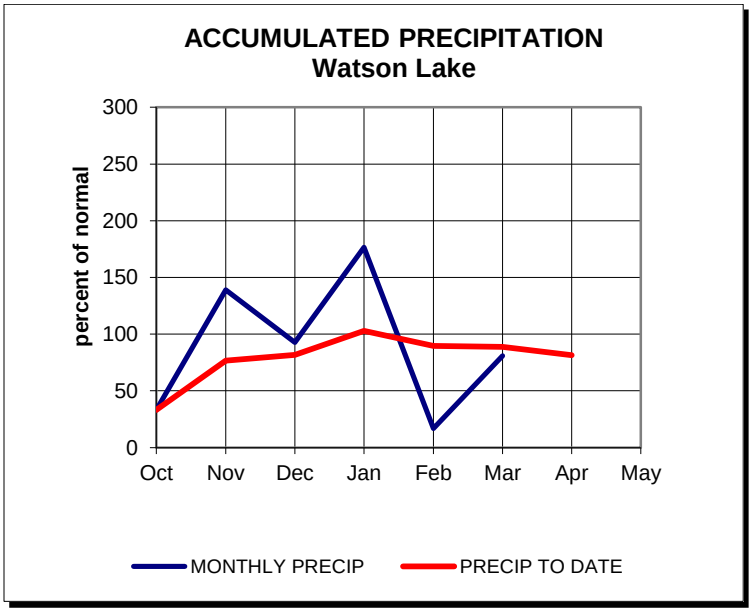


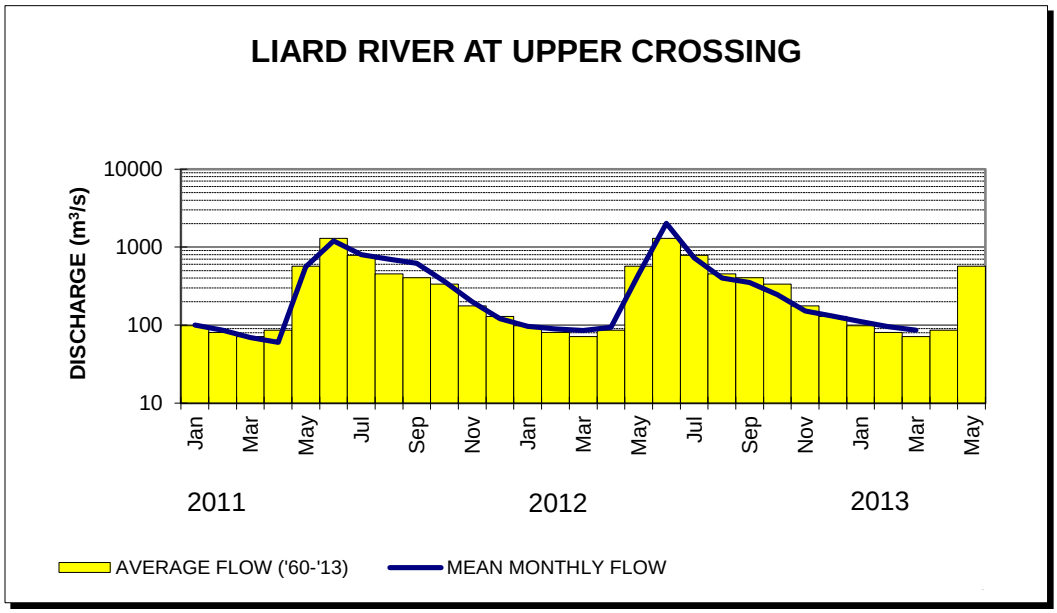
LIARD RIVER BASIN

Snowpack conditions within the Liard River watershed are above normal. Values of snow water equivalent range from 104 percent of normal at the Pine Lake Airstrip to 133 percent of normal at Tintina Airstrip. A basin-wide average has been estimated to be 120 percent of normal.

Mean March streamflow for the Liard River upstream of Upper Liard was 121 percent of normal. Given normal summer meteorological conditions, volume runoff and peak flows for the season are expected to be 120 percent and 125 percent of normal, respectively.



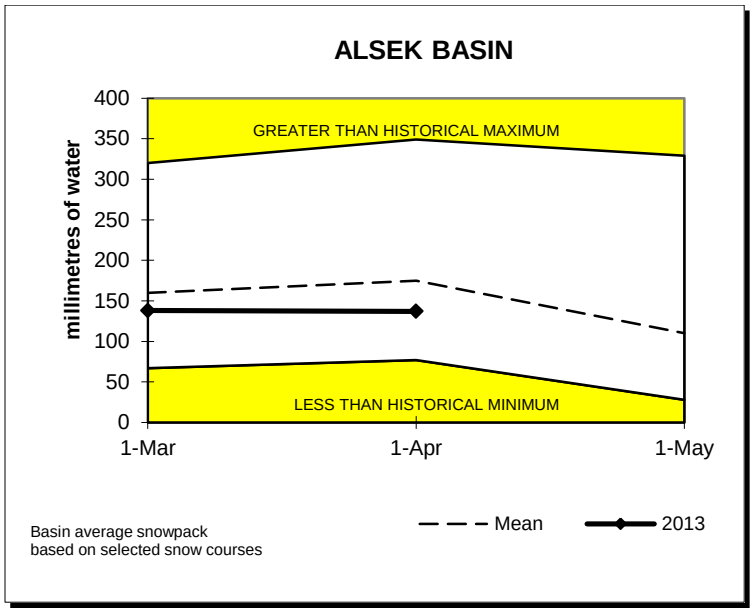


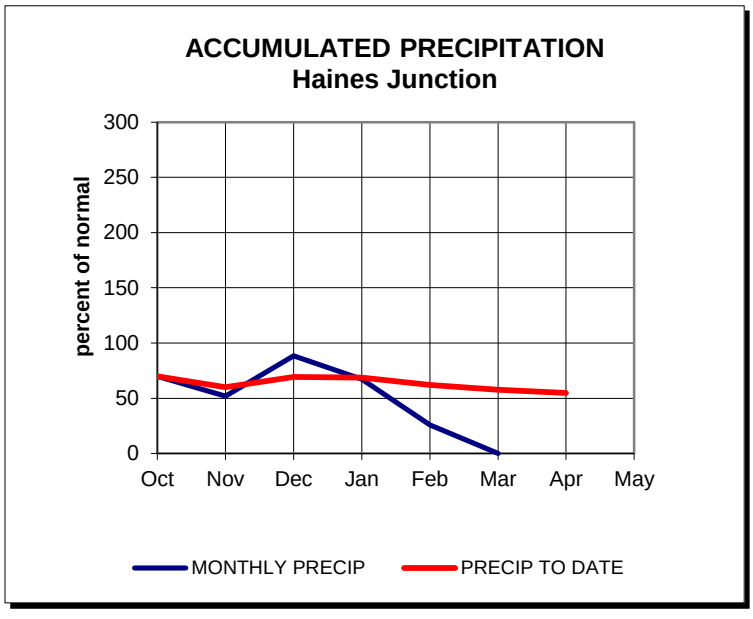

LIARD RIVER AT UPPER CROSSING
DISCHARGE (m³/s)
10000
1000
100
10
Jan
Mar
May
Jul
Sep
Nov
Jan
Mar
May
Jul
Sep
Nov
Jan
Mar
May
2011
2012
2013
AVERAGE FLOW ('60-'13)
MEAN MONTHLY FLOW

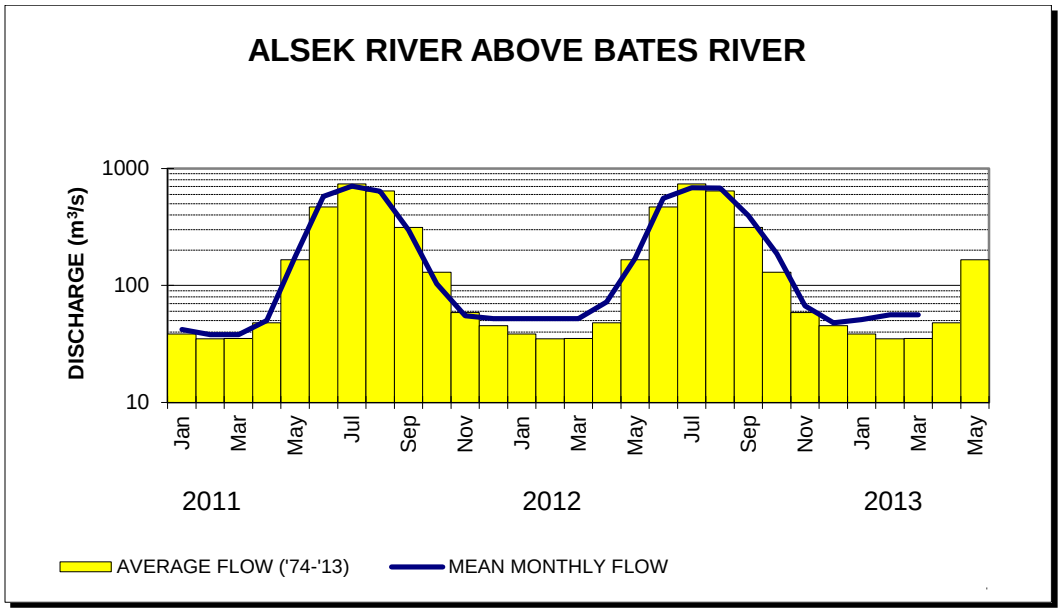
ALSEK RIVER BASIN

Snowpack conditions within the Alsek River watershed, although variable, are mostly below normal for April 1st. Values of snow water equivalent range from 54 percent of normal at Summit to 106 percent of normal at Canyon Lake. A basin-wide average has been estimated to be 78 percent of normal.

Mean monthly streamflow for March as indicated by the Alsek River above Bates River was 159 percent of normal. The Alsek River is primarily a glacial regime type, which is largely dependent on summer temperatures. Given normal summer meteorological conditions, volume runoff and peak flows for the season are expected to be 80 and 85 percent of normal, respectively.



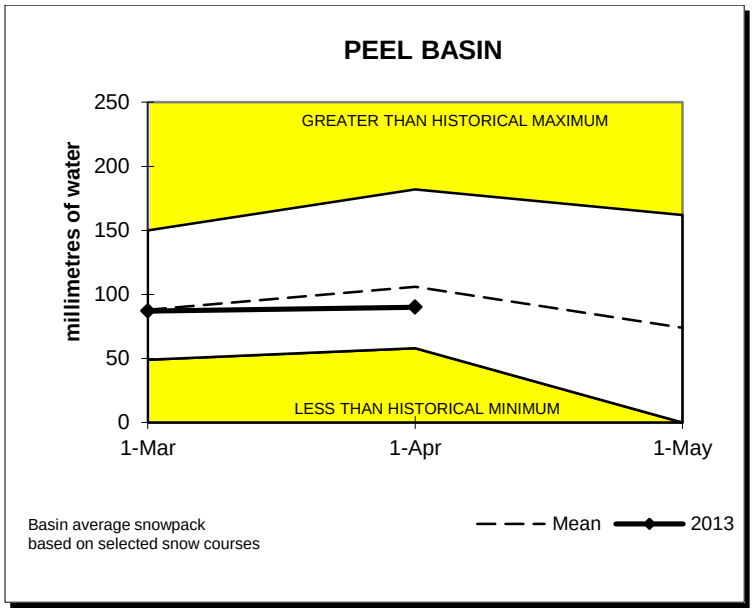


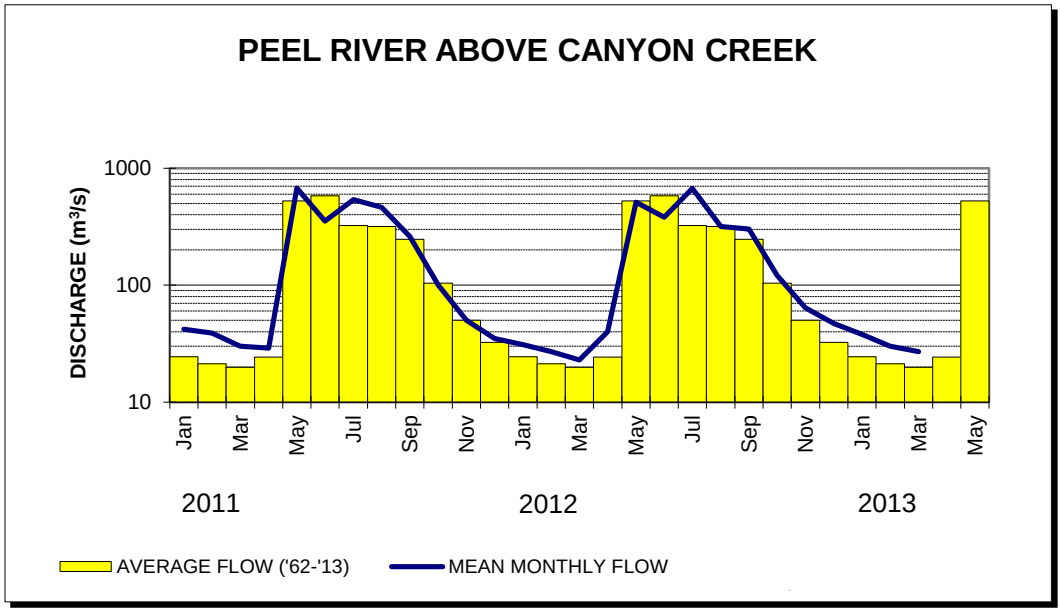

ALSEK RIVER ABOVE BATES RIVER
DISCHARGE (m³/s)
1000
100
10
Jan
Mar
May
Jul
Sep
Nov
Jan
Mar
May
Jul
Sep
Nov
Jan
Mar
May
2011
2012
2013
AVERAGE FLOW ('74-'13)
MEAN MONTHLY FLOW

PEEL RIVER BASIN

Snowpack conditions in the Peel River watershed are below normal with values of snow water equivalent ranging from 77 percent of normal at Blackstone to 92 percent of normal at Ogilvie. A basin-wide average has been estimated to be 85 percent of normal.

Mean monthly streamflow for February as indicated by the Peel River above Canyon Creek station was 136 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.

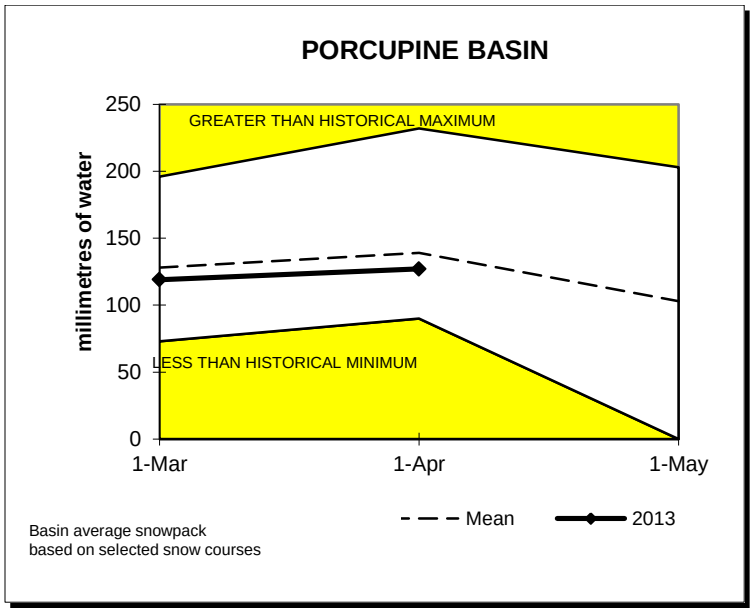


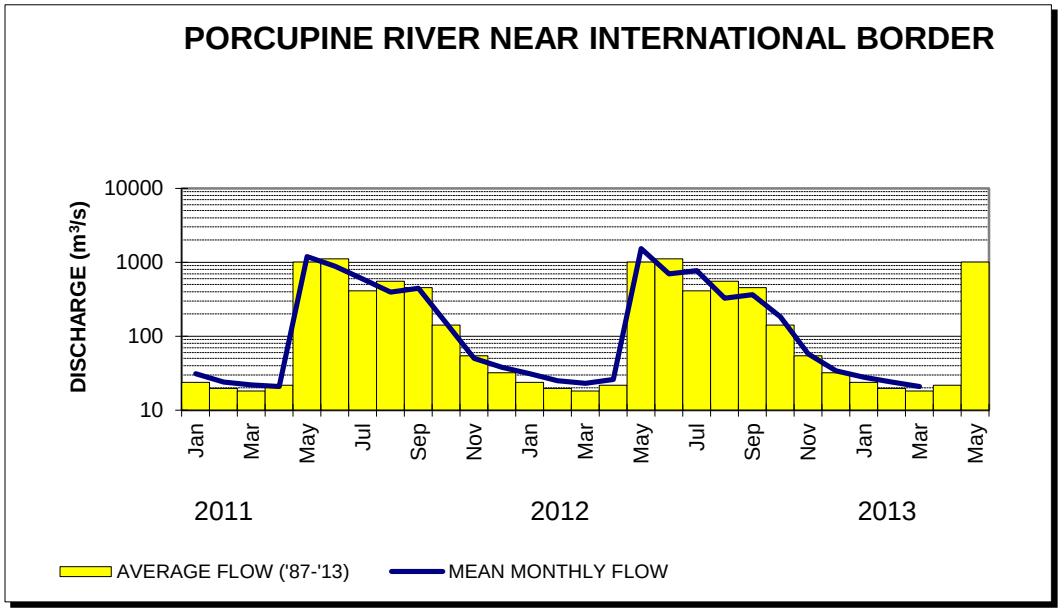


PORCUPINE RIVER BASIN

Snowpack conditions in the Porcupine River watershed are near normal with values of snow water equivalent ranging from 82 percent of normal at Eagle River to 101 percent of normal at Eagle Plains. A basin-wide average has been estimated to be 91 percent of normal.

Mean March streamflow for the basin as indicated by the Porcupine River near the International Boundary is 116 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: 2013-04-01

Name	Number	Elev (m)	Date of Survey	This Year Snow Depth (cm)	This Year Water Content (mm)	Water Content Last Year (mm)	Water Content Average (mm)	Water Content Yrs of Rec
Alsek River Basin								
Canyon Lake	08AA-SC01	1160	3/27/2013	47.2	94	126	95	34
Alder Creek	08AA-SC02	768	3/28/2013	70.3	169	221	160	33
Aishihik Lake	08AA-SC03	945	3/27/2013	47.2	92	118	83	19
Haines Junction Farm	08AA-SC04	610	3/26/2013	31.7	62	138	107	13
Summit	08AB-SC03	1000	3/26/2013	69.3	147	335	270	33
Profile Mountain	08AB-SC04	900	No Surv			N.S.	313	24
Yukon River Basin								
Tagish	09AA-SC01	1080	3/26/2013	73.7	147	150	148	37
Montana Mountain	09AA-SC02	1020	3/26/2013	65.9	150	176	143	36
Log Cabin (B.C.)	09AA-SC03	884	3/26/2013	128.9	399	610	377	53
Atlin (B.C)	09AA-SC04	730	4/1/2013	44	104	112	122	48
Mt McIntyre B	09AB-SC01B	1097	3/27/2013	71.4	148	225	157	37
Whitehorse Airport	09AB-SC02	700	3/27/2013	51.1	91	129	103	46
Meadow Creek	09AD-SC01	1235	3/26/2013	111	294	390	282	36
Jordan Lake	09AD-SC02	930	3/27/2013	76.1	151	151	139	26
Morley Lake	09AE-SC01	824	3/26/2013	66.2	136	172	154	25
Mount Berdoe	09AH-SC01	1035	3/26/2013	76.6	141	166	110	37
Satasha Lake	09AH-SC03	1106	3/26/2013	52	96	140	103	26
Williams Creek	09AH-SC04	914	3/26/2013	59	110	146	102	18
Twin Creeks	09BA-SC02	900	3/26/2013	96.1	233	236	190	35
Hoole River	09BA-SC03	1036	3/27/2013	85.4	182	207	138	36
Burns Lake	09BA-SC04	1112	3/27/2013	109.2	268	239	222	27
Finlayson Airstrip	09BA-SC05	988	3/27/2013	70.5	152	75 E	106	26
Fuller Lake	09BB-SC03	1126	No Surv			243	200	27
Russell Lake	09BB-SC04	1060	3/26/2013	100.6	222	287	233	26
Rose Creek	09BC-SC01	1080	3/28/2013	82.4	164	150	107	19
Mount Nansen	09CA-SC01	1021	3/26/2013	58.7	105	112	81	37
MacIntosh	09CA-SC02	1160	3/26/2013	65.7	120	125	102	37
Burwash Airstrip	09CA-SC03	810	3/26/2013	27.3	51	44	44	36
Duke River	09CA-SC05	1310	No Surv			N.S.	105	25
Burwash Uplands	09CA-SC06	1080	No Surv			N.S.	77	4
Beaver Creek	09CB-SC01	655	3/26/2013	51.4	104	134 E	87	38
Chair Mountain	09CB-SC02	1067	3/27/2013	52.6	97	94 E	97	24
White River	09CB-SC03	823	No Surv			N.S.	76	5
Casino Creek	09CD-SC01	1065	3/26/2013	60.9	109	182	130	35
Pelly Farm	09CD-SC03	472	3/27/2013	45.8	87	131	78	27

Code "E" – Estimate

Drainage Basin and Snow Course

For Sample Date: 2013-04-01

Name	Number	Elev (m)	This Year Date of Survey	This Year Snow Depth (cm)	This Year Water Content (mm)	Water Content Last Year (mm)	Water Content Average (mm)	Water Content Yrs of Rec
Yukon River Basin								
Plata Airstrip	09DA-SC01	830	3/27/2013	92.3	213	262 E	191	35
Arrowhead Lake	09DA-SC02	1120	No Surv			N.S.	196	18
Withers Lake	09DB-SC01	975	3/26/2013	87.9	195	306	236	27
Rackla Lake	09DB-SC02	1040	3/26/2013	82.8	168	222	196	26
Mayo Airport A	09DC-SC01A	540	3/26/2013	51	120	144	96	43
Mayo Airport B	09DC-SC01B	540	No Surv			156	106	26
Edwards Lake	09DC-SC02	830	3/26/2013	84.5	173	216	166	26
Calumet	09DD-SC01	1310	3/26/2013	77.2	186	180	196	34
King Solomon Dome	09EA-SC01	1080	3/26/2013	85.9	200	197	161	38
Grizzly Creek	09EA-SC02	975	3/28/2013	81.8	192	232	178	37
Midnight Dome	09EB-SC01	855	3/26/2013	101.9	239	184	149	38
Boundary (Alaska)	09EC-SC02	1005	3/30/2013	60.9	147	114	134	43
Porcupine River Basin								
Riff's Ridge	09FA-SC01	650	3/27/2013	82.8	163	165	145	25
Eagle Plains	09FB-SC01	710	3/28/2013	75.8	165	157	164	29
Eagle River	09FB-SC02	340	3/27/2013	61.7	112	133	136	29
Old Crow	09FD-SC01	299	3/27/2013	65.3	103	132	117	31
Liard River Basin								
Watson Lake Airport	10AA-SC01	685	3/27/2013	82.4	180	194	139	48
Tintina Airstrip	10AA-SC02	1067	3/26/2013	107.8	274	261	206	35
Pine Lake Airstrip	10AA-SC03	995	3/27/2013	95.8	234	219	226	37
Ford Lake	10AA-SC04	1110	3/26/2013	94.3	199	175	194	26
Frances River	10AB-SC01	730	3/26/2013	77.9	178	218	162	38
Hyland River	10AD-SC01	855	3/26/2013	92.6	224	303	177	36
Peel River Basin								
Blackstone River	10MA-SC01	920	3/28/2013	60.9	81	105	105	37
Ogilvie River	10MA-SC02	595	3/27/2013	54	98	89	106	36
Bonnet Plume Lake	10MB-SC01	1120	3/26/2013	83.7	160	211	184	26
Alaska Snow Courses								
Eaglecrest	08AK-SC01	305	3/31/2013	193	721	1107	527	31
Moore Creek Bridge	08AK-SC02	700	No Surv			546	546	21

Code "E" – Estimate

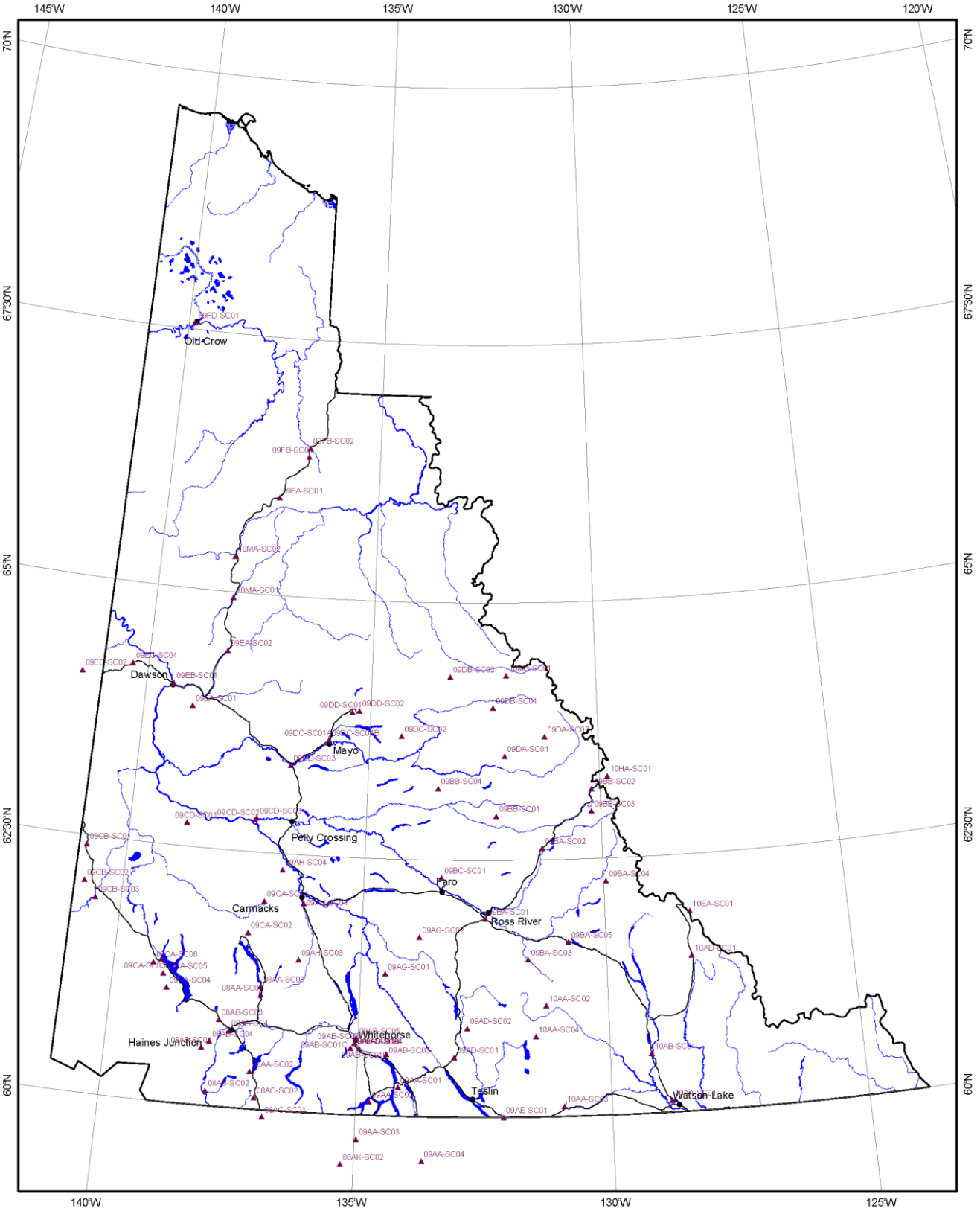
INDEX OF YUKON SNOW COURSES

NAME	NUMBER	ELEVATION (m)	LATITUDE	LONGITUDE	AGENCY
YUKON RIVER BASIN					
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
LIARD RIVER BASIN					
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
ALSEK RIVER BASIN					
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
PEEL RIVER BASIN					
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
PORCUPINE RIVER BASIN					
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
ALASKA SNOW COURSES					
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