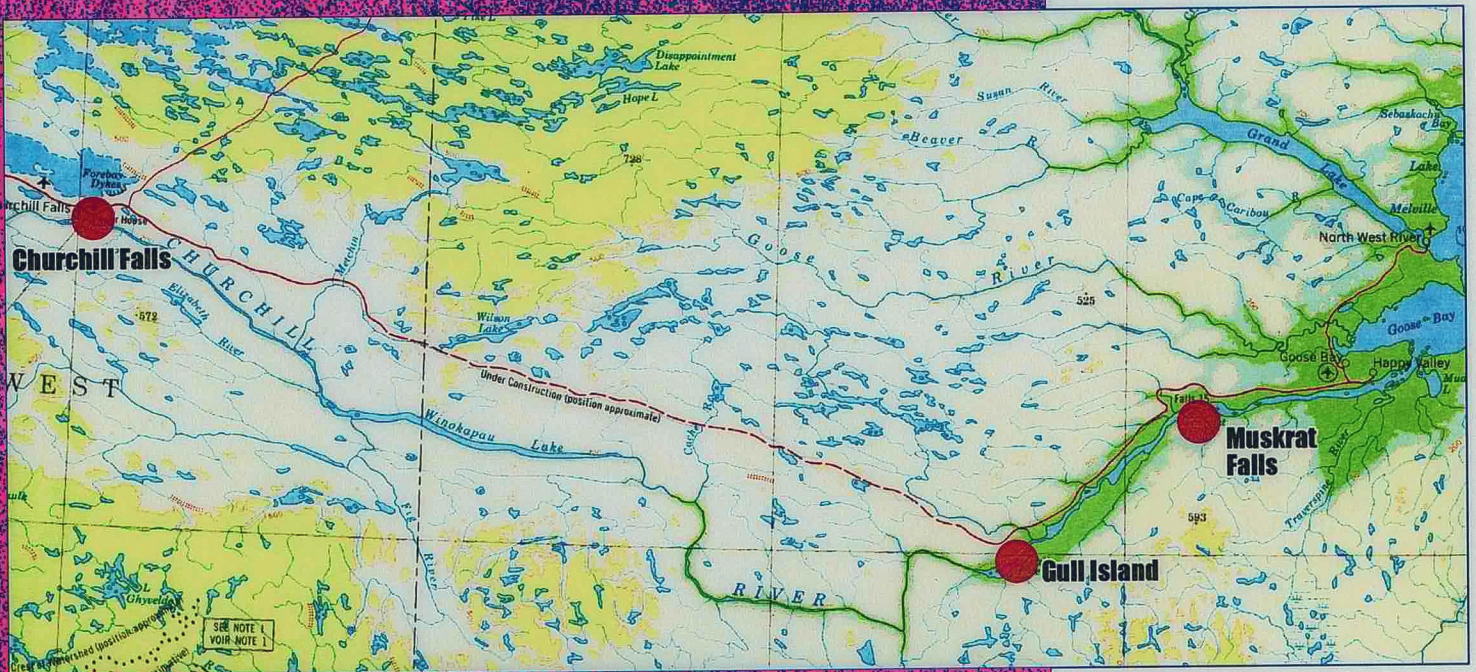
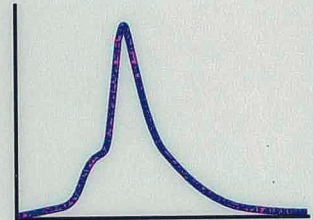




Churchill River Complex

PMF Review and Development Study



Volume 2 - Appendices

January 1999



Acres International



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Acres International

Volume 1 - Main Report

Volume 2 - Appendices

Appendix A
AEB Meteorology Report

Meteorological Parameters
for determining the PMF for the
Lower Churchill River Basin

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1. Introduction

The work described in this report was carried out for Acres International. Renewed interest in the Churchill River basin brought about the need to review and update the hydrological parameters related to the Probable Maximum Flood (PMF) for two sites on the Lower Churchill River: Gull Island and Muskrat Falls.

This study focuses on the meteorological aspects of PMF for the lower Churchill River Basin; i.e., extreme snowfall accumulation, ideal temperature sequence for the most efficient snowmelt and a Probable Maximum Precipitation (PMP) resulting from a late spring rainstorm. With regards to PMP, the work presented here is based on papers by Sparrow (1968) and Pollock and Ranahan (1975).

The scenario adopted for the study consists of the following combination of meteorological events:

- an extreme snowpack persisting into the late spring is subjected to the warmest snowmelt temperature sequence consistent with historical records;
- a few days after the snowmelt is triggered, a PMP rainfall event occurs over the lower Churchill basin;
- coincident with the PMP rainfall event over the lower basin a heavy rainfall event occurs over the upper Churchill basin.

Acknowledgments

This study could not have been carried out without contributions from many people in various parts of the Atmospheric Environment Program of Environment Canada. To our colleagues at AES Headquarters, thank you very much for providing data in all sorts of formats as well as software without which this work could not have been carried out. To our Atmospheric Environment Branch colleagues in the Quebec and Atlantic regions, thank you for helping out with data and meteorological advice.

The authors would like to give special thanks to:

Bill Hogg, Chief, Monitoring and Data Interpretation Section of the Climate Research Branch at Atmospheric Environment Service's headquarters in Downsview for providing the scientific base for the exercise and for reviewing and approving all results.

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2. The Churchill River Basin Watershed - Climatology

(This whole section is taken from "The Climates of Canada" by David Phillips)

The climate of Labrador is more Arctic than Atlantic. Because it is on the eastern side of the continent, it experiences strong seasonal contrasts in the characteristics and movement of air masses. The predominant flow is off the land. The rugged Torngat Mountains in the north, with peaks above 1500 m, and the Mealy Mountains in the south, with peaks about 1200 m, confine the moderating influence of the Atlantic Ocean to the rocky islands and near shore.

The limitation of the ocean's influence, however, is not a serious disadvantage, because in this region its effect on the climate is generally unpleasant. The Labrador sea is infested with floating pack ice and icebergs for eight months of the year. The masses of ice keep sea temperatures below 4°C. An east wind off the Labrador Current is a cool wind in summer, often with light rain or drizzle. In winter, when the Atlantic air is relatively mild, the accompanying weather includes cloud and frequent snow flurries. Whenever easterly winds bring very moist air from the Atlantic, widespread fog occurs.

Temperature

Winters are very cold, with typical daytime temperatures for January between -10 and -15°C, colder than Newfoundland and more like the frigidity of the southern Prairies. An occasional incursion of Atlantic air will warm up the winter. The summer season is brief and cool along the coast because of the cold Labrador Current. July average temperatures are from 8 to 10°C along the coast but are 3 to 5°C warmer in the interior. The pleasantness of the summer day along the coast is often determined by the wind direction--westerly winds bring clear, mild continental air, whereas easterlies, blowing off the Labrador Current, bring cold, cloudy, and moist weather.

Precipitation

Precipitation is heaviest in the south and decreases northwards. On the whole it is much lighter than in Newfoundland, although amounts can vary considerably from year to year.

Southern Labrador is not unlike the moist northern shores of Newfoundland, with 1000 mm, as a typical yearly fall of precipitation. About 45% of this occurs as snow. Over much of Labrador 800 mm is a more typical amount, with about half of it snow. In summer, rainfall is quite reliable, with seasonal totals seldom less than 175 mm in the north and 275 mm in the south.

Snowfall is heavy, with Churchill Falls in the interior having 481 cm, making it one of the snowiest places in Canada. Goose Bay has a mean snowfall of 445 cm. In the south, Cartwright averages 440 cm, and in the north Nain is typical with 424 cm. - The ground is snow-covered for eight months in the far north and for six months in the south.

3. Maximum Snowfall

Snowfall Return Periods (from snow course data)

A probability analysis of the maximum snowfall (water equivalent) for each snow course, shown in Table 3.1, was carried out. The maximum water equivalent for each year of operation was selected. Since this represents a seasonal accumulation and not a single extreme event, the analysis is not an extreme value analysis but is analogous to the calculation of the probability of seasonal precipitation. Hence, extreme value distributions, such as the Gumbel double exponential, are inappropriate. Seasonal precipitation accumulation has been found to fit either a Cube Root Normal or Log Normal distribution quite well. The Log Normal distribution was assumed for these calculations.

TABLE 3.1**Snowfall (water equivalent in mm) Return Periods**

Snow Course Location	Open	Years	Lat	Long	100-yr RP	10000-yr
Goose Bay	1962-94	32	53° 18'	60° 22'	543 mm	838 mm
Churchill Falls A	1968-93	22	53° 33'	64° 06'	708 mm	1122 mm
Churchill Falls	1972-98	25	53° 34'	64° 07'	544 mm	700 mm
Wabush	1972-98	25	52° 57'	66° 42'	533 mm	719 mm
Schefferville A	1968-94	24	54° 48'	66° 49'	529 mm	870 mm
Esker	1972-98	24	53° 51'	66° 24'	781 mm	2111 mm
Fig West	1972-98	24	53° 12'	64° 01'	568 mm	813 mm
Metchim Basin	1972-98	23	53° 26'	63° 16'	445 mm	619 mm
McPhayden	1972-98	25	54° 12'	67° 09'	477 mm	705 mm
Orma Lake	1972-98	25	54° 08'	63° 09'	569 mm	807 mm
Michikimats	1972-98	25	54° 34'	64° 07'	633 mm	845 mm
McKenzie Basin	1972-98	21	54° 34'	65° 32'	557 mm	843 mm
Lobstick	1972-98	25	53° 50'	65° 02'	530 mm	796 mm
Simms	1972-98	25	53° 46'	65° 49'	506 mm	714 mm
Twin Falls	1968-98	26	53° 36'	64° 28'	600 mm	869 mm
Flour Lake	1959-72	13	53° 45'	64° 38'	438 mm	665 mm
Anderson	1972-98	25	52° 10'	63° 34'	500 mm	745 mm
Kepimits	1972-98	25	52° 42'	64° 51'	504 mm	773 mm
Lac Joseph	1972-98	25	52° 58'	65° 32'	484 mm	667 mm
Lac Long	1972-98	24	52° 36'	63° 51'	491 mm	664 mm
Seahorse	1972-98	25	52° 10'	65° 44'	523 mm	742 mm

The procedure is as follows:

- the natural logarithm of each maximum snow water equivalent amount is taken;
- the mean and standard deviation of the resulting sample is computed, and the data set is transformed to the standard Normal distribution;
- return periods are calculated using the relationship, $T=1/(1-P)$ where 1-P is the probability of exceedance.

The goodness of fit of the Log-Normal distribution is shown in the accompanying graphs in Appendix A and the return period computations are summarized in Table 3.1 above. The 100-year return period values are intended to determine the snow pack appropriate for use with the PMP rain event. The 10,000-year values are estimates of the probable maximum snow pack useful for comparison with the snowstorm maximization estimates of the probable maximum snow pack. Of the 21 courses shown in Table 3.1, Esker is the only one to be vastly different from the group mean. Examination of the graph for Esker clearly shows that the Log-Normal distribution is an extremely poor fit for this sample, due to one very small water equivalent amount recorded in 1981. For this reason, the return period values for Esker should not be used for computation of the design snow pack.

The 100-year and 10,000-year return period averages for the selected snow courses are:

	100 Year	10,000 Year
21 snow course sites	545.9 mm	839.4 mm
20 sites (less Esker)	534.1 mm	775.8 mm

Probable Maximum Snowpack from snow storm maximization

A snow storm's efficiency is determined by the ratio of maximum probable available moisture for the date (+/- 15days) and location of the storm to the actual moisture available to the storm. The storm is maximized by multiplying this derived ratio by the actual snowfall. This results in the maximized snowfall that could have been produced by that particular storm if maximum moisture had been available to it.

As a first step in determining the Probable Maximum Snowpack, daily snowfall data for stations in and close to the study basin were assembled for their full period of record. Considering only the winter months (October to April), the daily totals were added together to produce annual totals for each station. The greatest years for all stations were examined and the four greatest years overall were selected. These were, in order of magnitude; 1981, 1977, 1972, and 1983. The results of this analysis are shown in Table 3.2.

The following criteria were used to determine whether or not a particular storm would be maximized:

- the storm had to produce 8 cm of snow or more in a two day period;
- the storm had to have a clearly defined warm air sector or trough which passed over or near the study area during the days of significant snowfall.

Snowfalls of less than the above threshold would normally lack the synoptic circulation features that supply a storm with maximum moisture. Surface weather maps and 500 mb charts were examined to select which storms were to be maximized.

Upper air data were used to calculate storm precipitable water. Winter storms pose a problem over most of Canada since the warm air providing the moisture input is often many kilometres to the south at the surface. This often requires that data from stations well to the south of the study basin are chosen for calculating storm precipitable water for maximizing the storm. Upper air data for storm dates are used to calculate precipitable water from the surface to 200 mb in millimetres of water. For 'snow only' storms (i.e., no mixed precipitation present) maximum precipitable water was capped at 24.1 mm, based on the work presented in Canadian Electrical Association (1994), when maximizing the storm. These higher values generally occur in October and April when much warmer moist air is supplied to the storm although precipitation falls as snow over the study basin.

Maximization ratios were obtained as follows:

- monthly maximum precipitable water values for upper air stations in the vicinity of the basin are determined using maps provided in Canadian Electrical Association (1994). Consistent with CEA (1994), maximum precipitable water estimates are capped at 24.1 mm on the assumption that only rain would be possible from a warmer and more moist air mass;
- for a particular storm's duration (1 to 4 days), precipitable water values are calculated for 0000 UTC and 1200 UTC ascents from upper air stations within the warm air sector of the storm system;
- the maximum storm precipitable water value is selected (in mm) from these ascents and then divided into the maximum precipitable water for the date of occurrence of the event to obtain the "maximization ratio" - the storm snowfall is then multiplied by this ratio to obtain its maximized value;
- each snow storm over the winter is maximized using this method to obtain an annual value for each station. Some snow events, such as those in which rain is mixed with snow, cannot be maximized using this method. As well, snowfall from storm events which are very weak (no significant warm air mass) or distant, or snowfall from orographic, convective, lake or ocean effect were not maximized.

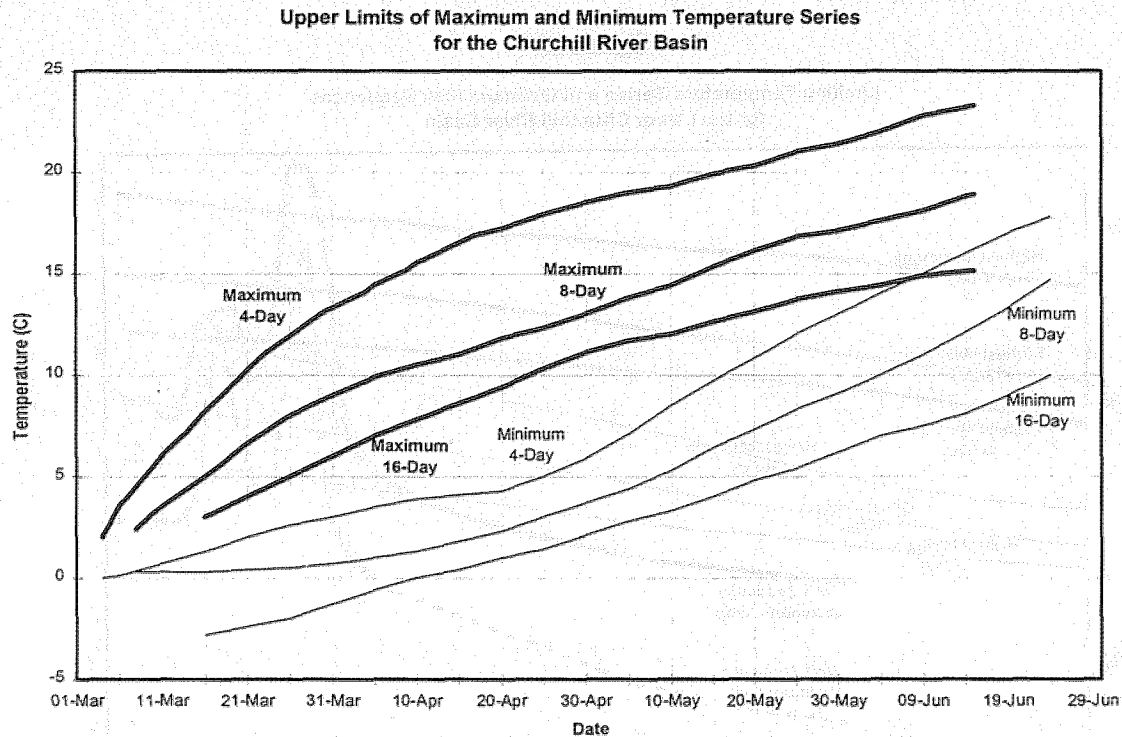
Tables 3-A, 3-B, 3-C and 3-D in Appendix B present the detailed data upon which the winter snowpack maximization is based.

TABLE 3-2

					WINTER STORM MAXIMIZATION SUMMARY													
	BASIN		STATIONS							PERIMETER STATIONS								
Study Years	Churchill Falls		Schefferville		Wabush L.		MEAN	MEAN	Goose Bay		Nitchequon		Sept-Isles		ANNUAL	MEANS		
	Mea.	Max.	Mea.	Max.	Mea.	Max.	MEA	MAX	Mea.	Max.	Mea.	Max.	Mea.	Max.	Measured	Maximize		
1971-72	506.40	662.34	430.20	550.76	566.50	737.17	501.03	650.09	421.50	568.38	250.70	335.56	589.70	867.66	420.63	590.54		
1976-77	474.10	607.20	561.50	721.75	516.40	659.12	517.33	662.69	440.70	590.87	429.30	579.61	395.90	541.90	421.97	570.79		
1980-81	445.60	589.10	592.20	784.01	506.90	672.05	514.90	681.72	551.90	735.72	373.60	489.12	476.00	666.83	467.17	630.56		
1982-83	527.10	648.30	442.40	558.33	535.30	660.22	501.60	622.28	528.00	646.63	345.70	404.16	326.70	423.66	400.13	491.48		
Mean	488.3	626.73	506.58	653.71	531.28	682.14	508.72	654.20	485.53	635.40	349.83	452.11	447.08	625.01	427.48	570.84		
Note:	Maximized values represent 10,000 year return period estimates.																	

4. Maximum Snowmelt Rate

Figure 4-1



In order to determine the largest possible snowmelt contribution to a spring flood, the scenario selected proposes preserving the maximized snowpack for as long as possible into spring then allowing the quickest feasible temperature rise (Bruce-1962). This approach to selecting the ideal melting temperature sequence was applied within the constraints of the following parameters for the lower Churchill Basin:

- **last zero-crossing date** to determine the beginning of snowmelt (the last date in spring when temperature rises from below 0°C to above 0°C, and continues to rise without returning below 0°C - CEA (1994). The last zero crossing date for the lower Churchill Basin was determined using data for Goose A (May 25) and for Wabush Lake A (May 27) - *Table 11, page 73, CEA (1994)*. May 26 was used as the last zero-crossing date for the basin;
- maximum temperature possible over a snow cover. A temperature of 24°C was used - recommended as the estimate of the upper bound of maximum temperature with significant snow cover - CEA (1994), p.69;
- highest maximum and highest minimum temperatures for 4, 8 and 16-day periods. Limiting temperatures - data from Churchill Falls (30 years), Wabush Lake (38 years), Goose Bay (57 years) and Schefferville (29 years) were used to determine the highest achievable temperatures for the lower Churchill Basin. The temperature envelopes are shown in Figure 4-1. Based on the idea that the effect of snow or lack of snow is significant for maximum temperatures but not as significant for minimum temperatures (CEA 1994 - p.71), the highest maximum temperatures factors in snow on the ground while the highest minimum temperatures do not. Although not shown above, the 30-day temperature periods were examined to ensure that these were not violated by the temperature sequence presented in figure 4.2;
- highest temperature likely over a snow cover during a continuous rain event over the lower Churchill basin. This was determined by extracting the maximum precipitable water content from Goose Bay

upper air soundings (37 years of data) and using precipitable water content tables in WMO's *Manual for Estimation of Probable Maximum Precipitation* (WMO - No. 332, 1986) to arrive at a surface temperature in the vicinity of 16°C.

Figure 4.2

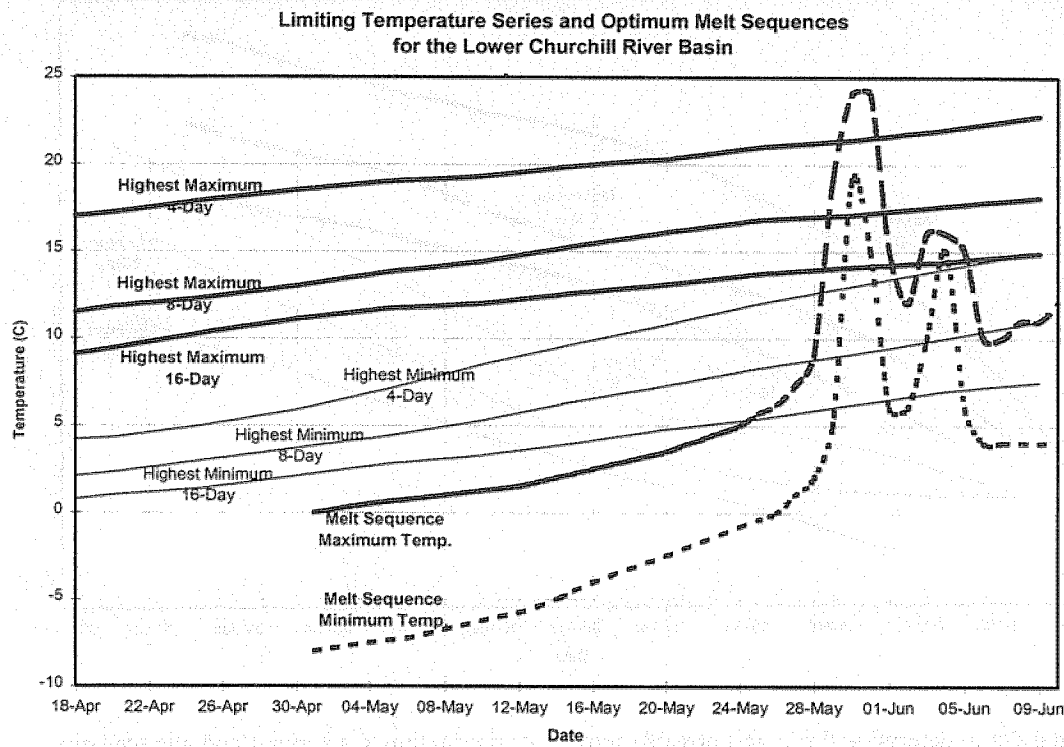


Figure 4.2 shows the optimized melting maximum temperature sequence super-imposed on the limiting curves. The minimum temperature sequence is based on historical relationships between maximum and minimum temperatures at several stations in and around the basin.

The meteorological scenario that would lead to such a temperature profile is as follows:

- the basin experiences a cooler-than-normal period during April and May which allows just enough melting to ripen the snowpack and to saturate the ground;
- a warm front passes over the basin at the end of May and brings very warm temperatures (24°C maximum) over the basin, which triggers extreme melting;
- the warm sector remains over the basin for 3 days after which the associated low and cold front move eastward, allowing the cold front to pass over the area. The cold front progresses very slowly eastward, east of the basin, and extends southwestward to a developing low pressure system. This developing system tracks northward and brings the PMP rain event over the basin from the 3rd to the 5th of June;
- the rain ends on June 5th as the system moves away. Temperatures over the basin return to seasonal values.

Table 4.1 presents the maximum 6-hourly temperatures that can be postulated during the PMP event while respecting the limiting temperature envelopes in Figure 4.2.

TABLE 4.1
6-hour Temperatures (°C) during PMP event

	<u>Max(°C)</u>	<u>Min(°C)</u>	<u>06:00</u>	<u>12:00</u>	<u>18:00</u>	<u>24:00</u>
29-May	19	5	5	7	16	19
30-May	24	19	19	22	21	19
31-May	24	15	20	22	20	15
01-Jun	15	6	12	10	8	6
02-Jun	12	6	6	9	11	12
03-Jun	16	12	14	15	16	16
04-Jun	16	15	16	16	15	15
05-Jun	15	5	15	10	8	6
06-Jun	10	4	4	6	8	6

Figure 4.3

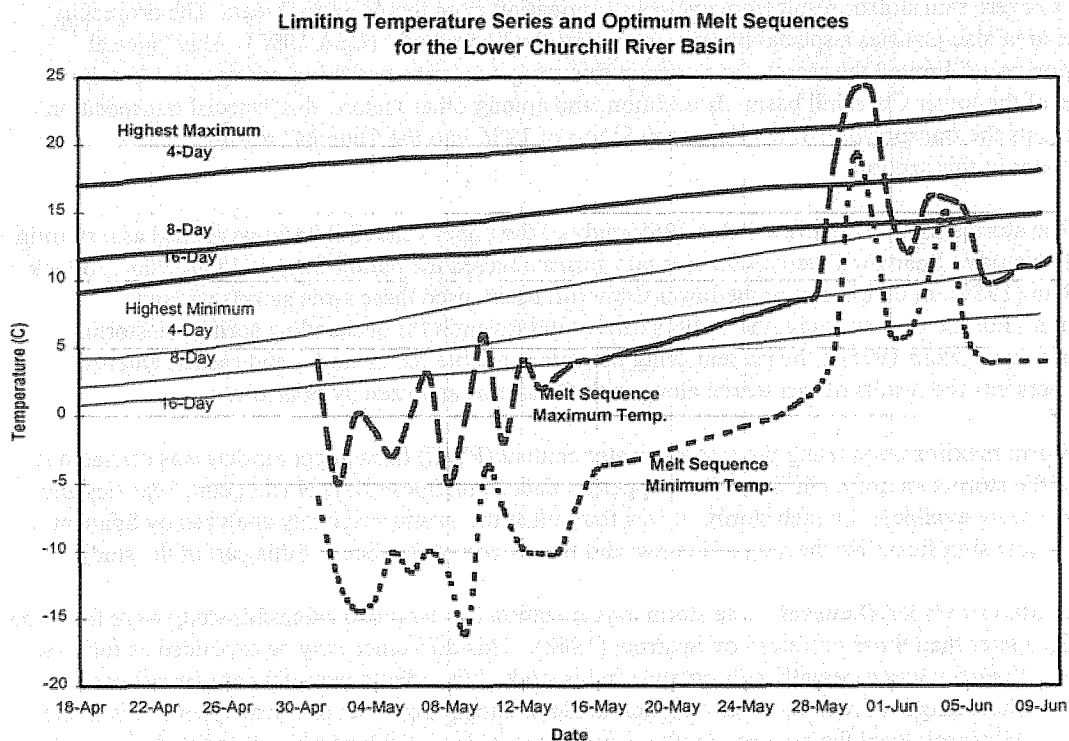


Figure 4.3 shows the temperature sequence chosen by Acres as the final scenario for input into the SSARR model to determine the Probable Maximum Flood (PMF) for the lower Churchill basin. The temperatures before May 15 were set to historic 1985 temperature. Somewhat warmer temperatures than the initial sequence provided were used between May 15 and May 29 as this was found to produce a higher peak flood. This sequence does not violate any of the established criteria.

5. Maximum Spring Rainfall

There are some difficulties inherent in carrying out a Spring-PMP study for the Labrador area. One of these is that heavy spring rainfalls are relatively rare, leaving one with few storms to analyse. This presents a problem since, "to consider only fewer than a half-dozen or so storms or storm sequences, no matter how sophisticated the maximization and transposition adjustments might be, gives no assurance that the PMP level has been obtained" - (WMO - No. 332, 1986).

The usual answer to the problem of too few storms is storm transposition. This approach allows one to supplement the storm data base for a given basin with storms from other source regions. This brings about the difficulty of finding suitable source regions from which to transpose storms into the Labrador area. Low pressure systems usually track from west to east into Labrador in the spring; these storms are unlikely to have the moisture supply necessary to deliver a PMP-class rainfall event. Storms that can tap moisture from the Atlantic Ocean are more likely to deliver heavy rainfalls, but these always occur too late in the season to coincide with an extreme snowmelt. While it is possible to transpose storms in time, this approach is usually limited to 15 days (WMO - No. 332, 1986) and care must be taken to respect seasonal limitations on storm types. For example, even with significant adjustments for seasonal variations in precipitable water content, it may not be proper to transpose a "summer" storm into a spring storm scenario if the upper support for such a storm is unlikely to exist in the spring.

Labrador's unique topography, as well as its position relative to storm tracks over eastern Canada, makes it difficult to find suitable source regions for outstanding spring rainstorms. These difficulties were recognized in a study by SNC-Shawinigan Inc. for the Canadian Electrical Association; "Most of Labrador's severe rain storms result from cyclones originating from the Atlantic Ocean. The orography around the area also justifies a special transposition zone for Labrador" - (CEA 1995). This "special transposition zone" limited the search for storms in this study to storms occurring within a few hundred kilometres of the lower Churchill basin. In addition, and among other factors, this "special transposition zone" prevents the transposition of the Saguenay Storm of 1996 into the Churchill region. This is discussed later in this section.

The storms used by Sparrow in his 1968 study of the upper Churchill basin were used as a starting point for this study. Sparrow's search of major rainstorms covered the period from 1948 to 1966. Pollock and Ranahan (1975), in their study of the lower Churchill basin, used these same storms without modification. For the current study, the authors carried out a search for outstanding spring rainstorms (April, May, June) from 1975 to the present using the data available for Labrador and eastern Quebec. Table 5.1 presents the results of this search along with the storms analyzed by Sparrow.

Storm maximization using precipitable water content (PWC) from upper air data was carried out for each of the storms identified in Table 5.1. Upper air data from Goose Bay, Nichequon, Sept-Iles and Stephenville were available for each storm. It was found that the storms originally analyzed by Sparrow remain the most significant for the area of interest and these became the focus of this part of the study.

Modifying Sparrow's DAD curves - The storm maximization factors produced in this study were found to be generally lower than those produced by Sparrow (1968). This difference may be explained as follows:

- Sparrow was especially conservative in his study; "In order to partially compensate for the short length of record, the assumption made in attempting to set physical upper limits to the Meteorological factors were on the conservative side, i.e., where a choice existed, the assumption which would yield higher values was taken." (Sparrow, 1968)
- In his study, Sparrow "... maximized each storm using the persisting dewpoint method ..." (Pollock/Ranahan, 1975). In the current study, upper air data are used exclusively; "... upper air measurements provide a more reliable estimate of the moisture present in the atmosphere than surface dew points, especially in the spring season when there is snow on the ground." (CEA 1995)
- The data sets used in this study are considerably longer than those available for Sparrow's study.

Based on the results shown in Figure 5.1 and using the DAD curves generated by Sparrow (Figure 4.4), the following are the calculations used to arrive at a spring PMP value for the lower Churchill basin:

- size of basin = 21,500 km²

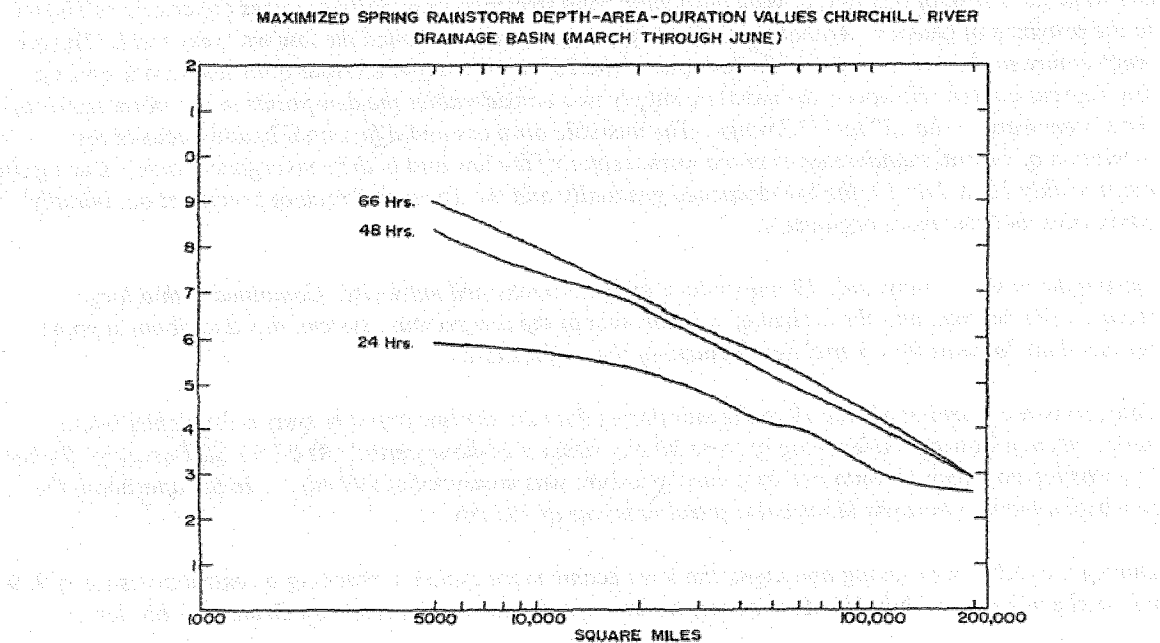
Duration	Unadjusted Sparrow	Adjusted Sparrow (Unadjusted Sparrow x 0.9)
66 hours	209.6 mm	188.6 mm
48 hours	193.0 mm	173.7 mm
24 hours	147.3 mm	132.6 mm

It was also required to work out a 100-year rainfall amount for the lower basin. This was worked out as follows:

- size of basin = 21,500 km²
- a Gumbel extreme value analysis of data at Goose Bay, Wabush and Churchill Falls give a value very close to 0.28 for the ratio 100-year rainfall/PMP rainfall at each of these stations.
- applying this ratio to the lower basin PMP values worked out above yields:

Duration	PMP rain	100-yr rain
66 hours	188.6 mm	52.8 mm
48 hours	173.7 mm	48.6 mm
24 hours	132.6 mm	37.1 mm

Figure 4.4 (Sparrow,68)



Saguenay Storm - July 18-21, 1996

Meteorological aspects: (the following information, *in italics*, is quoted directly from the Environment Canada report, "*Torrential rains of July 18 to 21 1996, in the province of Quebec*" - September 9, 1997 by Milton and Bourque).

The low pressure system that gave the heavy rain over the Saguenay region on July 18 to 21, 1996 was an uncommon event for the time of the year.

"The torrential downpours which fell on the province during this event were produced by a low pressure system of greater than normal intensity for a summertime period.

The first unusual feature of this low pressure system was its very rapid development and the resulting central barometric pressure. The particular intensity of the development of this system is characteristic of an 'explosive development,' a term which in meteorology means a very rapid drop in pressure. However, 'explosive' developments are rare in Quebec in the summer.

Second, the position of the low at the time of its maximum development plus its thermodynamic characteristics, enhanced local topographical effects which increased the production of precipitation."

The following describes the storm at the synoptic level:

"On July 18, 1996, a low pressure system being monitored west of Lake Michigan slowly began moving eastward North of this low, a weak baroclinic zone stretched from north of Lakes Superior and Huron to the province of Quebec. At that time, the temperature gradient around the low was very weak. The air temperature in the warm sector of the low was in the 20° to 30° range; elsewhere the temperature was a few degrees cooler. However, the moisture supply was considerable: the dew points in the warm sector of the system were in the 22° to 27°C range. The unstable air mass and differential heating caused the formation of several thunderstorms in the warm sector of the low and in the convergence zones. During the night of July 18 to July 19, the low deepened gradually and the associated area of precipitation, initially convective, became more organized

During the day of Friday, July 19, upper-level support intensified markedly. Combined with a large release of latent heat and the arrival of cold air west of the low pressure system, this additional support provided the impetus for a rapid development of the surface low.

Thus, from the morning of July 19 to the morning of July 20, the low pressure system developed into a major storm following a deepening of some 20 mb within a 24-hour period. At 08:00 EDT on July 19, the low was located near Toronto and its central pressure was measured at 999 mb In the afternoon, the low began moving towards Montreal (central pressure of 995 mb ...).

During the following evening and night, the low became more cyclonic, reaching a central pressure of 979 mb on the morning of July 20. At this time, it was located near the Quebec-New Brunswick border

It was during this period of development that the low pressure system produced the heaviest rainfalls covering the southwestern portion of the province towards the Saguenay-Lac Saint Jean, Gaspé Peninsula and North Shore regions. In addition, a large pressure gradient promoted the formation of very strong winds, especially along the gulf and the estuary of the St Lawrence river

The system became less intense during the day of July 20 and slowly moved toward New Brunswick Its central pressure increased during the next 24 hours to reach 993 mb by 8:00 EDT on July 21 The cloud cover began to break up, but the precipitation area associated with it continued to affect a large part of central and eastern Quebec, moving slowly eastward late in the day."

Topography was a very significant factor in the rainfall pattern generated by this storm. *"The regions that recorded the heaviest rainfall during July 19 and 20, in addition to being affected when the storm was at its peak, are characterized by a topography which promoted more intense formation of precipitation. The wind circulation pattern during this storm caused orographic lifting over certain parts of the Saguenay, Upper North Shore and Gaspé regions. This lifting produced larger amounts of precipitation."*

The importance of orography is emphasized again by Milton and Bourque, at the end of their report, in their Summary and Conclusions section: *"Notwithstanding the development of the weather system, orographic factors contributed significantly to increasing the spatial distribution of the rain; for instance, among the most affected areas (Saguenay and North Shore), the orographic lifting associated with the formation of convective cells locally increased the amounts of precipitation. The presence of mountains such as those in the Parc des Laurentides, Mont Valins, the Appalachians and the Chic Chocs Mountains resulted in additional accumulations along the upslope flanks. This was particularly apparent on July 20, when the rainfall was modulated mainly by orography factors."*

For the purposes of this study, the "Saguenay storm" was deemed not transposable for the following reasons:

- even though the storm had unusual characteristics, for a summer event, it occurred too late in the summer to justify transposing it back in time into a late spring event;
- the precipitation patterns produced by this storm were closely linked to the local orography which makes the event an unsuitable candidate for transposition;
- based on the "transposition maps" in CEA 9137 G 929 pp. 70-71, this storm occurred outside the "special transposition zone" for Labrador.

6. Conclusion

The scenario examined in this study consisted of a maximized snowpack over the Lower Churchill River Basin persisting late into the spring. A warm front passes over the basin at the end of May and brings very warm temperatures, triggering a rapid melt. The warm air lingers over the basin for several days after which a cold front passes over the area and moves slowly eastward. A low pressure system develops on this front southwest of the basin, tracks northeastward and brings a PMP rainfall event during the first week of June. At the same time as the PMP event in the south, the upper Churchill Basin experiences heavy rains.

Data from sixteen snow courses in the area of interest were used to calculate snow water equivalent 100-year and 10,000-year return period values. As well, data from stations within or in the vicinity of the basin were used to estimate the Probable Maximum Snowpack for the Lower Churchill Basin.

After an extensive search through decades of data for stations in Labrador and eastern Quebec, it was found that the heavy rainstorms analyzed by Sparrow in 1968 remain relevant today. As was done in Pollock and Ranahan (1975) study of the lower basin, the Depth-Area-Duration (DAD) curves generated by Sparrow were used in this study. As indicated from the results of maximizing the relevant storms using several decades of upper air data, Sparrow's curves were adjusted downwards by 10%.

An excellent analysis of the "Saguenay storm" by Milton & Bourque (Environment Canada, 1997) was used in this study to conclude that this particular storm could not be transposed to contribute to a spring PMF event over the Lower Churchill Basin.

Table 5.1

<i>Storm Date</i>	<i>Max Observed Point Rainfall (mm)</i>	<i>Station</i>	<i>Representative UA Station</i>	<i>Max PWC (Record) for Storm Date (mm)</i>	<i>Actual Storm PWC (mm)</i>	<i>Max Ratio (Record PWC)</i>	<i>100-year PWC Storm Date (mm)</i>	<i>Max Ratio 100-year PWC</i>	<i>Sparrow Max Factor</i>	<i>Sparrow DAD Curve Modification factor</i>
Jun. 13-15/58	59	Knob Lake	Goose Bay	42	26.2	1.60	41.49	1.58	2.20	0.72
May 25-27/61	81	Lake Eon	Sept-Iles A	43	27.1	1.59	47.42	1.75	1.96	0.89
Jun. 24-25/62	53	Twin Falls	Goose Bay	42	30.3	1.39	41.49	1.37	1.98	0.69
May 26-29/63	82	Nitchequon	Nitechquon	33	20.6	1.60	35.15	1.71	1.97	0.87
May 24-25/64	87	Wabush L.	Sept-Iles A	43	37.1	1.16	47.42	1.28	1.43	0.89
Jun. 1-2/75	69	Chur. Falls A	Sept-Iles UA	43	37.4	1.15	47.42	1.27		
Jun. 13-14/78	53	Wabush A	Sept-Iles UA	43	30.9	1.39	47.42	1.53		
Jun. 27-28/78	59	Chur. Falls A	Sept-Iles UA	43	31.6	1.36	47.42	1.50		
Jun. 26-28/80	81	Goose A	Sept-Iles UA	43	34.8	1.24	47.42	1.36		

- The assumption was made, in calculating precipitable water content (PWC), that PWC increases linearly throughout the spring-early summer period. The plotted data in Appendix C shows a continuous rise in PWC during this period. Calculations of period-of-record PWC as well as 100-yr return period PWC were based on this assumption.
- **Max PWC (Record) for Storm Date (mm)** - As indicated in Figure 4.2, the date for the PMP rainstorm is June 3rd. The maximum precipitable water content was calculated for that date from the upper air data for the period of record of the station in question. The upper air data available was as follows: Nitchequon (25 years), Sept-Iles (37 years), Goose Bay (37 years) and Stephenville (30 years).
- **Actual Storm PWC (mm)** - A series of surface pressure analyses and upper air charts for each storm was examined and used to pick the upper air station most representative of the moisture supply for the storm. The Actual Storm PWC was obtained from the representative station's upper air data.
- **Max Ratio (Record PWC)** - A maximization ratio based on period-of-record pwc by dividing the Actual Storm PWC into the Max PWC (Record) for the Storm Date.
- **100-year PWC Storm Date (mm)** - A Gumbel extreme value analysis was carried out on the selected station's data and the results for May and June were used to calculate the 100-year pwc for the storm date.
- **Max Ratio 100-year PWC** - A maximization ratio obtained by dividing the Actual Storm PWC into the 100-year PWC for the Storm Date.
- **Sparrow Max Factor** - This is the maximization factor obtained by Sparrow in his 1968 study.
- **Sparrow DAD Curve Modification factor** - Obtained by dividing the Sparrow Maximization Factor into the Maximization Ratio 100-year PWC. Based on these results, a factor of 0.9 was used to modify Sparrow's DAD curves to obtain the PMP for the lower Churchill basin in this study.
- It is interesting to note that, over its period of record, Goose Bay has experienced at least one instance of PWC greater than a 100-yr value.

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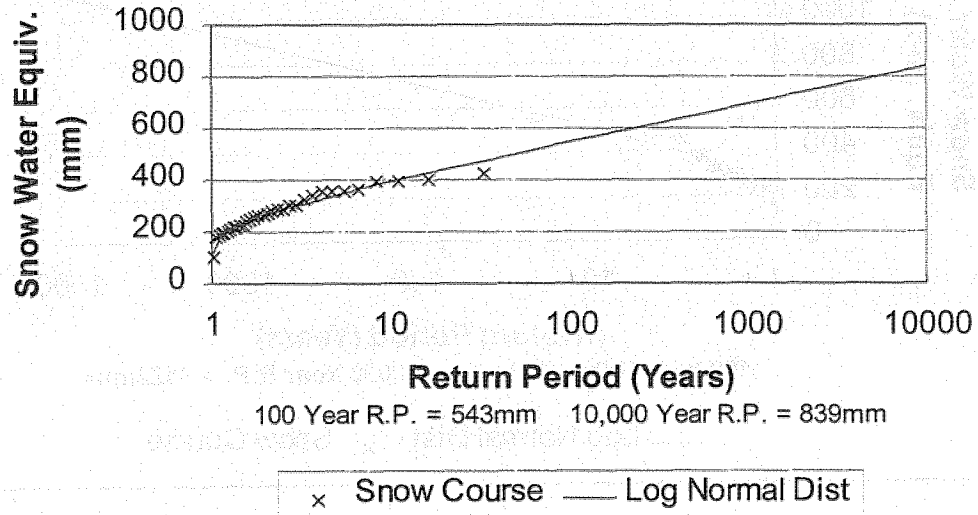
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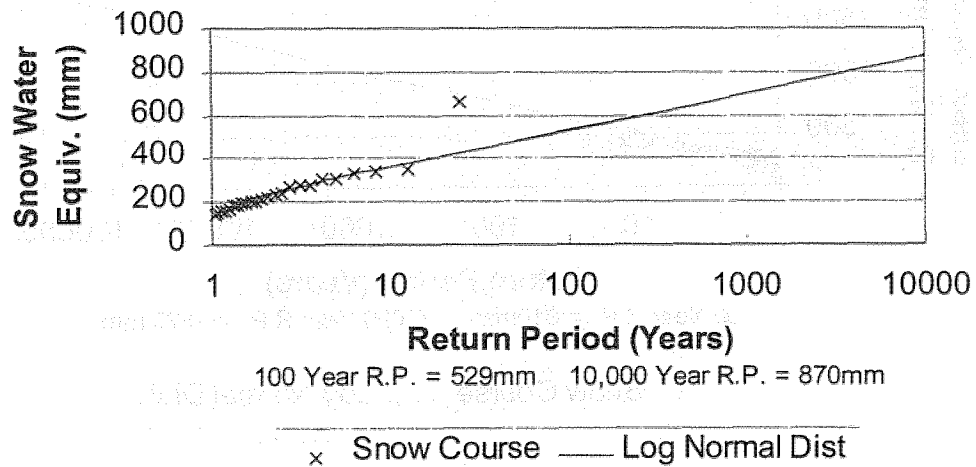
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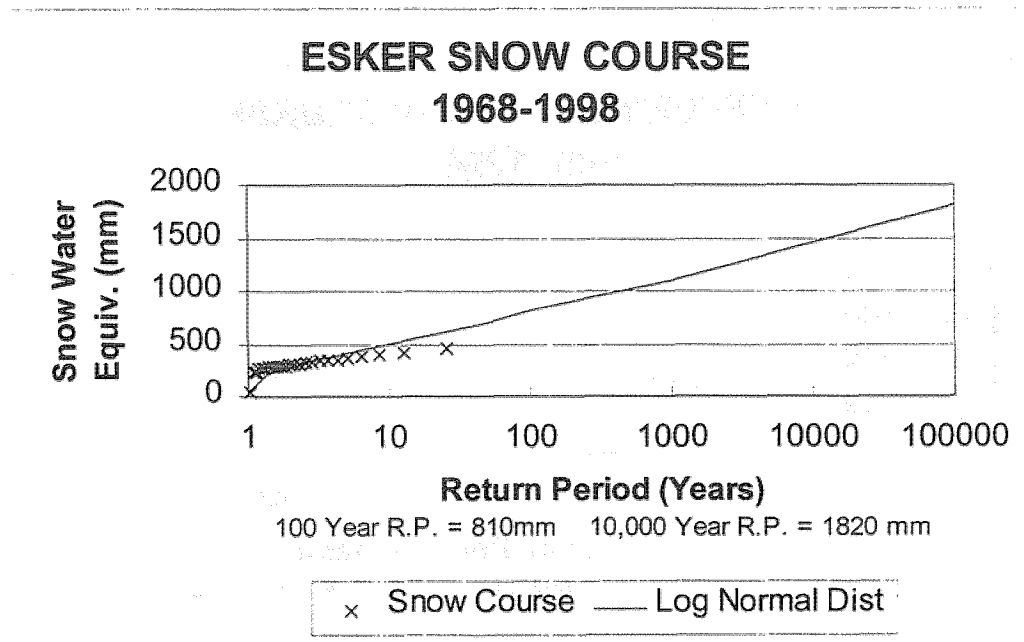
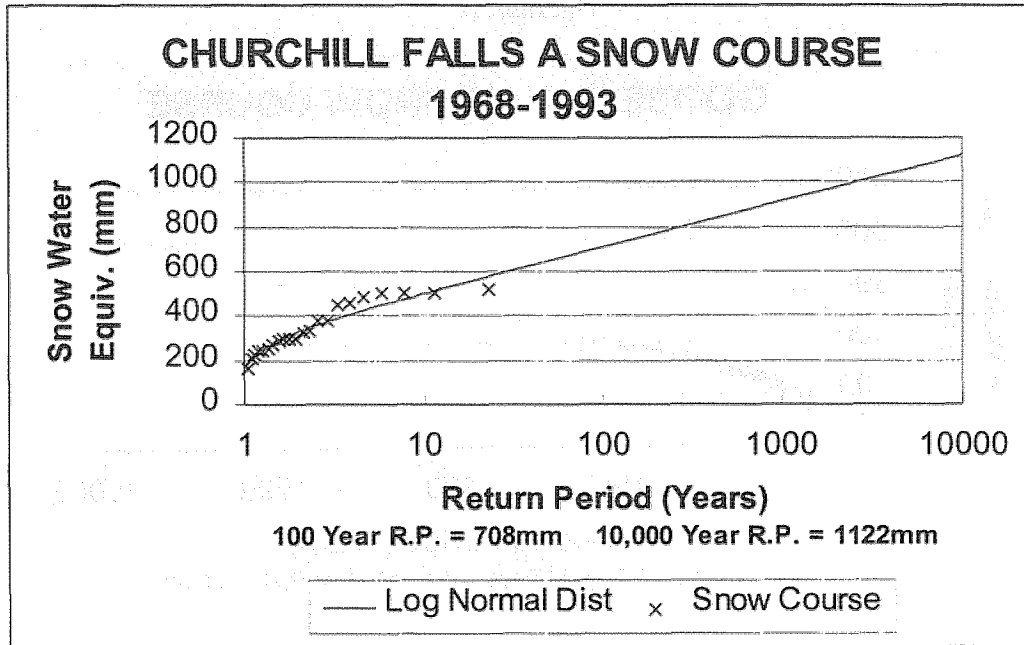
Appendix A

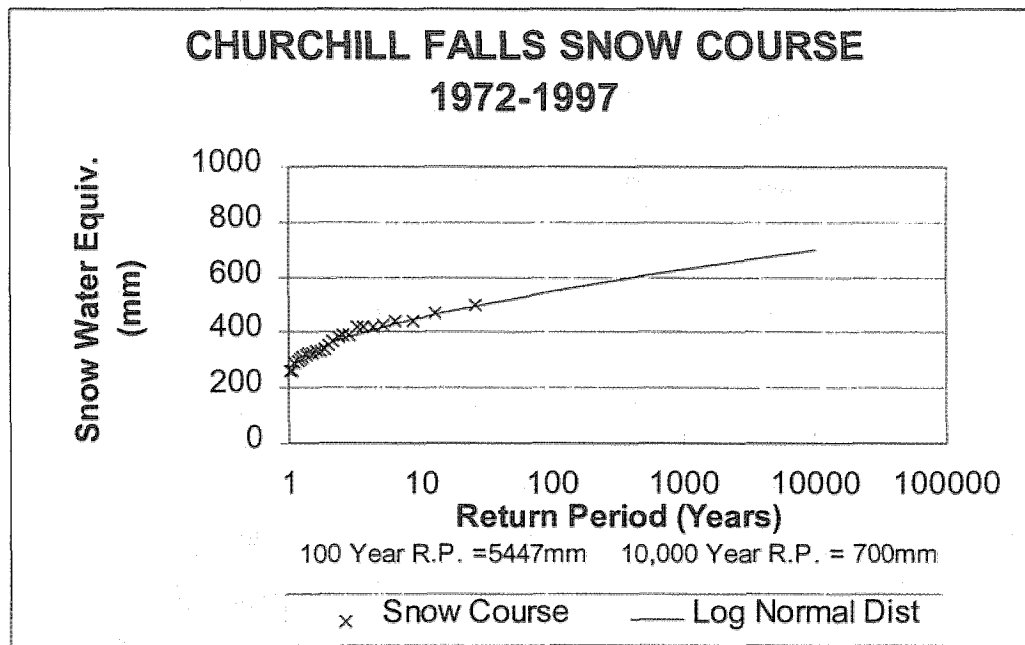
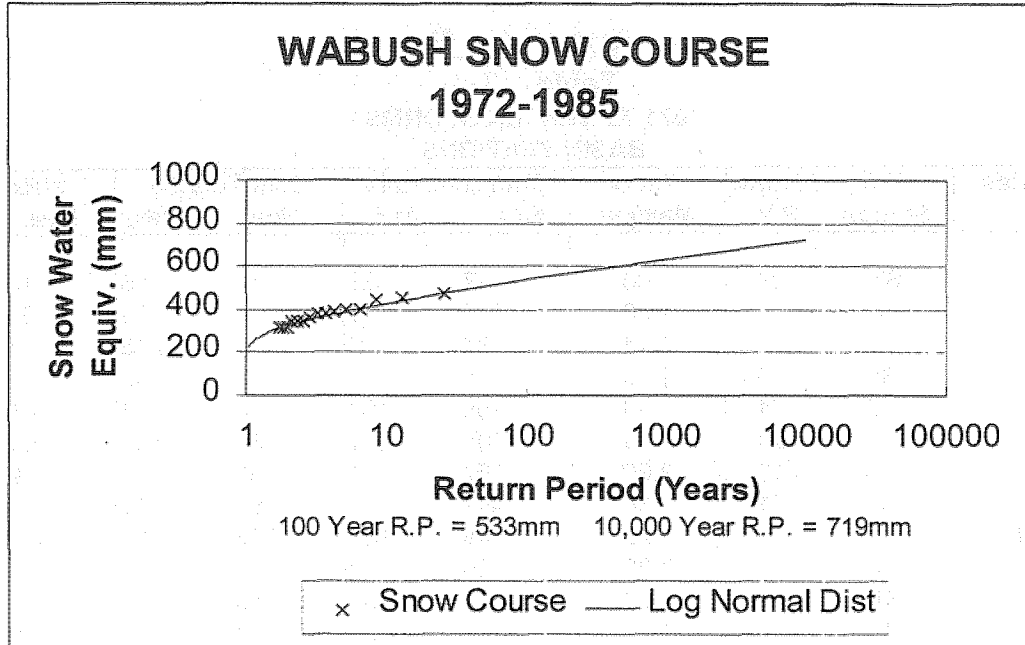
GOOSE BAY UA SNOW COURSE



SCHEFFERVILLE SNOW COURSE
1968-1994







Appendix B
Table 3-A
1971-72 WINTER STORMS
BASIN STATIONS

Storm Dates	U/A Station	Storm P.W.	Ratio Max/pw	Churchill Falls		Schefferville		Wabush L.	
				Mea.	Max.	Mea.	Max.	Mea.	Max.
1971									
Oct. 6 - 9	ST	24	1.00	127	127	156	156	118	118
Oct. 11 - 13	rain		1.00	191	191	160	160	21	21
Oct. 16 - 18	SI	21	1.14	84	96	186	213	176	201
Oct. 29 - 31	SI	20	1.20	10	12	86	103	0	0
Nov. 2 - 5	ST	24	1.00	100	100	176	176	181	181
Nov. 7 - 11	ST	24	1.00	361	361	533	533	704	704
Nov. 12 - 13	GB	12	2.00	157	314	69	138	49	98
Nov. 19 - 23	SI	21	1.14	447	511	262	299	137	157
Nov. 26 - 30	ST	19	1.26	348	440	325	411	437	552
Dec. 6 - 9	SI	12	2.00	66	132	95	190	112	224
Dec. 11 - 14	ST	18	1.33	231	308	153	204	482	643
Dec. 16 - 17	CAR	14	1.71	13	22	0	0	30	51
Dec. 21 - 26	ST	16	1.50	97	146	71	107	115	173
Dec. 27 - 29	CAR	12	2.00	28	56	15	30	23	46
1972									
Jan. 1 - 4	ST	18	1.33	51	68	41	55	104	139
Jan. 8 - 11	CAR	13	1.85	141	260	122	225	177	327
Jan. 12 - 14	ST	24	1.00	122	122	68	68	92	92
Jan. 17 - 20	ST	16	1.50	107	161	175	263	149	224
Jan. 21 - 23	CAR	19	1.26	117	148	155	196	99	125
Jan. 25 - 26	ST	17	1.41	152	215	46	65	191	270
Feb. 4 - 5	ST	11	2.18	119	260	153	334	125	273
Feb. 6 - 9	no storm		1.00	145	145	69	69	99	99
Feb. 12 - 16	ST	18	1.33	291	388	161	215	259	345
Feb. 19 - 20	CAR	12	2.00	76	152	21	42	132	264
Feb. 26 - 28	no storm		1.00	38	38	11	11	64	64
Mar. 2 - 3	ST	19	1.26	53	67	35	44	76	96
Mar. 5 - 8	ST	21	1.14	138	158	109	125	151	173
Mar. 11 - 12	no storm		1.00	36	36	56	56	46	46
Mar. 16 - 19	CAR	24	1.00	261	261	178	178	358	358
Mar. 24 - 27	ST	21	1.14	448	512	363	415	474	542
Apr. 5 - 7	ST	12	2.00	79	158	90	180	168	336
Apr. 21 - 22	CAR	14	1.71	145	249	36	62	28	48
Apr. 24 - 26	ST	14	1.71	178	305	86	147	135	231
Apr. 28 - 30	ST	24	1.00	107	107	40	40	153	153
TOTALS (mm water)				506.40	662.34	430.20	550.76	566.50	737.17

Legend:

Storm P.W. - precipitable water from u/a sounding, surface to 200 mb
U/A station - radiosonde station
Max. P.W. - snow only event: maximum precipitable water - 24 mm
Mea. - measured snowfall from daily snow.
Max. - maximized snowfall. Measured snow X ratio.

U/A Stations:

GB Goose Bay
CAR Caribou, Maine
MO Moosonee, Ont.
NI Nitschequon, Que.
SI Sept-Isle, Que.
ST Stephenville, Nfld.

Table 3-A (Continued)
1971-72 WINTER STORMS
PERIMETER STATIONS

Storm Dates	U/A Station	Storm P.W.	Ratio Max/pw	Goose Bay		Nitchequon		Sept-Isles	
				Mea.	Max.	Mea.	Max.	Mea.	Max.
1971									
Oct. 6 - 9	ST	24	1.00	0	0	69	69	0	0
Oct. 11 - 13	rain		1.00	0	0	61	61	0	0
Oct. 16 - 18	SI	21	1.14	10	11	109	125	8	9
Oct. 29 - 31	SI	20	1.20	3	4	28	34	0	0
Nov. 2 - 5	ST	24	1.00	71	71	240	240	135	135
Nov. 7 - 11	ST	24	1.00	736	736	181	181	0	0
Nov. 12 - 13	GB	12	2.00	66	132	8	16	0	0
Nov. 19 - 23	SI	21	1.14	31	35	96	110	20	23
Nov. 26 - 30	ST	19	1.26	311	393	125	158	493	623
Dec. 6 - 9	SI	12	2.00	59	118	69	138	158	316
Dec. 11 - 14	ST	18	1.33	208	277	61	81	389	519
Dec. 16 - 17	CAR	14	1.71	35	60	46	79	292	501
Dec. 21 - 26	ST	16	1.50	227	341	62	93	206	309
Dec. 27 - 29	CAR	12	2.00	33	66	16	32	137	274
1972									
Jan. 1 - 4	ST	18	1.33	119	159	71	95	230	307
Jan. 8 - 11	CAR	13	1.85	103	190	115	212	147	271
Jan. 12 - 14	ST	24	1.00	46	46	56	56	0	0
Jan. 17 - 20	ST	16	1.50	82	123	150	225	151	227
Jan. 21 - 23	CAR	19	1.26	41	52	73	92	147	186
Jan. 25 - 26	ST	17	1.41	223	315	90	127	439	620
Feb. 4 - 5	ST	11	2.18	23	50	83	181	418	912
Feb. 6 - 9	no storm		1.00	16	16	71	71	0	0
Feb. 12 - 16	ST	18	1.33	283	377	132	176	363	484
Feb. 19 - 20	CAR	12	2.00	110	220	63	126	356	712
Feb. 26 - 28	no storm		1.00	49	49	14	14	103	103
Mar. 2 - 3	ST	19	1.26	30	38	23	29	214	270
Mar. 5 - 8	ST	21	1.14	221	253	87	99	320	366
Mar. 11 - 12	no storm		1.00	16	16	35	35	58	58
Mar. 16 - 19	CAR	24	1.00	49	49	36	36	33	33
Mar. 24 - 27	ST	21	1.14	422	482	87	99	818	935
Apr. 5 - 7	ST	12	2.00	188	376	99	198	153	306
Apr. 21 - 22	CAR	14	1.71	221	379	18	31	30	51
Apr. 24 - 26	ST	14	1.71	94	161	5	9	69	118
Apr. 28 - 30	ST	24	1.00	89	89	28	28	10	10
TOTALS (mm water)				421.50	568.38	250.70	335.56	589.70	867.66

Legend:

Storm P.W. - precipitable water from u/a sounding, surface to 200 mb
U/A station - radiosonde station
Max. P.W. - snow only event: maximum precipitable water - 24 mm
Mea. - measured snowfall from daily snow.
Max. - maximized snowfall. Measured snow X ratio.

U/A Stations:

GB Goose Bay
CAR Caribou, Maine
MO Moosonee, Ont.
NI Nitchequon, Que.
SI Sept-Isle, Que.
ST Stephenville, Nfld.

Table 3-B
1976 - 77 WINTER STORMS
BASIN STATIONS

Storm Dates	U/A Station	Storm P.W.	Ratio Max/pw	Churchill Falls		Schefferville		Wabush L.	
				Mea.	Max.	Mea.	Max.	Mea.	Max.
1976									
Oct. 3	ST	20	1.20	15	18	5	6	23	28
Oct. 9 - 11	ST	24	1.00	186	186	91	91	213	213
Oct. 14 - 16	CAR	21	1.14	173	198	542	619	200	229
Oct. 18 - 19	ST	20	1.20	13	16	68	82	76	91
Oct. 21 - 23	ST	19	1.26	122	154	96	121	151	191
Oct. 26 - 29	ST	23	1.04	152	159	127	133	72	75
Nov. 1 - 2	ST	24	1.00	8	8	0	0	0	0
Nov. 5 - 8	ST	24	1.00	295	295	257	257	190	190
Nov. 9 - 11	ST	13	1.85	186	343	109	201	81	150
Nov. 14 - 15	ST	9	2.67	34	91	61	163	11	29
Nov. 19 - 22	ST	18	1.33	241	321	330	440	293	391
Nov. 27 - 29	CAR	18	1.33	31	41	44	59	43	57
Dec. 2 - 3	ST	16	1.50	84	126	201	302	269	404
Dec. 7 - 8	ST	22	1.09	49	53	43	47	51	56
Dec. 11 - 12	ST	15	1.60	18	29	13	21	28	45
Dec. 16 - 18	ST	14	1.71	85	146	9	15	29	50
Dec. 21 - 22	ST	24	1.00	181	181	267	267	287	287
Dec. 26 - 29	GB	19	1.26	118	149	161	203	215	272
1977									
Jan. 1 - 2	GB	13	1.85	52	96	21	39	127	234
Jan. 4 - 5	ST	19	1.26	38	48	33	42	11	14
Jan. 8 - 9	ST	19	1.26	268	339	102	129	23	29
Jan. 11	ST	21	1.14	170	194	226	258	347	397
Jan. 15 - 18	no storm		1.00	305	305	373	373	293	293
Jan. 20 - 21	GB	11	2.18	91	199	126	275	60	131
Jan. 26 - 27	ST	20	1.20	148	178	100	120	129	155
Jan. 28 - 29	GB	11	2.18	118	257	177	386	130	284
Feb. 3 - 6	no storm		1.00	218	218	295	295	259	259
Feb. 15 - 16	no storm		1.00	28	28	24	24	85	85
Feb. 21 - 22	ST	20	1.20	165	198	139	167	139	167
Feb. 27 - 28	CAR	19	1.26	135	171	100	126	348	440
Mar. 3	no storm		1.00	31	31	46	46	26	26
Mar. 10 - 12	ST	15	1.60	68	109	54	86	32	51
Mar. 17 - 18	SI	15	1.60	114	182	226	362	116	186
Mar. 24 - 25	SI	14	1.71	7	12	139	238	91	156
Mar. 31	CAR	23	1.04	97	101	153	160	46	48
Apr. 3	CAR	20	1.20	57	68	107	128	100	120
Apr. 5 - 6	CAR	24	1.00	247	247	362	362	163	163
Apr. 14 - 15	CAR	17	1.41	136	192	80	113	126	178
Apr. 28 - 29	SI	16	1.50	257	386	308	462	281	422
TOTALS (mm water)				474.10	607.20	561.50	721.75	516.40	659.12

Legend:

Storm P.W. - precipitable water from u/a sounding, surface to 200 mb
U/A station - radiosonde station
Max. P.W. - snow only event: maximum precipitable water - 24 mm
Mea. - measured snowfall from daily snow.
Max. - maximized snowfall. Measured snow X ratio.

U/A Stations:

GB Goose Bay
CAR Caribou, Maine
MO Moosonee, Ont.
NI Nitchequon, Que.
SI Sept-Isle, Que.
ST Stephenville, Nfld.

Table 3-B (Continued)
1976-77 WINTER STORMS
PERIMETER STATIONS

Storm Dates	U/A Station	Storm P.W.	Ratio Max/pw	Goose Bay		Nitchequon		Sept-Isles	
				Mea.	Max.	Mea.	Max.	Mea.	Max.
1976									
Oct. 3	ST	20	1.20	0	0	67	80	0	0
Oct. 9 - 11	ST	24	1.00	211	211	78	78	33	33
Oct. 14 - 16	CAR	21	1.14	3	3	227	259	0	0
Oct. 18 - 19	ST	20	1.20	35	42	51	61	0	0
Oct. 21 - 23	ST	19	1.26	94	119	124	157	285	360
Oct. 26 - 29	ST	23	1.04	152	159	115	120	41	43
Nov. 1 - 2	ST	24	1.00	104	104	0	0	11	11
Nov. 5 - 8	ST	24	1.00	79	79	158	158	38	38
Nov. 9 - 11	ST	13	1.85	94	174	97	179	0	0
Nov. 14 - 15	ST	9	2.67	26	69	51	136	0	0
Nov. 19 - 22	ST	18	1.33	125	167	348	464	44	59
Nov. 27 - 29	CAR	18	1.33	38	51	25	33	135	180
Dec. 2 - 3	ST	16	1.50	124	186	112	168	82	123
Dec. 7 - 8	ST	22	1.09	61	67	25	27	194	212
Dec. 11 - 12	ST	15	1.60	5	8	36	58	51	82
Dec. 16 - 18	ST	14	1.71	277	475	13	22	169	290
Dec. 21 - 22	ST	24	1.00	102	102	343	343	203	203
Dec. 26 - 29	GB	19	1.26	80	101	287	363	457	577
1977									
Jan. 1 - 2	GB	13	1.85	231	426	6	11	248	458
Jan. 4 - 5	ST	19	1.26	157	198	39	49	61	77
Jan. 8 - 9	ST	19	1.26	180	227	18	23	12	15
Jan. 11	ST	21	1.14	144	165	178	203	276	315
Jan. 15 - 18	no storm		1.00	304	304	119	119	13	13
Jan. 20 - 21	GB	11	2.18	227	495	126	275	25	55
Jan. 26 - 27	ST	20	1.20	75	90	72	86	183	220
Jan. 28 - 29	GB	11	2.18	26	57	218	476	321	700
Feb. 3 - 6	no storm		1.00	265	265	144	144	7	7
Feb. 15 - 16	no storm		1.00	49	49	6	6	98	98
Feb. 21 - 22	ST	20	1.20	210	252	13	16	161	193
Feb. 27 - 28	CAR	19	1.26	190	240	48	61	137	173
Mar. 3	no storm		1.00	36	36	22	22	0	0
Mar. 10 - 12	ST	15	1.60	49	78	107	171	87	139
Mar. 17 - 18	SI	15	1.60	139	222	430	688	143	229
Mar. 24 - 25	SI	14	1.71	61	105	123	211	0	0
Mar. 31	CAR	23	1.04	6	6	58	61	4	4
Apr. 3	CAR	20	1.20	111	133	176	211	250	300
Apr. 5 - 6	CAR	24	1.00	86	86	182	182	140	140
Apr. 14 - 15	CAR	17	1.41	213	301	18	25	24	34
Apr. 28 - 29	SI	16	1.50	38	57	33	50	26	39
TOTALS (mm water)				440.70	590.87	429.30	579.61	395.90	541.90

Legend:

Storm P.W.	- precipitable water from u/a sounding, surface to 200 mb
U/A station	- radiosonde station
Max. P.W.	- snow only event: maximum precipitable water - 24 mm
Mea.	- measured snowfall from daily snow.
Max.	- maximized snowfall. Measured snow X ratio.

U/A Stations:

GB	Goose Bay
CAR	Caribou, Maine
MO	Moosonee, Ont.
NI	Nitchequon, Que.
SI	Sept-Isle, Que.
ST	Stephenville, Nfld.

Table 3-C
1980-81 WINTER STORMS
BASIN STATIONS

Storm Dates	U/A Station	Storm P.W.	Ratio Max/pw	Churchill Falls		Schefferville		Wabush L.	
				Mea.	Max.	Mea.	Max.	Mea.	Max.
1980									
Oct. 1 - 4	rain	storm	1.00	12	12	91	91	4	4
Oct. 9 - 11	SI	19	1.26	70	88	33	42	130	164
Oct. 12 - 15	GB	23	1.04	176	184	389	406	86	90
Oct. 16 - 19	SI	21	1.14	66	75	53	61	72	82
Oct. 20 - 23	ST	14	1.71	148	254	149	255	37	63
Oct. 26 - 27	SI	24	1.00	36	36	60	60	23	23
Oct 31 - Nov. 2	SI	11	2.18	20	44	62	135	98	214
Nov. 4 - 6	ST	24	1.00	74	74	297	297	108	108
Nov. 8 - 10	ST	21	1.14	40	46	168	192	78	89
Nov. 14 - 15	GB	17	1.41	186	263	90	127	143	202
Nov. 24 - 26	CAR	23	1.04	218	227	122	127	147	153
Nov. 28 - 30	CAR	21	1.14	210	240	175	200	246	281
Dec. 3 - 4	CAR	20	1.20	364	437	304	365	970	1164
Dec. 7 - 9	CAR	21	1.14	180	206	156	178	140	160
Dec. 14 - 15	no	storm	1.00	34	34	37	37	7	7
Dec. 17 - 18	ST	16	1.50	72	108	40	60	110	165
Dec. 23 - 25	ST	12	2.00	70	140	51	102	49	98
Dec. 28 - 29	ST	23	1.04	96	100	71	74	103	107
1981									
Jan. 2 - 4	ST	10	2.40	190	456	219	526	198	475
Jan. 7 - 8	ST	15	1.60	120	192	328	525	197	315
Jan. 10 - 11	GB	15	1.60	104	166	291	466	222	355
Jan. 13 - 14	ST	18	1.33	56	75	0	0	34	45
Jan. 18 - 20	no	storm	1.00	108	108	17	17	22	22
Jan. 23 - 24	no	storm	1.00	18	18	0	0	5	5
Jan. 26 - 27	CAR	14	1.71	70	120	66	113	95	163
Feb. 1 - 3	CAR	23	1.04	80	83	166	173	137	143
Feb. 8 - 11	ST	22	1.09	164	179	255	278	227	248
Feb. 15 - 17	SI	13	1.85	56	103	98	181	45	83
Feb. 21	SI	22	1.09	16	17	22	24	79	86
Feb. 27 - Mar. 4	CAR	17	1.41	190	268	420	593	154	217
Mar. 13 - 16	ST	19	1.26	200	253	346	437	223	282
Mar. 28 - 29	CAR	19	1.26	60	76	134	169	54	68
Apr. 4 - 7	CAR	24	1.00	156	156	277	277	225	225
Apr. 9 - 11	ST	21	1.14	70	80	59	67	23	26
Apr. 14 - 15	CAR	19	1.26	150	189	220	278	108	136
Apr. 17 - 19	ST	18	1.33	342	456	267	356	219	292
Apr. 20 - 22	GB	17	1.41	154	217	263	371	132	186
Apr. 25 - 27	SI	16	1.50	46	69	94	141	94	141
Apr. 30	CAR	20	1.20	34	41	32	38	25	30
TOTALS (mm water)				445.60	589.10	592.20	784.01	506.90	672.05

Legend:

Storm P.W. - precipitable water from u/a sounding, surface to 200 mb
U/A station - radiosonde station
Max. P.W. - snow only event: maximum precipitable water - 24 mm
Mea. - measured snowfall from daily snow.
Max. - maximized snowfall. Measured snow X ratio.

U/A Stations:

GB Goose Bay
CAR Caribou, Maine
MO Moosonee, Ont.
NI Nitchequon, Que.
SI Sept-Isle, Que.
ST Stephenville, Nfld.

Table 3-C (Continued)
1980-81 WINTER STORMS
PERIMETER STATIONS

Storm Dates	U/A Station	Storm P.W.	Ratio Max/pw	Goose Bay		Nitchequon		Sept-Isles	
				Mea.	Max.	Mea.	Max.	Mea.	Max.
1980									
Oct. 1 - 4	rain	storm	1.00	22	22	14	14	42	42
Oct. 9 - 11	SI	19	1.26	0	0	59	75	0	0
Oct. 12 - 15	GB	23	1.04	14	15	159	166	0	0
Oct. 16 - 19	SI	21	1.14	108	123	42	48	4	5
Oct. 20 - 23	ST	14	1.71	116	199	19	33	10	17
Oct. 26 - 27	SI	24	1.00	52	52	110	110	2	2
Oct 31 - Nov. 2	SI	11	2.18	2	4	58	127	22	48
Nov. 4 - 6	ST	24	1.00	0	0	149	149	44	44
Nov. 8 - 10	ST	21	1.14	176	201	98	112	105	120
Nov. 14 - 15	GB	17	1.41	379	535	43	61	13	18
Nov. 24 - 26	CAR	23	1.04	374	390	171	178	189	197
Nov. 28 - 30	CAR	21	1.14	57	65	39	45	454	519
Dec. 3 - 4	CAR	20	1.20	64	77	59	71	514	617
Dec. 7 - 9	CAR	21	1.14	230	263	100	114	144	165
Dec. 14 - 15	no	storm	1.00	172	172	2	2	88	88
Dec. 17 - 18	ST	16	1.50	178	267	37	56	101	152
Dec. 23 - 25	ST	12	2.00	133	266	13	26	298	596
Dec. 28 - 29	ST	23	1.04	243	254	57	59	172	179
1981									
Jan. 2 - 4	ST	10	2.40	311	746	241	578	340	816
Jan. 7 - 8	ST	15	1.60	32	51	80	128	322	515
Jan. 10 - 11	GB	15	1.60	216	346	106	170	494	790
Jan. 13 - 14	ST	18	1.33	300	400	14	19	170	227
Jan. 18 - 20	no	storm	1.00	112	112	74	74	0	0
Jan. 23 - 24	no	storm	1.00	41	41	17	17	152	152
Jan. 26 - 27	CAR	14	1.71	182	312	93	159	100	171
Feb. 1 - 3	CAR	23	1.04	30	31	231	241	50	52
Feb. 8 - 11	ST	22	1.09	229	250	261	285	292	319
Feb. 15 - 17	SI	13	1.85	28	52	98	181	10	18
Feb. 21	SI	22	1.09	40	44	27	29	0	0
Feb. 27 - Mar. 4	CAR	17	1.41	475	671	146	206	4	6
Mar. 13 - 16	ST	19	1.26	110	139	150	189	330	417
Mar. 28 - 29	CAR	19	1.26	92	116	94	119	16	20
Apr. 4 - 7	CAR	24	1.00	345	345	238	238	10	10
Apr. 9 - 11	ST	21	1.14	420	480	69	79	38	43
Apr. 14 - 15	CAR	19	1.26	52	66	396	500	64	81
Apr. 17 - 19	ST	18	1.33	27	36	92	123	158	211
Apr. 20 - 22	GB	17	1.41	38	54	48	68	8	11
Apr. 25 - 27	SI	16	1.50	62	93	18	27	0	0
Apr. 30	CAR	20	1.20	57	68	14	17	0	0
TOTALS (mm water)				551.90	735.72	373.60	489.12	476.00	666.83

Legend:

Storm P.W. - precipitable water from u/a sounding, surface to 200 mb
U/A station - radiosonde station
Max. P.W. - snow only event: maximum precipitable water - 24 mm
Mea. - measured snowfall from daily snow.
Max. - maximized snowfall. Measured snow X ratio.

U/A Stations:

GB Goose Bay
CAR Caribou, Maine
MO Moosonee, Ont.
NI Nitchequon, Que.
SI Sept-Isle, Que.
ST Stephenville, Nfld.

Table 3-D
1982-83 WINTER STORMS
BASIN STATIONS

Storm Dates	U/A Station	Storm P.W.	Ratio Max/pw	Churchill Falls		Schefferville		Wabush L.	
				Mea.	Max.	Mea.	Max.	Mea.	Max.
1982									
Oct. 16 - 19	ST	19	1.26	145	183	205	259	103	130
Oct. 20 - 21	SI	23	1.04	84	88	235	245	97	101
Oct. 23 - 25	MO	19	1.26	80	101	91	115	42	53
Nov. 1 - 3	SI	20	1.20	124	149	87	104	116	139
Nov. 5 - 7	SI	24	1.00	82	82	144	144	234	234
Nov. 11 - 13	ST	23	1.04	58	61	75	78	50	52
Nov. 16 - 17	ST	19	1.26	30	38	4	5	33	42
Nov. 23 - 25	ST	24	1.00	174	174	212	212	316	316
Dec. 2 - 4	SI	24	1.00	84	84	50	50	78	78
Dec. 6 - 8	ST	22	1.09	48	52	145	158	134	146
Dec. 15 - 17	ST	21	1.14	112	128	16	18	34	39
Dec. 20 - 22	ST	21	1.14	220	251	97	111	93	106
Dec. 24 - 26	CAR	24	1.00	184	184	63	63	177	177
Dec. 28 - 29	CAR	24	1.00	158	158	105	105	195	195
1983									
Jan. 11 - 13	SI	19	1.26	76	96	323	408	405	512
Jan. 16 - 18	ST	13	1.85	360	665	224	414	424	783
Jan. 22 - 25	CAR	18	1.33	90	120	86	115	118	157
Jan. 29 - 31	CAR	12	2.00	42	84	55	110	139	278
Feb. 3 - 4	ST	22	1.09	322	351	251	274	316	345
Feb. 5 - 6	ST	20	1.20	120	144	4	5	4	5
Feb. 8 - 10	ST	18	1.33	314	419	164	219	166	221
Feb. 13 - 14	MO	13	1.85	72	133	43	79	84	155
Feb. 21	MO	11	2.18	80	175	34	74	89	194
Mar. 2 - 4	ST	22	1.09	94	103	5	5	26	28
Mar. 11 - 13	ST	22	1.09	198	216	192	209	212	231
Mar. 19 - 21	CAR	24	1.00	410	410	452	452	583	583
Mar. 22 - 24	ST	21	1.14	368	421	316	361	302	345
Mar. 28 - 31	ST	18	1.33	498	664	372	496	310	413
Apr. 4 - 6	ST	21	1.14	382	437	283	323	298	341
Apr. 11 - 12	ST	20	1.20	262	314	31	340	135	162
Apr. 24 - 25	rain	24	1.00	0	0	60	31	40	40
TOTALS (mm water)				527.10	648.30	442.40	558.33	535.30	660.22

Legend:

Storm P.W.	- precipitable water from u/a sounding, surface to 200 mb
U/A station	- radiosonde station
Max. P.W.	- snow only event: maximum precipitable water - 24 mm
Mea.	- measured snowfall from daily snow.
Max.	- maximized snowfall. Measured snow X ratio.

U/A Stations:

GB	Goose Bay
CAR	Caribou, Maine
MO	Moosonee, Ont.
NI	Nitchequon, Que.
SI	Sept-Isle, Que.
ST	Stephenville, Nfld.

Table 3-D (Continued)
1982-83 WINTER STORMS
PERIMETER STATIONS

Storm Dates	U/A Station	Storm P.W.	Ratio Max/pw	Goose Bay		Nitchequon		Sept-Isles	
				Mea.	Max.	Mea.	Max.	Mea.	Max.
1982									
Oct. 16 - 19	ST	19	1.26	47	59	56	71	0	0
Oct. 20 - 21	SI	23	1.04	4	4	198	207	0	0
Oct. 23 - 25	MO	19	1.26	8	10	30	38	2	3
Nov. 1 - 3	SI	20	1.20	49	59	20	24	0	0
Nov. 5 - 7	SI	24	1.00	127	127	212	212	0	0
Nov. 11 - 13	ST	23	1.04	86	90	86	90	26	27
Nov. 16 - 17	ST	19	1.26	164	207	30	38	100	126
Nov. 23 - 25	ST	24	1.00	41	41	82	82	42	42
Dec. 2 - 4	SI	24	1.00	131	131	84	84	32	32
Dec. 6 - 8	ST	22	1.09	8	9	112	122	62	68
Dec. 15 - 17	ST	21	1.14	314	359	26	30	396	453
Dec. 20 - 22	ST	21	1.14	346	395	24	27	83	95
Dec. 24 - 26	CAR	24	1.00	298	298	116	116	156	156
Dec. 28 - 29	CAR	24	1.00	233	233	190	190	50	50
1983									
Jan. 11 - 13	SI	19	1.26	113	143	202	255	76	96
Jan. 16 - 18	ST	13	1.85	305	563	38	70	212	391
Jan. 22 - 25	CAR	18	1.33	150	200	117	156	111	148
Jan. 29 - 31	CAR	12	2.00	60	120	87	174	83	166
Feb. 3 - 4	ST	22	1.09	144	157	194	212	96	105
Feb. 5 - 6	ST	20	1.20	252	302	0	0	6	7
Feb. 8 - 10	ST	18	1.33	354	472	36	48	242	323
Feb. 13 - 14	MO	13	1.85	68	126	84	155	61	113
Feb. 21	MO	11	2.18	90	196	84	183	162	353
Mar. 2 - 4	ST	22	1.09	299	326	14	15	211	230
Mar. 11 - 13	ST	22	1.09	268	292	70	76	44	48
Mar. 19 - 21	CAR	24	1.00	393	393	602	602	106	106
Mar. 22 - 24	ST	21	1.14	236	270	191	218	76	87
Mar. 28 - 31	ST	18	1.33	403	537	178	237	269	359
Apr. 4 - 6	ST	21	1.14	11	13	56	64	360	411
Apr. 11 - 12	ST	20	1.20	278	334	34	41	197	236
Apr. 24 - 25	rain	24	1.00	0	0	204	204	6	6
TOTALS (mm water)				528.00	646.63	345.70	404.16	326.70	423.66

Legend:

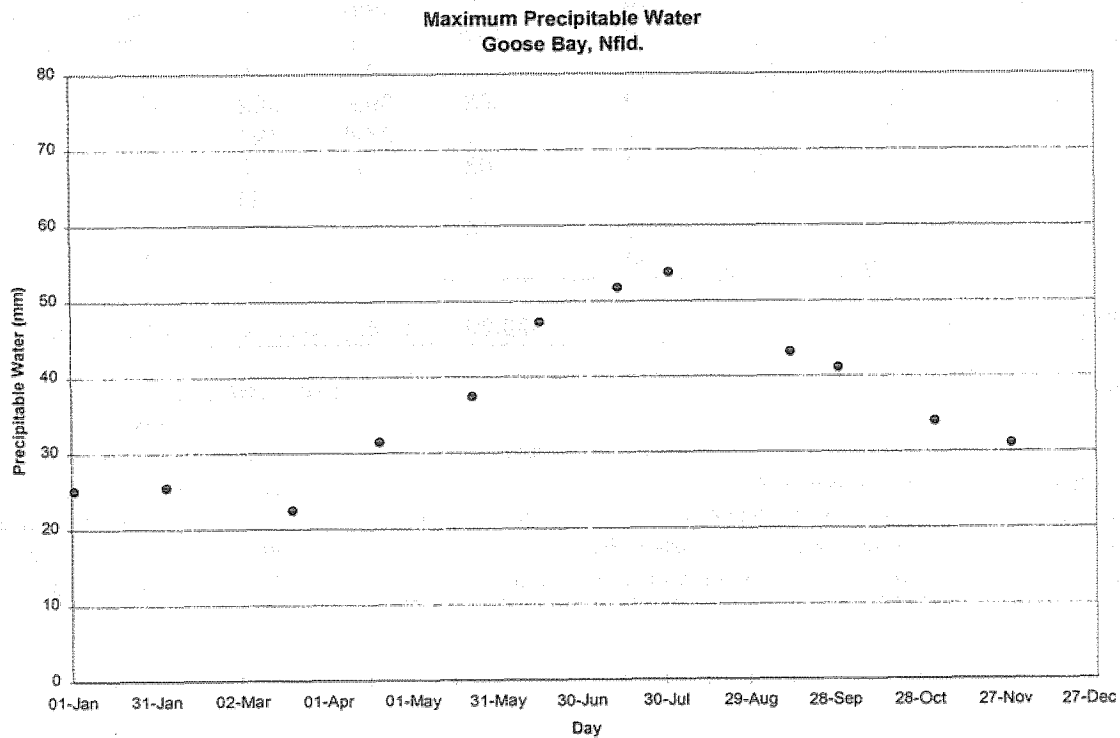
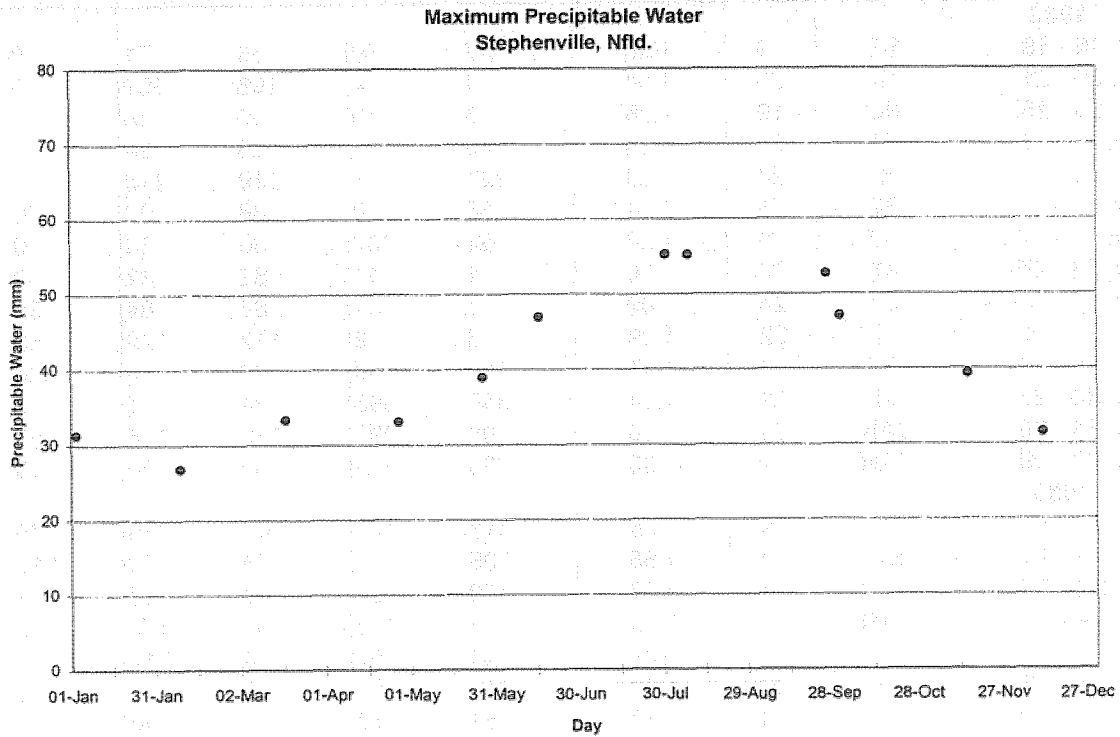
Storm P.W. - precipitable water from u/a sounding, surface to 200 mb
U/A station - radiosonde station
Max. P.W. - snow only event: maximum precipitable water - 24 mm
Mea. - measured snowfall from daily snow.
Max. - maximized snowfall. Measured snow X ratio.

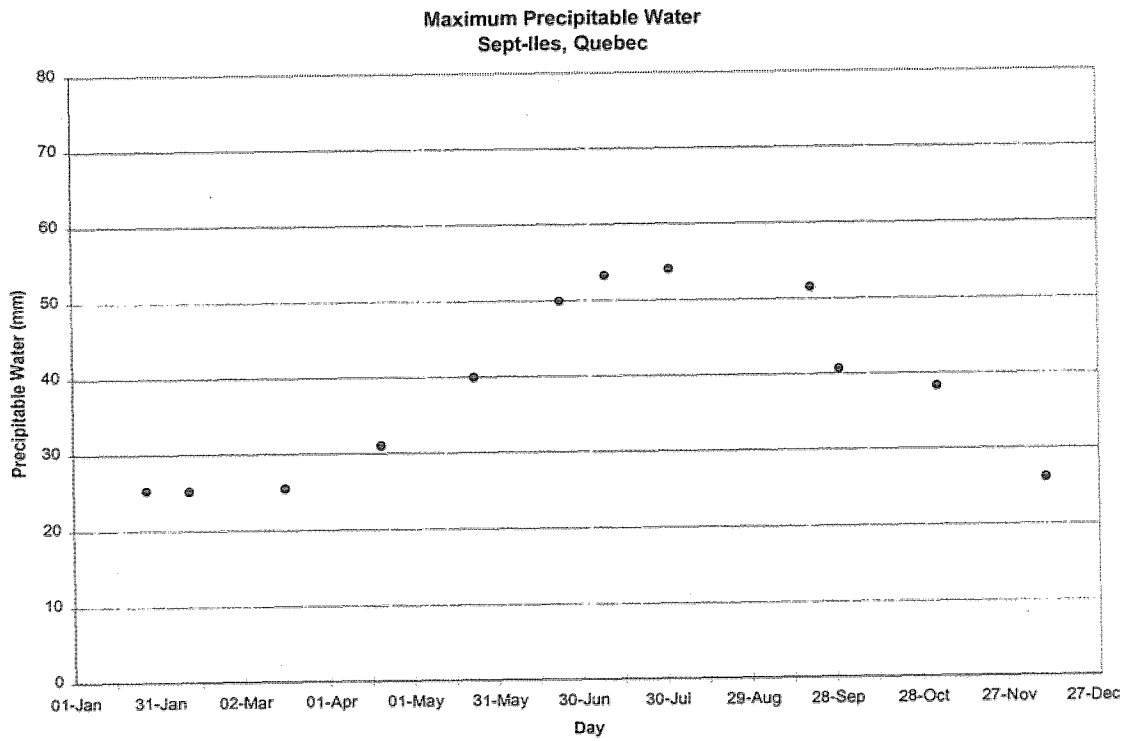
U/A Stations:

GB Goose Bay
CAR Caribou, Maine
MO Moosonee, Ont.
NI Nitchequon, Que.
SI Sept-Isle, Que.
ST Stephenville, Nfld.

Appendix C

The following three plots are based on the period of record for each station (Sept-iles 37 yrs, Goose Bay 37 yrs and Stephenville 30 yrs).





Appendix B
SSARR Input and Output Files:
Calibration Year 1981

81batch.bat

Batch file that reads information from various data files and runs the executable SSARR program. Input and output file names are different for each simulation.

```
COPY 81JTGM.DAT+CHARGM.DAT+81ICGM.DAT+MODGM.DAT FIRST.DAT
COPY 81CFAL.TMP+81GBAY.TMP+81CFAL.PRE+81GBAY.PRE ALLMET.DAT
COPY FIRST.DAT+ALLMET.DAT+RUNGM.DAT allcards.DAT
SSARR 81WAT.OUT 81PLOT.OUT <allcards.DAT> 81out.OUT
```

81jtgmdat

Job and Time file to define units, title of simulation, start time, run duration and timestep. Only the start time differs between different simulations.

```
J MPLUSR METRIC BATCH JOB=ACRES PMF STUDY, LOWER CHURCHILL
T 0 010481
183 6
RETURN
```

chargm.dat

Characteristics file containing the characteristics of the watershed, e.g., the definitions of the snowbands, lists and weightings of meteorologic stations, relationships describing melt, separation of flow into runoff zones etc. This file is the same for all simulations.

```
BASIN CHARACTERISTIC
ZCA GULLMUSK 3 3 10 48 34 2
ZCP GULLMUSK 30 0 150 3 300 6 370 16 460 64 610 98 760 100
ZC1 GULLMUSK COMUPUTED LOWER CHURCHILL DRAINAGE
ZC2 GULLMUSK 21500 6 5 6 4 18 2 200 2 1200 36 2.5 .2 20 .1
increase phases and Ts to max BCH values but then decreased surface
to 8 because of error in SSARR and had to recalibrate
ZC2 GULLMUSK 21500 6 4 20 5 36 2 400 2 3000 36 2.5 .2 20 .1
default melt rain during rain
ZC3 GULLMUSK EVSWP TVSMRCR 0.55 0.84 0.34 0.02 0.9 5000 6.0
lower melt rate during rain
ZC3 GULLMUSK EVSWP TVSMRCR 0.55 0.84 0.29 0.02 0.9 5000 6.0
increased timpr(changes rate of change of melt rate with temperature)
ZC3 GULLMUSK EVSWP TVSMRCR 0.9 0.84 0.34 0.02 0.9 5000 6.0
ZC4 GULLMUSK SMIVSROP BIIVSBFP SVSS RIVSEDE TVSET SMIVSDKE MVSDKE
ZC5 GULLMUSK 0.51 0 1.7 0.043 0.085 0.04 EVSDKE 5 60 1
ZC6 GULLMUSK MVSPCT
```

TABLES OF BASIN CHARACTERISTICS

ZCT EVSWP 2 30 98 300 99 400 100 600 100 760 99
 default rates
 ZCT TVSMRCR 3 0 0.115 0.115 28 0.12 0.115 56 0.14 0.115
 ZCT TVSMRCR 83 0.18 0.115
 ZCT TVSMRCR 111 0.23 0.115 139 0.23 0.115 999 0.23 0.115
 default melt rates, new cold rates
 ZCT TVSMRCR 3 0 0.115 0.04 28 0.12 0.04 56 0.14 0.04
 ZCT TVSMRCR 83 0.18 0.04
 ZCT TVSMRCR 111 0.23 0.04 139 0.23 0.04 999 0.23 0.04
 higher melt rates for the whole curve
 ZCT TVSMRCR 3 0 0.23 0.23 28 0.24 0.23 56 0.28 0.23
 ZCT TVSMRCR 83 0.36 0.23
 ZCT TVSMRCR 111 0.46 0.23 139 0.46 0.23 999 0.46 0.23
 flatten curve so melt rates not so high at high temps
 ZCT TVSMRCR 3 0 0.23 0.23 28 0.24 0.23 56 0.28 0.23
 ZCT TVSMRCR 83 0.28 0.23
 ZCT TVSMRCR 111 0.28 0.23 139 0.28 0.23 999 0.28 0.23
 high melt rates, low cold rates to prevent "stalling" redone >sept 25 too
 ZCT TVSMRCR 3 0 0.24 0.04 28 0.30 0.04 56 0.32 0.04
 ZCT TVSMRCR 83 0.35 0.04
 ZCT TVSMRCR 111 0.37 0.04 139 0.37 0.04 999 0.37 0.04
 typical cold rates, new melt rates
 ZCT TVSMRCR 3 0 0.24 0.115 28 0.30 0.115 56 0.32 0.115
 ZCT TVSMRCR 83 0.35 0.115
 ZCT TVSMRCR 111 0.37 0.115 139 0.37 0.115 999 0.37 0.115

 ZCT SMIVSROP 2 0 8 2.5 17 5.1 39 7.6 67 10.2 91 12 100 999 100
 ZCT SMIVSROP 2 0 15 2.5 28 5.1 70 7.6 90 10.2 95 12 100 999 100
 ZCT SMIVSROP 2 0 0 2.5 6 5.1 17 7.6 32 10.2 58 12 83 15 100 999 100
 ZCT BIIVSBFP 2 0 70 0.5 38 1 26 1.5 20 2 15 2.5 10
 ZCT BIIVSBFP 2 0 80 0.5 48 1 36 1.5 30 2 25 2.5 20
 ZCT BIIVSBFP 2 0 65 0.5 33 1 21 1.5 15 2 10 2.5 05
 increase flow to ss from ZCT SVSS 2 0 0 0.04 0.02 999 998.98
 ZCT SVSS 2 0 0 0.15 0.075 0.24 0.12 0.35 0.23 10 9.88
 ZCT SVSS 2 0 0 0.16 0.08 10 9.92
 ZCT SVSS 2 0 0 0.60 0.30 10 9.70
 ZCT RIVSEDE 2 0 100 0.5 70 1.0 50 2 10 5 10
 ZCT TVSET 2 -50 0.01 -20 0.01 -2 0.02 3 0.05 8 0.12 18 0.3 28 0.5
 ZCT TVSET 38 0.74 999 0.74
 ZCT SMIVSDKE 2 0 0 1 50 2 90 3 100 999 100
 ZCT MVSDKE 2 1 70 2 76 3 102 4 113 5 137 6 141 7 141
 ZCT MVSDKE 8 128 9 108 10 91 11 74 12 67 13 70
 ZCT EVSDKE 2 0 100 9999 100
 ZCT MVSPCT 2 1 100 2 100 3 100 4 100 5 100 6 100 7 100 8 100 9 100 10 100
 ZCT MVSPCT 11 100 12 100 13 100

 MET GAUGE INFO
 ZCH GULLMUSK 4 CFAL 140 4 GBAY 60
 ZCH GULLMUSK 3 CFAL 140 3 GBAY 60

ZH CFAL 440 115 1.7
ZH GBAY 49 115 1.7

81icgm.dat

Initial Conditions file contains initial values for the watershed parameters such as soil moisture index, cold content of the snowpack, snowpack water equivalent, etc. Conditions can be different for each simulation.

SNOW INITIAL CONDITIONS -

original WE: 10,22,30,37,47,47 second WE: 11,21,28,33,41,51

	station	date	rop	bfp	cc	sligw	atmir	aticc	we	smi	bii	tint
Z201	GULLMUSK,	,	,	50	0	2	20	0	25	6	,	,0
Z202	GULLMUSK,	,	,	50	0	2	20	0	26	6	,	,0
Z203	GULLMUSK,	,	,	50	0	2	20	0	28	6	,	,0
Z204	GULLMUSK,	,	,	50	0	2	20	0	38	6	,	,0
Z205	GULLMUSK,	,	,	50	0	2	20	0	38	6	,	,0
Z206	GULLMUSK,	,	,	50	0	2	20	0	38	6	,	,0

Z2B GULLMUSK, 13 13

Z2LZ GULLMUSK, 0 0

Z2S GULLMUSK, 6 6 6 6 6 6 6 6 6 6

Z2SS GULLMUSK, 8 8 8 8 8

modgm.dat

Model file indicates the order that the subbasins are in the watershed. File is the same for all simulations in this project.

N LOCHURCH
P GULLMUSK

First.dat

File that the batch file creates which is just a summation of the job and time file, the characteristics file, the initial conditions file and the model file.

81CFAL.TMP

A "4D" file containing meteorologic data. 4D files are fixed format, temperatures are in tenths of degrees C. This file is 1981 temperature data at Churchill Falls. For convenience data for the full year is contained in the file, SSARR will extract data for the run duration.

4D	60	CFAL8	600101814	-250	-190	-170	-220	-240	-150	-120	-190
4D	60	CFAL8	600301814	-140	-70	-40	-100	-220	-100	-50	-150
4D	60	CFAL8	600501814	-220	-140	-110	-170	-280	-200	-170	-230
4D	60	CFAL8	600701814	-300	-150	-90	-210	-200	-60	0	-120
4D	60	CFAL8	600901814	-290	-230	-210	-250	-320	-220	-180	-260
4D	60	CFAL8	601101814	-190	-80	-40	-130	-260	-160	-120	-200
4D	60	CFAL8	601301814	-310	-230	-200	-260	-200	-170	-160	-180
4D	60	CFAL8	601501814	-270	-220	-200	-240	-310	-240	-210	-270
4D	60	CFAL8	601701814	-340	-250	-210	-290	-370	-250	-210	-300
4D	60	CFAL8	601901814	-290	-200	-170	-240	-210	-140	-110	-170
4D	60	CFAL8	602101814	-290	-240	-210	-260	-250	-190	-170	-220
4D	60	CFAL8	602301814	-250	-160	-130	-200	-230	-150	-120	-180
4D	60	CFAL8	602501814	-270	-200	-170	-230	-300	-220	-190	-250
4D	60	CFAL8	602701814	-190	-150	-140	-170	-230	-170	-150	-200
4D	60	CFAL8	602901814	-240	-180	-160	-210	-300	-230	-200	-260
4D	60	CFAL8	603101814	-210	-170	-150	-180	-200	-120	-80	-150
4D	60	CFAL8	600202814	-80	-10	20	-40	-260	-60	20	-140
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4D	60	CFAL8	600602814	-270	-190	-160	-220	-260	-170	-140	-210
4D	60	CFAL8	600802814	-230	-130	-90	-170	-160	-110	-90	-130
4D	60	CFAL8	601002814	-240	-170	-150	-200	-200	-40	20	-100
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4D	60	CFAL8	601402814	-300	-210	-170	-250	-340	-220	-170	-270
4D	60	CFAL8	601602814	-160	-60	-30	-100	-20	10	20	0
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4D	60	CFAL8	602002814	0	20	30	10	0	20	30	10
4D	60	CFAL8	602202814	-10	30	40	10	-10	10	20	0
4D	60	CFAL8	602402814	-10	40	60	20	-60	20	50	-20
4D	60	CFAL8	602602814	-80	10	40	-30	-170	-60	-20	-100
4D	60	CFAL8	602802814	-190	-100	-60	-140	-130	-70	-50	-90
4D	60	CFAL8	600203814	-70	-20	-10	-40	-50	0	20	-20
4D	60	CFAL8	600403814	-10	10	20	10	-30	0	0	-10
4D	60	CFAL8	600603814	-40	-20	-10	-30	-60	-30	-20	-40
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4D	60	CFAL8	601403814	-120	-50	-20	-80	-130	-90	-70	-110
4D	60	CFAL8	601603814	-150	-40	0	-90	-230	-80	-30	-140
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4D	60	CFAL8	602003814	-80	-20	0	-50	-100	-40	-20	-70
4D	60	CFAL8	602203814	-140	-70	-50	-100	-120	-70	-50	-90
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4D	60	CFAL8	600104814	-190	-40	10	-110	-70	10	50	-20
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4D	60	CFAL8	600904814	-40	20	50	0	-90	-50	-40	-60
4D	60	CFAL8	601104814	-140	-60	-30	-90	-150	-80	-50	-110
4D	60	CFAL8	601304814	-190	-60	-10	-110	-50	10	30	-10
4D	60	CFAL8	601504814	-220	-80	-30	-140	-240	-170	-140	-200
4D	60	CFAL8	601704814	-240	-90	-40	-150	-220	-100	-60	-150
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4D	60	CFAL8	602104814	-120	-40	0	-70	0	20	30	10
4D	60	CFAL8	602304814	-20	30	50	10	-40	20	40	0
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4D	60	CFAL8	602704814	-70	-30	-10	-40	-50	10	40	-20
4D	60	CFAL8	602904814	-70	40	80	-10	-10	10	20	0
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4D	60	CFAL8	602305814	-40	100	150	40	10	60	80	40
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4D	60	CFAL8	601806814	50	130	160	100	90	190	230	150
4D	60	CFAL8	602006814	30	90	120	70	20	130	170	80
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4D	60	CFAL8	602606814	40	100	120	70	50	70	70	60
4D	60	CFAL8	602806814	60	130	160	100	70	170	210	130
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4D	60	CFAL8	600407814	80	140	150	110	50	170	210	120
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4D	60	CFAL8	600807814	80	110	130	100	70	100	120	90
4D	60	CFAL8	601007814	50	90	100	70	60	120	150	100
4D	60	CFAL8	601207814	100	160	190	140	50	140	170	100
4D	60	CFAL8	601407814	40	110	130	80	60	80	90	70

4D	60	CFAL8	601607814	40	100	120	70	30	150	200	100
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4D	60	CFAL8	602007814	150	250	280	210	130	160	170	150
4D	60	CFAL8	602207814	60	110	120	90	60	120	140	100
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4D	60	CFAL8	602807814	80	100	110	90	70	120	140	100
4D	60	CFAL8	603007814	90	160	190	130	120	200	240	170
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4D	60	CFAL8	601609814	60	100	120	80	30	80	100	60
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4D	60	CFAL8	602009814	40	70	80	60	20	50	60	40
4D	60	CFAL8	602209814	20	40	50	30	0	50	60	30
4D	60	CFAL8	602409814	0	60	80	30	-30	50	80	20
4D	60	CFAL8	602609814	20	60	70	40	-20	70	100	30
4D	60	CFAL8	602809814	30	40	40	30	30	70	80	60
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4D 60 CFAL8 602210814 -80 -40 -30 -60 -50 -20 -20 -30
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4D 60 CFAL8 602912814 -290 -180 -130 -220 -200 -130 -110 -160
4D 60 CFAL8 603112814 -230 -200 -190 -210 -230 -120 -80 -170

```

81GBAY.TMP

A "4D" file containing meteorologic data. 4D files are fixed format, temperatures are in tenths of degrees C. This file is 1981 temperature data at Goose Bay.

```

4D 60 GBAY8 600101814 -190 -110 -80 -140 -210 -150 -130 -180
4D 60 GBAY8 600301814 -150 -50 -20 -90 -200 -140 -110 -160
4D 60 GBAY8 600501814 -210 -140 -110 -170 -210 -150 -130 -170
4D 60 GBAY8 600701814 -250 -140 -100 -190 -110 0 40 -50

```

4D	60	GBAY8	600901814	-230	-150	-120	-180	-270	-180	-150	-220
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4D	60	GBAY8	601301814	-240	-200	-190	-220	-190	-130	-110	-160
4D	60	GBAY8	601501814	-200	-130	-100	-160	-250	-200	-180	-220
4D	60	GBAY8	601701814	-300	-220	-180	-250	-340	-240	-200	-280
4D	60	GBAY8	601901814	-200	-150	-130	-170	-180	-90	-50	-120
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4D	60	GBAY8	602301814	-230	-170	-150	-200	-180	-120	-90	-140
4D	60	GBAY8	602501814	-200	-130	-110	-160	-230	-170	-160	-200
4D	60	GBAY8	602701814	-210	-150	-130	-180	-210	-130	-100	-160
4D	60	GBAY8	602901814	-220	-140	-110	-180	-220	-160	-130	-180
4D	60	GBAY8	603101814	-200	-150	-130	-170	-160	-100	-70	-120
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4D	60	GBAY8	600402814	-240	-150	-120	-190	-250	-190	-170	-210
4D	60	GBAY8	600602814	-200	-160	-140	-170	-220	-130	-90	-170
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4D	60	GBAY8	601002814	-170	-120	-100	-140	-190	-20	40	-90
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4D	60	GBAY8	601402814	-260	-160	-120	-200	-300	-210	-180	-250
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4D	60	GBAY8	602202814	0	20	30	10	-10	10	20	0
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4D	60	GBAY8	602602814	-50	30	50	-10	-90	-10	20	-50
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4D	60	GBAY8	600603814	-10	10	10	0	-20	0	10	-10
4D	60	GBAY8	600803814	-40	-20	-10	-30	-60	-10	10	-30
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4D	60	GBAY8	601803814	-40	0	20	-20	0	10	10	10
4D	60	GBAY8	602003814	-30	0	20	-10	-40	0	10	-20
4D	60	GBAY8	602203814	-80	-30	-10	-50	-90	-50	-30	-70
4D	60	GBAY8	602403814	-100	-50	-30	-70	-120	-30	10	-70
4D	60	GBAY8	602603814	-70	0	30	-30	-120	-80	-60	-90
4D	60	GBAY8	602803814	-130	-50	-20	-80	-120	-40	-10	-80
4D	60	GBAY8	603003814	-160	-50	-10	-100	-200	-90	-50	-140
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4D	60	GBAY8	600304814	-120	-20	10	-60	-140	-60	-30	-90
4D	60	GBAY8	600504814	-120	-90	-70	-100	-100	-50	-30	-70
4D	60	GBAY8	600704814	-90	-20	0	-50	-120	-20	20	-60
4D	60	GBAY8	600904814	-50	-10	0	-30	-40	-30	-30	-30
4D	60	GBAY8	601104814	-60	-20	-10	-40	-80	-40	-20	-60
4D	60	GBAY8	601304814	-120	-20	10	-60	-100	30	80	-20
4D	60	GBAY8	601504814	-170	-40	20	-90	-190	-130	-110	-150

4D	60	GBAY8	601704814	-190	-60	-10	-120	-110	-50	-30	-70
4D	60	GBAY8	601904814	-40	0	10	-20	0	30	40	20
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4D	60	GBAY8	602304814	0	30	40	20	-10	20	30	10
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4D	60	GBAY8	602905814	80	200	240	150	110	170	180	140
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4D	60	GBAY8	600206814	30	120	150	80	10	80	110	50
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4D	60	GBAY8	603006814	140	190	210	170	80	160	200	130
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4D	60	GBAY8	602007814	180	270	310	240	160	230	250	200
4D	60	GBAY8	602207814	80	150	170	120	60	140	180	110

4D	60	GBAY8	602407814	90	210	260	160	110	200	240	170
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4D	60	GBAY8	600908814	90	200	240	150	120	210	250	170
4D	60	GBAY8	601108814	130	230	270	190	140	190	210	170
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4D	60	GBAY8	601908814	70	130	160	110	60	180	230	130
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4D	60	GBAY8	600409814	170	260	290	220	100	170	200	150
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4D	60	GBAY8	600809814	110	180	210	150	130	170	180	150
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4D	60	GBAY8	602209814	10	90	110	60	20	70	100	50
4D	60	GBAY8	602409814	-10	70	100	40	-30	50	80	20
4D	60	GBAY8	602609814	50	70	80	60	0	70	100	40
4D	60	GBAY8	602809814	-10	40	60	20	70	90	100	80
4D	60	GBAY8	603009814	60	90	100	80	60	90	100	80
4D	60	GBAY8	600210814	40	80	90	60	70	100	110	80
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4D	60	GBAY8	600610814	40	80	90	60	40	60	60	50
4D	60	GBAY8	600810814	40	60	70	50	10	40	50	30
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4D	60	GBAY8	601410814	30	90	120	70	90	150	170	130
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4D	60	GBAY8	602010814	-10	70	90	40	-10	20	40	10
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4D	60	GBAY8	602410814	-10	10	20	0	-30	0	10	-10
4D	60	GBAY8	602610814	-10	30	50	20	-10	30	50	20
4D	60	GBAY8	602810814	-40	20	40	-10	-50	-10	10	-20

```

4D 60 GBAY8 603010814 -70 -30 -20 -50 -90 -30 -10 -50
4D 60 GBAY8 600111814 -70 0 30 -30 10 40 60 30
4D 60 GBAY8 600311814 0 20 20 10 -60 -10 10 -30
4D 60 GBAY8 600511814 -80 -50 -30 -60 -70 -40 -30 -50
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4D 60 GBAY8 601111814 -80 -30 -10 -50 -100 -50 -30 -70
4D 60 GBAY8 601311814 -120 -70 -50 -90 -100 0 30 -40
4D 60 GBAY8 601511814 -30 20 40 0 -20 10 20 -10
4D 60 GBAY8 601711814 -10 0 10 -10 -30 -20 -10 -30
4D 60 GBAY8 601911814 -40 -20 -10 -20 -40 -20 -20 -30
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4D 60 GBAY8 602311814 -20 10 30 0 -40 -20 0 -30
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4D 60 GBAY8 600712814 0 10 10 10 10 20 20 10
4D 60 GBAY8 600912814 10 20 30 20 -10 10 20 0
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4D 60 GBAY8 601512814 -160 -90 -60 -120 -190 -110 -80 -140
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4D 60 GBAY8 602712814 -250 -200 -180 -220 -270 -210 -190 -230
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4D 60 GBAY8 603112814 -100 -70 -60 -80 -100 -80 -70 -90

```

81CFAL.PRE

A "4D" file containing meteorologic data. 4D files are fixed format, rainfall is in hundredths of a centimeter. This file is 1981 precipitation data at Churchill Falls.

```

4D 60 CFAL8 600101813 0 0 0 0 2 2 2 2
4D 60 CFAL8 600301813 7 7 7 7 19 19 19 19
4D 60 CFAL8 600501813 7 7 7 7 0 0 0 0
4D 60 CFAL8 600701813 15 15 15 15 15 15 15 15
4D 60 CFAL8 600901813 0 0 0 0 1 1 1 1
4D 60 CFAL8 601101813 25 25 25 25 1 1 1 1
4D 60 CFAL8 601301813 0 0 0 0 10 10 10 10
4D 60 CFAL8 601501813 1 1 1 1 0 0 0 0

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4D	60	CFAL8	601901813	5	5	5	5	22	22	22	22
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4D	60	CFAL8	602301813	2	2	2	2	1	1	1	1
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4D	60	CFAL8	602701813	12	12	12	12	1	1	1	1
4D	60	CFAL8	602901813	1	1	1	1	1	1	1	1
4D	60	CFAL8	603101813	0	0	0	0	0	0	0	0
4D	60	CFAL8	600202813	20	20	20	20	0	0	0	0
4D	60	CFAL8	600402813	0	0	0	0	0	0	0	0
4D	60	CFAL8	600602813	0	0	0	0	0	0	0	0
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4D	60	CFAL8	601002813	0	0	0	0	25	25	25	25
4D	60	CFAL8	601202813	7	7	7	7	0	0	0	0
4D	60	CFAL8	601402813	0	0	0	0	1	1	1	1
4D	60	CFAL8	601602813	5	5	5	5	4	4	4	4
4D	60	CFAL8	601802813	3	3	3	3	2	2	2	2
4D	60	CFAL8	602002813	0	0	0	0	33	33	33	33
4D	60	CFAL8	602202813	18	18	18	18	0	0	0	0
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4D	60	CFAL8	600803813	1	1	1	1	0	0	0	0
4D	60	CFAL8	601003813	0	0	0	0	0	0	0	0
4D	60	CFAL8	601203813	0	0	0	0	0	0	0	0
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4D	60	CFAL8	602010813	5	5	5	5	9	9	9	9
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4D	60	CFAL8	602810813	1	1	1	1	8	8	8	8
4D	60	CFAL8	603010813	2	2	2	2	0	0	0	0
4D	60	CFAL8	600111813	4	4	4	4	6	6	6	6
4D	60	CFAL8	600311813	14	14	14	14	2	2	2	2
4D	60	CFAL8	600511813	5	5	5	5	13	13	13	13

4D	60	CFAL8	600711813	2	2	2	2	0	0	0	0
4D	60	CFAL8	600911813	6	6	6	6	0	0	0	0
4D	60	CFAL8	601111813	4	4	4	4	1	1	1	1
4D	60	CFAL8	601311813	0	0	0	0	0	0	0	0
4D	60	CFAL8	601511813	0	0	0	0	0	0	0	0
4D	60	CFAL8	601711813	1	1	1	1	3	3	3	3
4D	60	CFAL8	601911813	0	0	0	0	1	1	1	1
4D	60	CFAL8	602111813	17	17	17	17	15	15	15	15
4D	60	CFAL8	602311813	3	3	3	3	7	7	7	7
4D	60	CFAL8	602511813	2	2	2	2	0	0	0	0
4D	60	CFAL8	602711813	0	0	0	0	0	0	0	0
4D	60	CFAL8	602911813	1	1	1	1	0	0	0	0
4D	60	CFAL8	600112813	1	1	1	1	23	23	23	23
4D	60	CFAL8	600312813	4	4	4	4	22	22	22	22
4D	60	CFAL8	600512813	0	0	0	0	3	3	3	3
4D	60	CFAL8	600712813	5	5	5	5	14	14	14	14
4D	60	CFAL8	600912813	11	11	11	11	0	0	0	0
4D	60	CFAL8	601112813	1	1	1	1	1	1	1	1
4D	60	CFAL8	601312813	1	1	1	1	2	2	2	2
4D	60	CFAL8	601512813	0	0	0	0	1	1	1	1
4D	60	CFAL8	601712813	3	3	3	3	0	0	0	0
4D	60	CFAL8	601912813	1	1	1	1	1	1	1	1
4D	60	CFAL8	602112813	4	4	4	4	10	10	10	10
4D	60	CFAL8	602312813	0	0	0	0	2	2	2	2
4D	60	CFAL8	602512813	3	3	3	3	0	0	0	0
4D	60	CFAL8	602712813	0	0	0	0	0	0	0	0
4D	60	CFAL8	602912813	6	6	6	6	2	2	2	2
4D	60	CFAL8	603112813	0	0	0	0	1	1	1	1

81GBAY.PRE

A "4D" file containing meteorologic data. 4D files are fixed format, rainfall is in hundreths of a centimeter. This file is 1981 precipitation data at Goose Bay.

4D	60	GBAY8	600101813	10	10	10	10	1	1	1	1
4D	60	GBAY8	600301813	34	34	34	34	12	12	12	12
4D	60	GBAY8	600501813	7	7	7	7	0	0	0	0
4D	60	GBAY8	600701813	6	6	6	6	1	1	1	1
4D	60	GBAY8	600901813	0	0	0	0	17	17	17	17
4D	60	GBAY8	601101813	37	37	37	37	0	0	0	0
4D	60	GBAY8	601301813	10	10	10	10	33	33	33	33
4D	60	GBAY8	601501813	6	6	6	6	0	0	0	0
4D	60	GBAY8	601701813	0	0	0	0	2	2	2	2
4D	60	GBAY8	601901813	12	12	12	12	8	8	8	8
4D	60	GBAY8	602101813	1	1	1	1	0	0	0	0
4D	60	GBAY8	602301813	1	1	1	1	6	6	6	6

4D	60	GBAY8	602501813	0	0	0	0	0	0	0	0
4D	60	GBAY8	602701813	29	29	29	29	0	0	0	0
4D	60	GBAY8	602901813	5	5	5	5	0	0	0	0
4D	60	GBAY8	603101813	0	0	0	0	0	0	0	0
4D	60	GBAY8	600202813	10	10	10	10	3	3	3	3
4D	60	GBAY8	600402813	0	0	0	0	0	0	0	0
4D	60	GBAY8	600602813	0	0	0	0	0	0	0	0
4D	60	GBAY8	600802813	2	2	2	2	38	38	38	38
4D	60	GBAY8	601002813	0	0	0	0	41	41	41	41
4D	60	GBAY8	601202813	8	8	8	8	0	0	0	0
4D	60	GBAY8	601402813	0	0	0	0	0	0	0	0
4D	60	GBAY8	601602813	3	3	3	3	0	0	0	0
4D	60	GBAY8	601802813	4	4	4	4	0	0	0	0
4D	60	GBAY8	602002813	4	4	4	4	15	15	15	15
4D	60	GBAY8	602202813	18	18	18	18	8	8	8	8
4D	60	GBAY8	602402813	0	0	0	0	0	0	0	0
4D	60	GBAY8	602602813	0	0	0	0	16	16	16	16
4D	60	GBAY8	602802813	0	0	0	0	32	32	32	32
4D	60	GBAY8	600203813	35	35	35	35	31	31	31	31
4D	60	GBAY8	600403813	18	18	18	18	0	0	0	0
4D	60	GBAY8	600603813	0	0	0	0	1	1	1	1
4D	60	GBAY8	600803813	1	1	1	1	0	0	0	0
4D	60	GBAY8	601003813	0	0	0	0	0	0	0	0
4D	60	GBAY8	601203813	1	1	1	1	1	1	1	1
4D	60	GBAY8	601403813	0	0	0	0	7	7	7	7
4D	60	GBAY8	601603813	13	13	13	13	0	0	0	0
4D	60	GBAY8	601803813	0	0	0	0	1	1	1	1
4D	60	GBAY8	602003813	0	0	0	0	1	1	1	1
4D	60	GBAY8	602203813	3	3	3	3	4	4	4	4
4D	60	GBAY8	602403813	3	3	3	3	0	0	0	0
4D	60	GBAY8	602603813	1	1	1	1	1	1	1	1
4D	60	GBAY8	602803813	0	0	0	0	5	5	5	5
4D	60	GBAY8	603003813	0	0	0	0	0	0	0	0
4D	60	GBAY8	600104813	0	0	0	0	0	0	0	0
4D	60	GBAY8	600304813	22	22	22	22	2	2	2	2
4D	60	GBAY8	600504813	19	19	19	19	15	15	15	15
4D	60	GBAY8	600704813	25	25	25	25	0	0	0	0
4D	60	GBAY8	600904813	8	8	8	8	78	78	78	78
4D	60	GBAY8	601104813	3	3	3	3	0	0	0	0
4D	60	GBAY8	601304813	0	0	0	0	1	1	1	1
4D	60	GBAY8	601504813	17	17	17	17	0	0	0	0
4D	60	GBAY8	601704813	0	0	0	0	4	4	4	4
4D	60	GBAY8	601904813	6	6	6	6	19	19	19	19
4D	60	GBAY8	602104813	22	22	22	22	3	3	3	3
4D	60	GBAY8	602304813	3	3	3	3	6	6	6	6
4D	60	GBAY8	602504813	4	4	4	4	0	0	0	0
4D	60	GBAY8	602704813	0	0	0	0	0	0	0	0
4D	60	GBAY8	602904813	0	0	0	0	40	40	40	40
4D	60	GBAY8	600105813	0	0	0	0	2	2	2	2

4D	60	GBAY8	600305813	7	7	7	7	1	1	1	1
4D	60	GBAY8	600505813	6	6	6	6	29	29	29	29
4D	60	GBAY8	600705813	68	68	68	68	0	0	0	0
4D	60	GBAY8	600905813	2	2	2	2	1	1	1	1
4D	60	GBAY8	601105813	0	0	0	0	0	0	0	0
4D	60	GBAY8	601305813	22	22	22	22	19	19	19	19
4D	60	GBAY8	601505813	2	2	2	2	0	0	0	0
4D	60	GBAY8	601705813	1	1	1	1	6	6	6	6
4D	60	GBAY8	601905813	2	2	2	2	8	8	8	8
4D	60	GBAY8	602105813	0	0	0	0	0	0	0	0
4D	60	GBAY8	602305813	0	0	0	0	0	0	0	0
4D	60	GBAY8	602505813	0	0	0	0	0	0	0	0
4D	60	GBAY8	602705813	0	0	0	0	0	0	0	0
4D	60	GBAY8	602905813	0	0	0	0	12	12	12	12
4D	60	GBAY8	603105813	4	4	4	4	0	0	0	0
4D	60	GBAY8	600206813	0	0	0	0	22	22	22	22
4D	60	GBAY8	600406813	12	12	12	12	6	6	6	6
4D	60	GBAY8	600606813	9	9	9	9	56	56	56	56
4D	60	GBAY8	600806813	73	73	73	73	1	1	1	1
4D	60	GBAY8	601006813	0	0	0	0	0	0	0	0
4D	60	GBAY8	601206813	0	0	0	0	0	0	0	0
4D	60	GBAY8	601406813	1	1	1	1	3	3	3	3
4D	60	GBAY8	601606813	1	1	1	1	23	23	23	23
4D	60	GBAY8	601806813	0	0	0	0	0	0	0	0
4D	60	GBAY8	602006813	0	0	0	0	0	0	0	0
4D	60	GBAY8	602206813	2	2	2	2	35	35	35	35
4D	60	GBAY8	602406813	13	13	13	13	2	2	2	2
4D	60	GBAY8	602606813	52	52	52	52	20	20	20	20
4D	60	GBAY8	602806813	1	1	1	1	0	0	0	0
4D	60	GBAY8	603006813	6	6	6	6	21	21	21	21
4D	60	GBAY8	600207813	0	0	0	0	0	0	0	0
4D	60	GBAY8	600407813	0	0	0	0	0	0	0	0
4D	60	GBAY8	600607813	3	3	3	3	8	8	8	8
4D	60	GBAY8	600807813	1	1	1	1	7	7	7	7
4D	60	GBAY8	601007813	9	9	9	9	3	3	3	3
4D	60	GBAY8	601207813	2	2	2	2	1	1	1	1
4D	60	GBAY8	601407813	1	1	1	1	167	167	167	167
4D	60	GBAY8	601607813	8	8	8	8	0	0	0	0
4D	60	GBAY8	601807813	0	0	0	0	0	0	0	0
4D	60	GBAY8	602007813	0	0	0	0	25	25	25	25
4D	60	GBAY8	602207813	53	53	53	53	0	0	0	0
4D	60	GBAY8	602407813	4	4	4	4	0	0	0	0
4D	60	GBAY8	602607813	0	0	0	0	47	47	47	47
4D	60	GBAY8	602807813	30	30	30	30	9	9	9	9
4D	60	GBAY8	603007813	1	1	1	1	4	4	4	4
4D	60	GBAY8	600108813	31	31	31	31	21	21	21	21
4D	60	GBAY8	600308813	37	37	37	37	3	3	3	3
4D	60	GBAY8	600508813	0	0	0	0	0	0	0	0
4D	60	GBAY8	600708813	0	0	0	0	0	0	0	0

4D	60	GBAY8	600908813	0	0	0	0	0	0	0	0
4D	60	GBAY8	601108813	1	1	1	1	12	12	12	12
4D	60	GBAY8	601308813	6	6	6	6	20	20	20	20
4D	60	GBAY8	601508813	0	0	0	0	57	57	57	57
4D	60	GBAY8	601708813	8	8	8	8	0	0	0	0
4D	60	GBAY8	601908813	0	0	0	0	0	0	0	0
4D	60	GBAY8	602108813	2	2	2	2	0	0	0	0
4D	60	GBAY8	602308813	27	27	27	27	5	5	5	5
4D	60	GBAY8	602508813	1	1	1	1	0	0	0	0
4D	60	GBAY8	602708813	2	2	2	2	2	2	2	2
4D	60	GBAY8	602908813	6	6	6	6	0	0	0	0
4D	60	GBAY8	603108813	0	0	0	0	0	0	0	0
4D	60	GBAY8	600209813	0	0	0	0	0	0	0	0
4D	60	GBAY8	600409813	0	0	0	0	1	1	1	1
4D	60	GBAY8	600609813	36	36	36	36	11	11	11	11
4D	60	GBAY8	600809813	0	0	0	0	0	0	0	0
4D	60	GBAY8	601009813	3	3	3	3	0	0	0	0
4D	60	GBAY8	601209813	0	0	0	0	5	5	5	5
4D	60	GBAY8	601409813	8	8	8	8	21	21	21	21
4D	60	GBAY8	601609813	24	24	24	24	4	4	4	4
4D	60	GBAY8	601809813	1	1	1	1	13	13	13	13
4D	60	GBAY8	602009813	77	77	77	77	17	17	17	17
4D	60	GBAY8	602209813	2	2	2	2	0	0	0	0
4D	60	GBAY8	602409813	0	0	0	0	0	0	0	0
4D	60	GBAY8	602609813	2	2	2	2	0	0	0	0
4D	60	GBAY8	602809813	36	36	36	36	58	58	58	58
4D	60	GBAY8	603009813	13	13	13	13	0	0	0	0
4D	60	GBAY8	600210813	5	5	5	5	22	22	22	22
4D	60	GBAY8	600410813	6	6	6	6	0	0	0	0
4D	60	GBAY8	600610813	11	11	11	11	10	10	10	10
4D	60	GBAY8	600810813	0	0	0	0	0	0	0	0
4D	60	GBAY8	601010813	6	6	6	6	0	0	0	0
4D	60	GBAY8	601210813	0	0	0	0	0	0	0	0
4D	60	GBAY8	601410813	3	3	3	3	4	4	4	4
4D	60	GBAY8	601610813	19	19	19	19	0	0	0	0
4D	60	GBAY8	601810813	0	0	0	0	11	11	11	11
4D	60	GBAY8	602010813	8	8	8	8	13	13	13	13
4D	60	GBAY8	602210813	0	0	0	0	52	52	52	52
4D	60	GBAY8	602410813	93	93	93	93	0	0	0	0
4D	60	GBAY8	602610813	3	3	3	3	0	0	0	0
4D	60	GBAY8	602810813	0	0	0	0	0	0	0	0
4D	60	GBAY8	603010813	0	0	0	0	0	0	0	0
4D	60	GBAY8	600111813	4	4	4	4	3	3	3	3
4D	60	GBAY8	600311813	0	0	0	0	0	0	0	0
4D	60	GBAY8	600511813	0	0	0	0	24	24	24	24
4D	60	GBAY8	600711813	92	92	92	92	8	8	8	8
4D	60	GBAY8	600911813	0	0	0	0	0	0	0	0
4D	60	GBAY8	601111813	8	8	8	8	3	3	3	3
4D	60	GBAY8	601311813	0	0	0	0	0	0	0	0

4D	60	GBAY8	601511813	0	0	0	0	0	0	0	0
4D	60	GBAY8	601711813	1	1	1	1	0	0	0	0
4D	60	GBAY8	601911813	0	0	0	0	3	3	3	3
4D	60	GBAY8	602111813	11	11	11	11	5	5	5	5
4D	60	GBAY8	602311813	0	0	0	0	3	3	3	3
4D	60	GBAY8	602511813	1	1	1	1	3	3	3	3
4D	60	GBAY8	602711813	3	3	3	3	13	13	13	13
4D	60	GBAY8	602911813	6	6	6	6	3	3	3	3
4D	60	GBAY8	600112813	0	0	0	0	4	4	4	4
4D	60	GBAY8	600312813	5	5	5	5	19	19	19	19
4D	60	GBAY8	600512813	19	19	19	19	5	5	5	5
4D	60	GBAY8	600712813	66	66	66	66	24	24	24	24
4D	60	GBAY8	600912813	25	25	25	25	0	0	0	0
4D	60	GBAY8	601112813	0	0	0	0	8	8	8	8
4D	60	GBAY8	601312813	5	5	5	5	4	4	4	4
4D	60	GBAY8	601512813	0	0	0	0	6	6	6	6
4D	60	GBAY8	601712813	27	27	27	27	2	2	2	2
4D	60	GBAY8	601912813	4	4	4	4	2	2	2	2
4D	60	GBAY8	602112813	0	0	0	0	2	2	2	2
4D	60	GBAY8	602312813	0	0	0	0	0	0	0	0
4D	60	GBAY8	602512813	1	1	1	1	0	0	0	0
4D	60	GBAY8	602712813	0	0	0	0	0	0	0	0
4D	60	GBAY8	602912813	0	0	0	0	16	16	16	16
4D	60	GBAY8	603112813	7	7	7	7	0	0	0	0

ALLMET.DAT

File that the batch file creates which is just a summation of all of the meteorologic files.

RUNGM.DAT

Run card that gives instruction to SSARR as to what routines to calls, and indicates what output is required. File is the essentially the same for all simulations.

IA

BASIN LOCHURCH

RIVER LOCHURCH

ZR L 4

ZS GULLMUSK,,,1,2,3,4,5,6,7

PR GULLMUSK1

allcards.DAT

File that the batch file creates which is just a summation of all of the data files.

81WAT.OUT

Output File containing a monthly water balance for the simulation.

SSARR WATERSHED MODEL - MONTHLY WATER BALANCES - SUMMARY MODULE

Ver 2.3

BASIN ZONES MM-YY AREA RUN: 1434 HOURS 16 NOV 98
 GULLMUSK 6 3 80 21500. SQ KM COMUPUTED LOWER CHURCHILL DRAINAGE

UNITS: BASIN CENTIMETERS

HYDROLOGIC INPUTS:

DATA TYPE	STATION ID	WEIGHT
4.	CFAL	140.0%
4.	GBAY	60.0%
3.	CFAL	140.0%
3.	GBAY	60.0%

WATERSHED PARAMETERS:

BFLIM: .200 TINTMX: .000 PBLZ: 20.% BIITS: 36.00 DGWLIM: .100 BIIMX: 2.50
 ELINT: 5000. BASE: .0 PXTMP: 1.7 TIPMR: .90 TIPM: .84

WATERSHED FUNCTIONS:

SMI/ROP: SMIVSROP BII/BFP: BIIVSBFP ETMO: MVSDKE EKE: RIVSEDE EL/ETI: EVSDKE
 ETP: TVSET S/SS: SVSS DKE: SMIVSDKE ATIMR: TVSMRCR MRPCT: MVSPCT

-----MONTHLY WATER BALANCE AMOUNTS-----										----OUTPUTS FROM FLOW COMPONENTS----					OBSERVED
MO-YR	PCP	INTER	SWE		MI	ET	SMI		GRO	SFRO	SSRO	BFRO	LZRO	TOTAL	FLOW
			EOM	INCR			EOM	INCR							
APR-80	5.46	1.27	30.56	-6.93	11.11	1.06	8.74	2.74	7.30	1.29	.61	.43	.00	2.33	.00
MAY-80	9.88	2.31	3.79	-26.77	34.34	2.53	10.19	1.45	30.36	10.04	9.02	3.09	.04	22.19	.00
JUN-80	15.39	3.98	.44	-3.35	14.72	4.59	8.81	-1.39	11.52	4.51	5.65	4.45	.12	14.72	.00
JUL-80	10.34	6.61	.00	-.44	4.21	6.94	4.35	-4.46	1.74	1.33	1.87	3.35	.21	6.76	.00
AUG-80	10.62	3.94	.00	.00	6.68	6.22	2.83	-1.51	1.94	.44	.44	1.78	.27	2.93	.00
SEP-80	11.18	2.38	.89	.89	7.91	2.31	5.77	2.94	2.70	.50	.49	1.23	.30	2.52	.00
TOT	62.88	20.50		-36.60	78.98	23.65		-.23	55.56	18.10	18.08	14.33	.94	51.44	.00

1

81PLOT.OUT

Null file

81out.OUT

Output file containing an echo of the input data, detailed output by zone if requested in the Run file, and summary output for all zones combined.S
Some of the output has been deleted to limit the length of this appendix.

INTERACTIVE SSARR MONITOR. (METRIC UNITS) ENTER ? FOR INSTRUCTIONS

*

J MPLUSR METRIC BATCH JOB=ACRES PMF STUDY, LOWER CHURCHILL

MORE KEYWORDS?

T 0 010481

DAYS, HOURS/PERIOD OR HOUR, DDMMYY, HOURS/PERIOD

183 6

RUN START TIME IS HOUR 24.0, 31 MAR 81, TUESDAY, 6.0 HOURS/COMPUTE PERIOD

END TIME IS 24.0 30 SEP 81 WEDNESDAY

*

RETURN

BASIN CHARACTERISTIC

Basin Characteristics deleted from output file.

SNOW INITIAL CONDITIONS -

Snow Initial Conditions deleted from output file.

N LOCHURCH

P GULLMUSK

Echo of temperature and precipitation data deleted from output file.

First output is listing by snow band (here only band 4 included) showing calculation of runoff and distribution of runoff between four routing zones.

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BASIN LOCHURCH

MODEL LOCHURCH RUNNING BASINS ONLY FOR 732 PERIODS.

BASIN ZONE MM-YY AREA ELEV PP% TINTMX										COMPUTED LOWER CHURCHILL DRAINAGE																
MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F
GULLMUSK 4 3 8110320.0 415. 100.0 .51																										
3	31	240		38.00	0	.00				20						6.00			.31							
4	1	60	.00	.00	37.99	-8	-.2	-1.2	-18.1	14	.000	.000	.010	.01	.01	6.00	49.	.005	.27	50	.001	.001	.002	.000	4	S
4	1	120	.00	.00	37.98	-6	-.1	-1.2	-4.3	13	.000	.000	.010	.02	.02	6.00	49.	.005	.23	52	.001	.001	.002	.001	4	S
4	1	180	.00	.00	37.97	-3	-.1	-1.2	.4	13	.268	.030	.010	.04	.04	6.00	49.	.005	.20	55	.001	.001	.002	.001	4	C
4	1	240	.00	.00	37.96	-6	-.2	-1.2	-10.7	10	.000	.000	.010	.02	.02	6.00	49.	.005	.17	57	.001	.001	.002	.001	4	S
4	2	60	.02	.02	37.95	-6	-.2	-1.2	-5.5	8	.000	.000	.010	.02	.02	6.00	49.	.005	.15	59	.001	.001	.002	.001	4	S
4	2	120	.02	.02	37.94	-2	-.1	-1.2	1.3	8	.259	.087	.010	.04	.04	6.00	49.	.005	.13	60	.001	.001	.002	.001	4	C
4	2	180	.01	.01	36.48	0	.0	.0	4.4	9	.261	.290	1.463	.07	.07	6.72	49.	.718	.55	61	.137	.137	.355	.089	4	D
4	2	240	.02	.02	36.47	0	.0	.0	-1.4	9	.000	.000	.010	.02	.02	6.72	57.	.006	.47	36	.002	.002	.002	.000	4	S
4	3	60	.08	.08	36.46	-7	-.2	.0	-14.7	5	.000	.000	.010	.01	.01	6.72	57.	.006	.40	40	.002	.002	.002	.000	4	S
4	3	120	.08	.08	36.45	-7	-.1	.0	-6.8	3	.000	.000	.010	.01	.01	6.72	57.	.006	.34	44	.002	.002	.002	.001	4	S
4	3	180	.08	.08	36.44	-5	-.1	.0	-4.5	2	.000	.000	.010	.02	.02	6.72	57.	.006	.29	48	.001	.001	.002	.001	4	S
4	3	240	.08	.08	36.43	-7	-.2	.0	-10.1	0	.000	.000	.010	.01	.01	6.73	57.	.006	.25	51	.001	.001	.002	.001	4	S
4	4	60	.01	.01	36.42	-12	-.3	.0	-17.4	0	.000	.000	.010	.01	.01	6.73	57.	.006	.22	53	.001	.001	.002	.001	4	S
4	4	120	.01	.01	36.41	-9	-.2	.0	-7.3	0	.000	.000	.010	.02	.02	6.73	57.	.006	.19	56	.001	.001	.003	.001	4	S
4	4	180	.01	.01	36.40	-6	-.1	.0	-3.6	0	.000	.000	.010	.02	.02	6.73	57.	.006	.16	58	.001	.001	.003	.001	4	S
4	4	240	.01	.01	36.39	-8	-.2	.0	-11.0	0	.000	.000	.010	.02	.02	6.73	57.	.006	.14	59	.001	.001	.003	.001	4	S
4	5	60	.16	.16	36.38	-13	-.3	.0	-18.9	0	.000	.000	.010	.01	.01	6.73	57.	.006	.12	61	.001	.001	.003	.001	4	S
4	5	120	.16	.02	36.51	-12	-.2	.0	-11.0	0	.000	.000	.010	.01	.01	6.73	57.	.006	.11	62	.001	.001	.003	.001	4	A
4	5	180	.16	.00	36.65	-10	-.2	.0	-8.3	0	.000	.000	.010	.01	.01	6.73	57.	.006	.09	63	.001	.001	.003	.001	4	A
4	5	240	.16	.00	36.80	-12	-.2	.0	-14.1	0	.000	.000	.010	.01	.01	6.73	57.	.006	.08	63	.001	.001	.003	.001	4	A
4	6	60	.20	.00	36.99	-11	-.2	.0	-11.3	0	.000	.000	.010	.01	.01	6.74	57.	.006	.07	64	.001	.001	.003	.001	4	A
4	6	120	.20	.00	37.17	-9	-.2	.0	-7.0	0	.000	.000	.010	.01	.01	6.74	57.	.006	.07	65	.001	.001	.003	.001	4	A
4	6	180	.20	.00	37.36	-7	-.1	.0	-5.0	0	.000	.000	.010	.01	.01	6.74	57.	.006	.06	65	.001	.001	.003	.001	4	A
4	6	240	.20	.00	37.54	-8	-.2	.0	-9.0	0	.000	.000	.010	.01	.01	6.74	57.	.006	.05	66	.001	.001	.003	.001	4	A
4	7	60	.11	.00	37.64	-8	-.2	.0	-9.6	0	.000	.000	.010	.01	.01	6.74	57.	.006	.05	66	.001	.001	.003	.001	4	A
4	7	120	.11	.00	37.74	-6	-.1	.0	-3.3	0	.000	.000	.010	.02	.02	6.74	57.	.006	.04	66	.001	.001	.003	.001	4	A
4	7	180	.11	.00	37.83	-3	-.1	.0	-1.3	0	.000	.000	.010	.02	.02	6.74	57.	.006	.04	67	.001	.001	.003	.001	4	A
4	7	240	.11	.00	37.93	-4	-.1	.0	-5.6	0	.000	.000	.010	.01	.01	6.74	57.	.006	.04	67	.001	.001	.003	.001	4	A
4	8	60	.01	.00	37.92	-9	-.2	.0	-14.7	0	.000	.000	.010	.01	.01	6.74	57.	.006	.04	67	.001	.001	.003	.001	4	A
4	8	120	.01	.00	37.92	-6	-.1	.0	-4.0	0	.000	.000	.010	.02	.02	6.74	57.	.006	.03	67	.001	.001	.003	.001	4	A
4	8	180	.01	.00	37.91	-3	-.1	.0	.0	0	.240	.003	.010	.03	.03	6.74	57.	.006	.03	67	.001	.001	.003	.001	4	C
4	8	240	.01	.01	37.90	-6	-.2	.0	-8.7	0	.000	.000	.010	.02	.02	6.74	57.	.006	.03	67	.001	.001	.003	.001	4	S
4	9	60	.03	.00	37.91	-5	-.2	.0	-4.9	0	.000	.000	.010	.02	.02	6.74	57.	.006	.03	68	.001	.001	.003	.001	4	A

4	9	120	.02	.00	37.92	-2	-.1	.0	.5	0	.240	.033	.010	.04	.04	6.73	57.	.006	.03	68	.001	.001	.003	.001	4	C
4	9	180	.02	.01	37.88	0	.0	.0	2.9	0	.242	.036	.061	.05	.05	6.75	57.	.035	.05	68	.006	.006	.019	.005	4	D
4	9	240	.03	.01	37.88	0	.0	.0	-1.5	0	.000	.000	.010	.02	.02	6.75	57.	.006	.04	67	.001	.001	.003	.001	4	A
4	10	60	.41	.01	38.27	-4	-.1	.0	-8.1	0	.000	.000	.010	.00	.00	6.75	57.	.006	.04	67	.001	.001	.003	.001	4	A
4	10	120	.41	.00	38.67	-4	-.1	.0	-5.0	0	.000	.000	.010	.00	.00	6.75	57.	.006	.04	67	.001	.001	.003	.001	4	A
4	10	180	.41	.00	39.06	-4	-.1	.0	-4.3	0	.000	.000	.010	.01	.01	6.76	58.	.006	.03	67	.001	.001	.003	.001	4	A
4	10	240	.41	.00	39.46	-5	-.1	.0	-5.7	0	.000	.000	.010	.00	.00	6.76	58.	.006	.03	67	.001	.001	.003	.001	4	A
4	11	60	.01	.00	39.45	-8	-.2	.0	-12.2	0	.000	.000	.010	.02	.02	6.76	58.	.006	.03	67	.001	.001	.003	.001	4	A
4	11	120	.01	.00	39.45	-6	-.1	.0	-5.4	0	.000	.000	.010	.02	.02	6.76	58.	.006	.03	67	.001	.001	.003	.001	4	A
4	11	180	.01	.00	39.45	-4	-.1	.0	-3.0	0	.000	.000	.010	.02	.02	6.76	58.	.006	.03	68	.001	.001	.003	.001	4	A
4	11	240	.01	.01	39.44	-6	-.1	.0	-8.1	0	.000	.000	.010	.02	.02	6.76	58.	.006	.03	68	.001	.001	.003	.001	4	A
4	12	60	.00	.00	39.43	-9	-.2	.0	-13.5	0	.000	.000	.010	.02	.02	6.76	58.	.006	.03	68	.001	.001	.003	.001	4	S
4	12	120	.00	.00	39.42	-8	-.2	.0	-7.4	0	.000	.000	.010	.02	.02	6.76	58.	.006	.03	68	.001	.001	.003	.001	4	S
4	12	180	.00	.00	39.41	-6	-.1	.0	-4.7	0	.000	.000	.010	.02	.02	6.76	58.	.006	.03	68	.001	.001	.003	.001	4	S
4	12	240	.00	.00	39.40	-8	-.2	.0	-10.1	0	.000	.000	.010	.02	.02	6.76	58.	.006	.03	68	.001	.001	.003	.001	4	S
4	13	60	.00	.00	39.39	-12	-.3	.0	-17.5	0	.000	.000	.010	.01	.01	6.76	58.	.006	.03	68	.001	.001	.003	.001	4	S
4	13	120	.00	.00	39.38	-9	-.2	.0	-5.4	0	.000	.000	.010	.02	.02	6.76	58.	.006	.02	68	.001	.001	.003	.001	4	S
4	13	180	.00	.00	39.37	-5	-.1	.0	-1.0	0	.000	.000	.010	.03	.03	6.75	58.	.006	.02	68	.001	.001	.003	.001	4	S
4	13	240	.00	.00	39.36	-7	-.2	.0	-10.1	0	.000	.000	.010	.02	.02	6.75	58.	.006	.02	68	.001	.001	.003	.001	4	S
4	14	60	.06	.04	39.37	-7	-.1	.0	-7.1	0	.000	.000	.010	.02	.02	6.75	58.	.006	.02	68	.001	.001	.003	.001	4	A

BASIN ZONE MM-YY AREA ELEV PP% TINTMX																										
GULLMUSK 4 4 8110320.0 415. 100.0 .51																										
COMPUTED LOWER CHURCHILL DRAINAGE																										
MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F
4	14	120	.06	.00	39.41	-3	-.1	.0	1.0	0	.241	.063	.010	.04	.04	6.75	58.	.006	.02	68	.001	.001	.003	.001	4	C
4	14	180	.05	.01	39.28	0	.0	.0	3.9	1	.243	.125	.178	.06	.06	6.81	57.	.102	.08	68	.016	.016	.056	.014	4	D
4	14	240	.06	.02	39.31	0	.0	.0	-1.9	0	.000	.000	.010	.02	.02	6.81	58.	.006	.07	64	.001	.001	.003	.001	4	A
4	15	60	.28	.00	39.58	-10	-.2	.0	-21.1	0	.000	.000	.010	.01	.01	6.81	58.	.006	.07	65	.001	.001	.003	.001	4	A
4	15	120	.28	.00	39.84	-9	-.2	.0	-7.4	0	.000	.000	.010	.01	.01	6.81	58.	.006	.06	65	.001	.001	.003	.001	4	A
4	15	180	.28	.00	40.10	-5	-.1	.0	-2.1	0	.000	.000	.010	.01	.01	6.81	58.	.006	.05	66	.001	.001	.003	.001	4	A
4	15	240	.28	.00	40.37	-9	-.2	.0	-13.1	0	.000	.000	.010	.01	.01	6.82	58.	.006	.05	66	.001	.001	.003	.001	4	A
4	16	60	.00	.00	40.36	-16	-.3	.0	-23.1	0	.000	.000	.010	.01	.01	6.82	58.	.006	.05	66	.001	.001	.003	.001	4	S
4	16	120	.00	.00	40.35	-16	-.3	.0	-16.4	0	.000	.000	.010	.01	.01	6.82	58.	.006	.04	67	.001	.001	.003	.001	4	S
4	16	180	.00	.00	40.34	-14	-.3	.0	-13.7	0	.000	.000	.010	.02	.02	6.82	58.	.006	.04	67	.001	.001	.003	.001	4	S
4	16	240	.00	.00	40.33	-16	-.3	.0	-19.1	0	.000	.000	.010	.01	.01	6.82	58.	.006	.04	67	.001	.001	.003	.001	4	S
4	17	60	.02	.01	40.32	-20	-.4	.0	-23.1	0	.000	.000	.010	.01	.01	6.82	58.	.006	.03	67	.001	.001	.003	.001	4	A
4	17	120	.02	.00	40.32	-14	-.3	.0	-8.7	0	.000	.000	.010	.02	.02	6.82	58.	.006	.03	67	.001	.001	.003	.001	4	A
4	17	180	.02	.00	40.32	-9	-.2	.0	-3.7	0	.000	.000	.010	.02	.02	6.82	58.	.006	.03	67	.001	.001	.003	.001	4	A
4	17	240	.02	.01	40.32	-11	-.2	.0	-14.7	0	.000	.000	.010	.01	.01	6.82	58.	.006	.03	67	.001	.001	.003	.001	4	A
4	18	60	.21	.00	40.52	-15	-.3	.0	-19.3	0	.000	.000	.010	.01	.01	6.82	58.	.006	.03	68	.001	.001	.003	.001	4	A
4	18	120	.21	.00	40.71	-12	-.2	.0	-9.1	0	.000	.000	.010	.01	.01	6.83	58.	.006	.03	68	.001	.001	.003	.001	4	A
4	18	180	.21	.00	40.91	-8	-.2	.0	-5.7	0	.000	.000	.010	.01	.01	6.83	58.	.006	.03	68	.001	.001	.003	.001	4	A
4	18	240	.21	.00	41.10	-11	-.2	.0	-13.2	0	.000	.000	.010	.01	.01	6.83	58.	.006	.03	68	.001	.001	.003	.001	4	A
4	19	60	.50	.00	41.58	-9	-.2	.0	-8.8	0	.000	.000	.010	.00	.00	6.83	58.	.006	.03	68	.001	.001	.003	.001	4	A
4	19	120	.50	.00	42.07	-6	-.1	.1	-4.1	0	.000	.000	.010	.00	.00	6.84	58.	.006	.03	68	.001	.001	.003	.001	4	A
4	19	180	.50	.00	42.56	-4	-.1	.1	-2.4	0	.000	.000	.010	.00	.00	6.84	58.	.006	.03	68	.001	.001	.003	.001	4	A
4	19	240	.50	.00	43.04	-5	-.1	.1	-6.1	0	.000	.000	.010	.00	.00	6.84	58.	.006	.03	68	.001	.001	.003	.001	4	A
4	20	60	.10	.00	43.13	-7	-.1	.1	-9.0	0	.000	.000	.010	.01	.01	6.84	59.	.006	.02	68	.001	.001	.003	.001	4	A

4	20	120	.10	.00	43.21	-5	-.1	.1	-4.6	0	.000	.000	.010	.02	.02	6.84	59.	.006	.02	68	.001	.001	.003	.001	4	A
4	20	180	.10	.00	43.30	-4	-.1	.1	-2.9	0	.000	.000	.010	.02	.02	6.84	59.	.006	.02	68	.001	.001	.003	.001	4	A
4	20	240	.10	.00	43.38	-5	-.1	.1	-6.3	0	.000	.000	.010	.02	.02	6.84	59.	.006	.02	68	.001	.001	.003	.001	4	A
4	21	60	.34	.00	43.71	-6	-.1	.1	-8.7	0	.000	.000	.010	.01	.01	6.85	59.	.006	.02	68	.001	.001	.003	.001	4	A
4	21	120	.34	.00	44.04	-4	-.1	.1	-2.8	0	.000	.000	.010	.01	.01	6.85	59.	.006	.02	68	.001	.001	.003	.001	4	A
4	21	180	.33	.00	44.36	-2	-.1	.1	.3	0	.240	.021	.010	.01	.01	6.85	59.	.006	.02	68	.001	.001	.003	.001	4	C
4	21	240	.34	.00	44.68	-3	-.1	.1	-4.9	0	.000	.000	.010	.01	.01	6.85	59.	.006	.02	68	.001	.001	.003	.001	4	A
4	22	60	.03	.00	44.70	-1	-.1	.1	-.3	0	.000	.000	.010	.03	.03	6.85	59.	.006	.02	68	.001	.001	.003	.001	4	A
4	22	120	.03	.01	44.70	0	.0	.1	1.7	0	.241	.105	.010	.05	.05	6.84	59.	.006	.02	68	.001	.001	.003	.001	4	Q
4	22	180	.02	.01	44.58	0	.0	.0	2.7	1	.242	.113	.135	.05	.05	6.88	58.	.079	.07	68	.012	.012	.043	.011	4	D
4	22	240	.03	.01	44.53	0	.0	.0	.7	1	.243	.036	.058	.04	.04	6.90	59.	.034	.08	65	.006	.006	.018	.004	4	A
4	23	60	.01	.01	44.52	0	.0	.0	-2.0	0	.000	.000	.010	.02	.02	6.89	59.	.006	.07	64	.001	.001	.003	.001	4	A
4	23	120	.01	.01	44.38	0	.0	.0	2.4	1	.243	.130	.143	.05	.05	6.94	59.	.085	.11	65	.015	.015	.044	.011	4	D
4	23	180	.01	.01	44.12	0	.0	.0	4.1	2	.245	.254	.267	.08	.08	7.03	60.	.159	.19	62	.030	.030	.080	.020	4	D
4	23	240	.01	.01	44.06	0	.0	.0	.7	2	.245	.046	.061	.04	.04	7.04	61.	.037	.19	57	.008	.008	.017	.004	4	S
4	24	60	.02	.02	44.05	-1	.0	.0	-3.7	1	.000	.000	.010	.02	.02	7.04	61.	.006	.16	58	.001	.001	.003	.001	4	S
4	24	120	.02	.01	43.99	0	.0	.0	1.4	1	.244	.045	.063	.05	.05	7.05	61.	.038	.16	59	.008	.008	.018	.005	4	A
4	24	180	.02	.01	43.79	0	.0	.0	3.1	2	.245	.193	.211	.06	.06	7.12	61.	.128	.21	59	.026	.026	.061	.015	4	D
4	24	240	.02	.01	43.78	0	.0	.0	-.3	2	.000	.000	.010	.03	.03	7.12	62.	.006	.18	56	.001	.001	.003	.001	4	A
4	25	60	.09	.01	43.85	-2	.0	.0	-4.4	1	.000	.000	.010	.02	.02	7.12	62.	.006	.16	58	.001	.001	.003	.001	4	A
4	25	120	.08	.00	43.92	-1	.0	.0	-.3	1	.000	.000	.010	.03	.03	7.11	62.	.006	.14	59	.001	.001	.003	.001	4	A
4	25	180	.08	.01	43.92	0	.0	.0	1.4	1	.243	.000	.073	.04	.04	7.13	62.	.045	.15	61	.009	.009	.022	.005	4	A
4	25	240	.09	.01	43.99	0	.0	.0	-2.0	0	.000	.000	.010	.02	.02	7.13	62.	.006	.13	60	.001	.001	.003	.001	4	A
4	26	60	.00	.00	43.98	-5	-.1	.0	-9.6	0	.000	.000	.010	.02	.02	7.13	62.	.006	.11	61	.001	.001	.003	.001	4	S
4	26	120	.00	.00	43.97	-3	-.1	.0	-.8	0	.000	.000	.010	.03	.03	7.12	62.	.006	.10	62	.001	.001	.003	.001	4	S
4	26	180	.00	.00	43.90	0	.0	.0	1.9	0	.241	.057	.067	.05	.05	7.14	62.	.042	.11	63	.008	.008	.021	.005	4	D
4	26	240	.00	.00	43.89	-2	.0	.0	-4.5	0	.000	.000	.010	.02	.02	7.14	62.	.006	.10	63	.001	.001	.003	.001	4	S
4	27	60	.02	.02	43.88	-3	-.1	.0	-5.5	0	.000	.000	.010	.02	.02	7.13	62.	.006	.08	63	.001	.001	.003	.001	4	S
4	27	120	.02	.02	43.88	-2	-.1	.0	-1.5	0	.000	.000	.010	.03	.03	7.13	62.	.006	.08	64	.001	.001	.003	.001	4	A
4	27	180	.02	.01	43.89	-1	.0	.0	.2	0	.240	.015	.010	.04	.04	7.13	62.	.006	.07	65	.001	.001	.003	.001	4	C

BASIN ZONE MM-YY AREA ELEV PP% TINTMX												COMPUTED LOWER CHURCHILL DRAINAGE														
GULLMUSK 4 4 8110320.0 415. 100.0 .51																										
MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F
4	27	240	.02	.01	43.89	-1	-.1	.0	-2.8	0	.000	.000	.010	.02	.02	7.12	62.	.006	.06	65	.001	.001	.003	.001	4	A
4	28	60	.00	.00	43.88	-3	-.1	.0	-5.3	0	.000	.000	.010	.02	.02	7.12	62.	.006	.06	66	.001	.001	.003	.001	4	S
4	28	120	.00	.00	43.87	-1	.0	.0	1.3	0	.241	.081	.010	.05	.05	7.11	62.	.006	.05	66	.001	.001	.003	.001	4	C
4	28	180	.00	.00	43.60	0	.0	.0	4.3	1	.243	.260	.270	.08	.08	7.20	62.	.166	.15	66	.028	.028	.089	.022	4	D
4	28	240	.00	.00	43.59	0	.0	.0	-1.7	0	.000	.000	.010	.03	.03	7.19	62.	.006	.13	60	.001	.001	.003	.001	4	S
4	29	60	.00	.00	43.58	-3	-.1	.0	-6.7	0	.000	.000	.010	.02	.02	7.19	62.	.006	.11	61	.001	.001	.003	.001	4	S
4	29	120	.00	.00	43.43	0	.0	.0	3.4	0	.242	.139	.149	.07	.07	7.23	62.	.093	.15	62	.017	.017	.047	.012	4	D
4	29	180	.00	.00	42.98	0	.0	.0	7.1	2	.246	.439	.452	.13	.13	7.37	63.	.284	.30	60	.056	.056	.137	.034	4	D
4	29	240	.00	.00	42.97	0	.0	.0	-1.3	2	.000	.000	.010	.03	.03	7.36	64.	.006	.26	50	.002	.002	.003	.001	4	S
4	30	60	.21	.11	43.06	0	.0	.0	-1.3	1	.000	.000	.010	.02	.02	7.36	64.	.006	.22	53	.002	.002	.003	.001	4	A
4	30	120	.19	.00	43.17	0	.0	.0	1.3	2	.245	.000	.077	.03	.03	7.38	64.	.050	.22	55	.011	.011	.022	.006	4	A
4	30	180	.18	.01	43.02	0	.0	.0	2.3	2	.246	.142	.328	.03	.03	7.49	65.	.212	.32	55	.047	.047	.095	.024	4	D
4	30	240	.19	.01	43.18	0	.0	.0	.0	2	.246	.000	.016	.02	.02	7.49	66.	.010	.27	49	.003	.003	.004	.001	4	A

11.45				2.744				.70				2.909				.547				1.452						
1.18				5.093				.70								.547				.363						
5	1	60	.02	.01	43.18	0	.0	.0	-1.0	2	.000	.000	.010	.03	.03	7.48	66.	.007	.24	52	.002	.002	.003	.001	4	A
5	1	120	.01	.01	42.98	0	.0	.0	3.3	3	.247	.197	.213	.07	.07	7.54	66.	.140	.29	54	.032	.032	.062	.015	4	D
5	1	180	.01	.01	42.65	0	.0	.0	5.0	4	.249	.314	.329	.09	.09	7.63	66.	.218	.38	51	.053	.053	.090	.023	4	D
5	1	240	.02	.02	42.55	0	.0	.0	1.3	4	.250	.084	.101	.05	.05	7.65	67.	.068	.36	45	.018	.018	.025	.006	4	S
5	2	60	.01	.01	42.54	-1	.0	.0	-2.3	3	.000	.000	.010	.02	.02	7.65	67.	.007	.31	46	.002	.002	.003	.001	4	S
5	2	120	.01	.01	42.31	0	.0	.0	3.8	4	.250	.220	.230	.08	.08	7.70	67.	.155	.36	50	.039	.039	.062	.016	4	D
5	2	180	.01	.01	41.88	0	.0	.0	6.5	6	.253	.415	.429	.12	.12	7.81	68.	.292	.48	47	.077	.077	.110	.028	4	D
5	2	240	.01	.01	41.77	0	.0	.0	1.4	6	.254	.092	.110	.05	.05	7.83	69.	.076	.45	39	.023	.023	.024	.006	4	S
5	3	60	.02	.02	41.76	0	.0	.0	-1.9	5	.000	.000	.010	.02	.02	7.83	69.	.007	.39	40	.002	.002	.002	.001	4	S
5	3	120	.02	.02	41.56	0	.0	.0	3.1	6	.254	.183	.193	.06	.06	7.87	69.	.134	.41	45	.037	.037	.048	.012	4	D
5	3	180	.02	.02	41.24	0	.0	.0	4.8	7	.256	.310	.324	.09	.09	7.95	70.	.225	.49	43	.063	.063	.079	.020	4	D
5	3	240	.02	.02	41.15	0	.0	.0	1.1	7	.256	.073	.090	.05	.05	7.97	70.	.063	.45	38	.019	.019	.020	.005	4	S
5	4	60	.04	.03	41.15	-1	.0	.0	-3.6	6	.000	.000	.010	.02	.02	7.96	70.	.007	.39	41	.002	.002	.002	.001	4	A
5	4	120	.04	.01	40.83	0	.0	.0	5.4	7	.256	.315	.357	.09	.09	8.05	70.	.251	.48	45	.069	.069	.091	.023	4	D
5	4	180	.04	.02	40.21	0	.0	.0	9.1	9	.261	.597	.628	.16	.16	8.19	71.	.446	.68	39	.136	.136	.140	.035	4	D
5	4	240	.04	.04	40.05	0	.0	.0	2.1	10	.261	.140	.163	.05	.05	8.22	72.	.118	.65	33	.039	.039	.032	.008	4	D
5	5	60	.08	.01	40.04	0	.0	.0	1.0	10	.261	.002	.080	.04	.04	8.23	73.	.058	.59	34	.019	.019	.016	.004	4	A
5	5	120	.07	.01	39.54	0	.0	.0	7.3	11	.265	.486	.561	.11	.11	8.36	73.	.409	.75	35	.131	.131	.118	.029	4	D
5	5	180	.07	.03	38.89	0	.0	.0	9.3	13	.269	.629	.695	.15	.15	8.50	74.	.514	.95	32	.175	.175	.132	.033	4	D
5	5	240	.07	.04	38.58	0	.0	.0	4.3	14	.271	.294	.355	.07	.07	8.57	75.	.267	.97	27	.097	.097	.058	.015	4	D
5	6	60	.26	.02	38.81	0	.0	.0	-1.7	13	.000	.000	.010	.01	.01	8.57	76.	.008	.82	26	.003	.003	.002	.000	4	A
5	6	120	.23	.00	38.62	0	.0	.0	2.9	13	.270	.180	.414	.03	.03	8.66	76.	.314	.89	30	.110	.110	.076	.019	4	D
5	6	180	.23	.01	38.27	0	.0	.0	4.9	14	.272	.336	.569	.05	.05	8.78	77.	.437	1.02	28	.156	.156	.100	.025	4	D
5	6	240	.25	.01	38.42	0	.0	.0	.9	14	.271	.000	.081	.02	.02	8.79	78.	.063	.90	25	.023	.023	.013	.003	4	A
5	7	60	.23	.01	38.64	-3	-1	.0	-6.7	12	.000	.000	.010	.01	.01	8.79	78.	.008	.77	28	.003	.003	.002	.000	4	A
5	7	120	.23	.00	38.86	-2	-1	.0	-2.3	11	.000	.000	.010	.01	.01	8.79	78.	.008	.66	31	.003	.003	.002	.000	4	A
5	7	180	.23	.00	39.08	-1	.0	.0	-6	11	.000	.000	.010	.02	.02	8.79	78.	.008	.56	34	.003	.003	.002	.001	4	A
5	7	240	.23	.00	39.30	-2	-1	.0	-4.0	10	.000	.000	.010	.01	.01	8.79	78.	.008	.48	36	.002	.002	.002	.001	4	A
5	8	60	.03	.00	39.32	-5	-1	.0	-8.0	7	.000	.000	.010	.02	.02	8.78	78.	.008	.41	39	.002	.002	.002	.001	4	A
5	8	120	.03	.00	39.34	-2	-1	.0	.7	7	.257	.048	.010	.04	.04	8.78	78.	.008	.35	43	.002	.002	.003	.001	4	C
5	8	180	.03	.01	39.17	0	.0	.0	3.7	8	.258	.165	.192	.07	.07	8.80	78.	.150	.39	47	.039	.039	.057	.014	4	D
5	8	240	.03	.02	39.17	-1	.0	.0	-3.0	7	.000	.000	.010	.02	.02	8.80	78.	.008	.33	45	.002	.002	.003	.001	4	A
5	9	60	.10	.01	39.25	-3	-1	.0	-4.7	6	.000	.000	.010	.02	.02	8.80	78.	.008	.29	48	.002	.002	.003	.001	4	A
5	9	120	.09	.00	39.29	0	.0	.0	1.5	6	.254	.000	.047	.04	.04	8.80	78.	.037	.27	51	.009	.009	.015	.004	4	A
5	9	180	.08	.01	39.02	0	.0	.0	4.1	7	.256	.264	.347	.07	.07	8.86	78.	.271	.39	52	.064	.064	.115	.029	4	D
5	9	240	.10	.02	39.09	0	.0	.0	-8	6	.000	.000	.010	.03	.03	8.85	79.	.008	.34	44	.002	.002	.003	.001	4	A
5	10	60	.03	.01	39.10	-4	-1	.0	-7.8	4	.000	.000	.010	.02	.02	8.85	79.	.008	.29	48	.002	.002	.003	.001	4	A

BASIN		ZONE	MM-YY	AREA	ELEV	PP%	TINTMX	COMPUTED LOWER CHURCHILL DRAINAGE																			
GULLMUSK		4	5	8110320.0	415.	100.0	.51																				
MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F	
5	10	120	.02	.00	39.03	0	.0	.0	2.2	5	.251	.065	.094	.05	.05	8.86	79.	.074	.29	51	.018	.018	.030	.008	4	D	
5	10	180	.02	.01	38.68	0	.0	.0	5.2	6	.254	.333	.355	.10	.10	8.91	79.	.279	.42	51	.068	.068	.115	.029	4	D	
5	10	240	.03	.02	38.67	0	.0	.0	-1.8	5	.000	.000	.010	.02	.02	8.90	79.	.008	.36	43	.002	.002	.003	.001	4	A	
5	11	60	.00	.00	38.66	-4	-1	.0	-8.5	3	.000	.000	.010	.02	.02	8.90	79.	.008	.31	47	.002	.002	.003	.001	4	S	

5	11	120	.00	.00	38.65	-1	.0	.0	.9	3	.248	.059	.010	.05	.05	8.89	79.	.008	.27	50	.002	.002	.003	.001	4	C
5	11	180	.00	.00	38.38	0	.0	.0	4.6	4	.250	.263	.273	.09	.09	8.93	79.	.216	.36	53	.051	.051	.092	.023	4	D
5	11	240	.00	.00	38.37	-1	.0	.0	-3.1	3	.000	.000	.010	.02	.02	8.92	79.	.008	.31	47	.002	.002	.003	.001	4	S
5	12	60	.00	.00	38.36	-3	-.1	.0	-6.4	2	.000	.000	.010	.02	.02	8.92	79.	.008	.26	50	.002	.002	.003	.001	4	S
5	12	120	.00	.00	38.14	0	.0	.0	4.6	3	.247	.214	.224	.09	.09	8.94	79.	.177	.33	53	.042	.042	.075	.019	4	D
5	12	180	.00	.00	37.58	0	.0	.0	8.6	5	.251	.544	.558	.16	.16	9.02	79.	.443	.55	48	.114	.114	.173	.043	4	D
5	12	240	.00	.00	37.52	0	.0	.0	.6	5	.251	.041	.062	.04	.04	9.02	80.	.049	.50	36	.016	.016	.015	.004	4	S
5	13	60	.28	.13	37.66	0	.0	.0	-.3	5	.000	.000	.010	.02	.02	9.01	80.	.008	.43	38	.002	.002	.002	.001	4	A
5	13	120	.26	.00	37.36	0	.0	.0	4.7	6	.253	.291	.552	.05	.05	9.11	80.	.442	.63	42	.127	.127	.151	.038	4	D
5	13	180	.26	.01	36.95	0	.0	.0	6.0	7	.256	.387	.647	.06	.06	9.22	81.	.524	.86	34	.171	.171	.146	.036	4	D
5	13	240	.26	.01	36.76	0	.0	.0	2.7	8	.257	.177	.436	.03	.03	9.29	82.	.357	.95	29	.126	.126	.084	.021	4	D
5	14	60	.18	.01	36.87	0	.0	.0	.7	8	.257	.000	.063	.03	.03	9.30	83.	.052	.83	27	.019	.019	.011	.003	4	A
5	14	120	.16	.01	36.63	0	.0	.0	3.4	8	.259	.221	.386	.05	.05	9.35	83.	.319	.90	30	.112	.112	.077	.019	4	D
5	14	180	.16	.01	36.33	0	.0	.0	4.4	9	.261	.290	.455	.06	.06	9.42	83.	.378	1.00	28	.136	.136	.086	.021	4	D
5	14	240	.16	.01	36.15	0	.0	.0	2.4	9	.261	.160	.324	.04	.04	9.46	84.	.271	1.01	26	.100	.100	.057	.014	4	D
5	15	60	.01	.01	36.02	0	.0	.0	1.7	10	.262	.114	.131	.05	.05	9.47	84.	.110	.92	25	.041	.041	.023	.006	4	D
5	15	120	.01	.01	35.56	0	.0	.0	6.7	11	.265	.446	.459	.13	.13	9.51	84.	.387	1.02	27	.139	.139	.086	.022	4	D
5	15	180	.01	.01	34.96	0	.0	.0	8.7	13	.269	.588	.607	.16	.16	9.56	85.	.513	1.18	25	.191	.191	.106	.026	4	D
5	15	240	.01	.01	34.61	0	.0	.0	4.7	14	.271	.321	.343	.09	.09	9.59	85.	.292	1.18	23	.111	.111	.056	.014	4	D
5	16	60	.10	.09	34.46	0	.0	.0	2.0	14	.271	.139	.166	.04	.04	9.60	85.	.142	1.08	23	.054	.054	.027	.007	4	D
5	16	120	.10	.01	33.88	0	.0	.0	8.2	16	.274	.566	.672	.12	.12	9.67	85.	.574	1.27	25	.215	.215	.115	.029	4	D
5	16	180	.10	.03	33.10	0	.0	.0	10.8	18	.279	.758	.855	.16	.16	9.75	86.	.737	1.53	22	.284	.284	.134	.034	4	D
5	16	240	.10	.04	32.68	0	.0	.0	5.6	19	.281	.397	.488	.08	.08	9.79	87.	.424	1.55	19	.170	.170	.067	.017	4	D
5	17	60	.21	.02	32.36	0	.0	.0	4.3	19	.283	.307	.509	.05	.05	9.85	87.	.444	1.59	19	.179	.179	.069	.017	4	D
5	17	120	.21	.01	31.73	0	.0	.0	8.5	21	.286	.611	.821	.09	.09	9.92	88.	.720	1.79	19	.291	.291	.110	.028	4	D
5	17	180	.21	.02	30.99	0	.0	.0	9.8	23	.290	.714	.920	.11	.11	10.00	88.	.814	2.01	17	.337	.337	.112	.028	4	D
5	17	240	.21	.03	30.51	0	.0	.0	6.2	24	.292	.456	.660	.07	.07	10.06	89.	.588	2.06	14	.250	.250	.070	.018	4	D
5	18	60	.25	.02	30.67	0	.0	.0	.7	23	.291	.000	.073	.02	.02	10.06	90.	.065	1.79	14	.028	.028	.008	.002	4	A
5	18	120	.22	.01	30.33	0	.0	.0	4.6	24	.292	.337	.562	.05	.05	10.10	90.	.504	1.82	17	.209	.209	.069	.017	4	D
5	18	180	.22	.01	29.87	0	.0	.0	5.9	25	.294	.437	.663	.06	.06	10.15	90.	.597	1.91	16	.249	.249	.080	.020	4	D
5	18	240	.22	.02	29.61	0	.0	.0	3.3	25	.295	.246	.471	.04	.04	10.19	91.	.427	1.88	15	.179	.179	.054	.014	4	D
5	19	60	.07	.01	29.66	-1	.0	.0	-3.0	24	.000	.000	.010	.02	.02	10.18	91.	.009	1.60	16	.004	.004	.001	.000	4	A
5	19	120	.06	.01	29.48	0	.0	.0	2.6	24	.292	.171	.238	.05	.05	10.19	91.	.216	1.48	19	.087	.087	.033	.008	4	D
5	19	180	.06	.01	29.17	0	.0	.0	3.9	24	.292	.289	.352	.07	.07	10.21	91.	.320	1.45	20	.128	.128	.052	.013	4	D
5	19	240	.07	.02	29.19	0	.0	.0	.3	23	.291	.000	.041	.04	.04	10.20	91.	.037	1.25	20	.015	.015	.006	.002	4	A
5	20	60	.03	.01	29.20	-2	.0	.0	-4.4	22	.000	.000	.010	.02	.02	10.20	91.	.009	1.06	22	.004	.004	.002	.000	4	A
5	20	120	.02	.01	29.17	0	.0	.0	1.0	21	.287	.013	.042	.05	.05	10.19	91.	.038	.92	25	.014	.014	.008	.002	4	A
5	20	180	.02	.01	29.01	0	.0	.0	2.0	21	.287	.147	.170	.05	.05	10.19	91.	.155	.88	27	.056	.056	.034	.009	4	D
5	20	240	.03	.01	29.02	0	.0	.0	-1.7	20	.000	.000	.010	.03	.03	10.19	91.	.009	.75	28	.003	.003	.002	.001	4	A
5	21	60	.00	.00	29.01	-3	-.1	.0	-5.4	18	.000	.000	.010	.02	.02	10.18	91.	.009	.64	32	.003	.003	.002	.001	4	S
5	21	120	.00	.00	28.92	0	.0	.0	1.9	18	.281	.078	.088	.05	.05	10.18	91.	.080	.59	34	.026	.026	.022	.006	4	D
5	21	180	.00	.00	28.56	0	.0	.0	4.9	19	.282	.349	.361	.10	.10	10.19	91.	.328	.70	35	.105	.105	.094	.023	4	D
5	21	240	.00	.00	28.55	0	.0	.0	-1.1	18	.000	.000	.010	.03	.03	10.18	91.	.009	.60	33	.003	.003	.002	.001	4	S
5	22	60	.00	.00	28.54	-3	-.1	.0	-6.0	16	.000	.000	.010	.02	.02	10.17	91.	.009	.51	35	.003	.003	.003	.001	4	S
5	22	120	.00	.00	28.19	0	.0	.0	5.6	17	.278	.336	.346	.11	.11	10.18	91.	.314	.63	37	.098	.098	.095	.024	4	D
5	22	180	.00	.00	27.47	0	.0	.0	9.9	19	.283	.703	.720	.20	.20	10.20	91.	.654	.93	34	.213	.213	.183	.046	4	D
5	22	240	.00	.00	27.36	0	.0	.0	1.3	19	.282	.095	.119	.05	.05	10.19	91.	.109	.86	27	.039	.039	.024	.006	4	S
5	23	60	.00	.00	27.35	-1	.0	.0	-3.7	18	.000	.000	.010	.02	.02	10.19	91.	.009	.73	29	.003	.003	.002	.001	4	S
5	23	120	.00	.00	26.61	0	.0	.0	10.6	20	.284	.722	.732	.21	.21	10.20	91.	.665	1.03	32	.225	.225	.173	.043	4	D

6	2	180	.00	.00	4.16	0	.0	.0	11.6	49	.315	.739	.763	.24	.24	10.59	93.	.709	1.68	20	.282	.282	.116	.029	4	L
6	2	240	.00	.00	3.72	0	.0	.0	5.3	49	.315	.421	.447	.11	.11	10.59	93.	.415	1.68	18	.170	.170	.060	.015	4	D
6	3	60	.20	.20	3.66	0	.0	.0	.4	48	.315	.035	.054	.03	.03	10.59	93.	.050	1.45	18	.021	.021	.007	.002	4	S
6	3	120	.19	.08	3.12	0	.0	.0	6.7	48	.315	.530	.648	.08	.08	10.62	93.	.602	1.60	20	.239	.239	.099	.025	4	D
6	3	180	.19	.02	2.61	0	.0	.0	9.0	49	.316	.493	.678	.11	.11	10.64	93.	.631	1.74	19	.256	.256	.096	.024	4	L
6	3	240	.19	.03	2.29	0	.0	.0	3.7	49	.315	.295	.474	.05	.05	10.66	93.	.442	1.74	17	.182	.182	.062	.016	4	D
6	4	60	.07	.01	2.34	0	.0	.0	-1.3	47	.000	.000	.010	.03	.03	10.65	93.	.009	1.48	17	.004	.004	.001	.000	4	A
6	4	120	.06	.01	2.03	0	.0	.0	3.8	47	.314	.297	.357	.07	.07	10.66	93.	.333	1.46	20	.133	.133	.054	.013	4	D
6	4	180	.06	.02	1.70	0	.0	.0	5.8	47	.314	.311	.367	.10	.10	10.66	93.	.343	1.45	20	.136	.136	.056	.014	4	L
6	4	240	.06	.02	1.61	0	.0	.0	1.4	46	.313	.084	.130	.04	.04	10.66	93.	.121	1.30	20	.048	.048	.020	.005	4	A
6	5	60	.03	.01	1.62	0	.0	.0	-.6	45	.000	.000	.010	.03	.03	10.65	93.	.009	1.10	22	.004	.004	.002	.000	4	A

BASIN ZONE MM-YY AREA ELEV PP% TINTMX																										
GULLMUSK 4 6 8110320.0 415. 100.0 .51																										
COMPUTED LOWER CHURCHILL DRAINAGE																										
MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F
6	5	120	.03	.01	1.37	0	.0	.0	6.6	45	.313	.242	.268	.12	.12	10.64	93.	.250	1.09	24	.094	.094	.050	.012	4	L
6	5	180	.03	.03	1.15	0	.0	.0	9.9	47	.314	.205	.220	.18	.18	10.60	93.	.205	1.05	24	.077	.077	.041	.010	4	L
6	5	240	.03	.03	.96	0	.0	.0	4.0	47	.314	.172	.186	.08	.08	10.60	93.	.173	.99	25	.065	.065	.035	.009	4	L
6	6	60	.30	.05	1.20	-1	.0	.0	-2.3	45	.000	.000	.010	.01	.01	10.60	93.	.009	.85	26	.003	.003	.002	.000	4	A
6	6	120	.26	.00	1.00	0	.0	.0	4.6	45	.312	.190	.455	.05	.05	10.62	93.	.423	.98	29	.149	.149	.101	.025	4	L
6	6	180	.26	.01	.80	0	.0	.0	6.9	45	.313	.187	.448	.07	.07	10.63	93.	.417	1.08	26	.153	.153	.089	.022	4	L
6	6	240	.26	.02	.63	0	.0	.0	2.0	45	.312	.156	.412	.03	.03	10.65	93.	.384	1.15	25	.144	.144	.077	.019	4	L
6	7	60	.38	.01	.41	0	.0	.0	2.3	44	.359	.210	.592	.02	.02	10.69	93.	.552	1.31	24	.209	.209	.107	.027	4	R
6	7	120	.38	.00	.00	0	.0	.0	6.3	44	.359	.408	.782	.04	.04	10.73	93.	.731	1.56	22	.284	.284	.130	.032	4	R
6	7	180	.38	.01	.00	0	.0	.0	8.3	0	.000	.000	.368	.05	.05	10.74	94.	.345	1.53	19	.139	.139	.053	.013	4	
6	7	240	.38	.01	.00	0	.0	.0	4.3	0	.000	.000	.365	.03	.03	10.76	94.	.342	1.51	19	.137	.137	.054	.013	4	
6	8	60	.44	.01	.00	0	.0	.0	2.0	0	.000	.000	.436	.01	.01	10.78	94.	.409	1.53	19	.164	.164	.065	.016	4	
6	8	120	.44	.00	.00	0	.0	.0	3.7	0	.000	.000	.440	.02	.02	10.80	94.	.413	1.55	19	.166	.166	.065	.016	4	
6	8	180	.44	.00	.00	0	.0	.0	4.7	0	.000	.000	.439	.02	.02	10.82	94.	.413	1.56	19	.166	.166	.064	.016	4	
6	8	240	.44	.01	.00	0	.0	.0	3.0	0	.000	.000	.438	.01	.01	10.85	94.	.412	1.58	19	.166	.166	.064	.016	4	
6	9	60	.07	.00	.00	0	.0	.0	2.7	0	.000	.000	.070	.06	.06	10.84	94.	.066	1.37	19	.026	.026	.010	.003	4	
6	9	120	.07	.01	.00	0	.0	.0	6.4	0	.000	.000	.059	.11	.11	10.81	94.	.055	1.20	21	.022	.022	.010	.002	4	
6	9	180	.07	.03	.00	0	.0	.0	8.1	0	.000	.000	.044	.14	.14	10.78	94.	.042	1.04	23	.016	.016	.008	.002	4	
6	9	240	.07	.04	.00	0	.0	.0	4.7	0	.000	.000	.037	.09	.09	10.76	94.	.035	.90	25	.013	.013	.007	.002	4	
6	10	60	.01	.01	.00	0	.0	.0	2.7	0	.000	.000	.000	.07	.07	10.74	94.	.000	.76	28	.000	.000	.000	.000	4	
6	10	120	.01	.01	.00	0	.0	.0	6.4	0	.000	.000	.000	.13	.13	10.71	94.	.000	.64	31	.000	.000	.000	.000	4	
6	10	180	.01	.01	.00	0	.0	.0	7.4	0	.000	.000	.000	.15	.15	10.67	94.	.000	.55	34	.000	.000	.000	.000	4	
6	10	240	.01	.01	.00	0	.0	.0	4.7	0	.000	.000	.000	.10	.10	10.65	93.	.000	.46	36	.000	.000	.000	.000	4	
6	11	60	.00	.00	.00	0	.0	.0	1.0	0	.000	.000	.000	.05	.05	10.63	93.	.000	.39	40	.000	.000	.000	.000	4	
6	11	120	.00	.00	.00	0	.0	.0	7.8	0	.000	.000	.000	.17	.17	10.59	93.	.000	.33	45	.000	.000	.000	.000	4	
6	11	180	.00	.00	.00	0	.0	.0	9.8	0	.000	.000	.000	.22	.22	10.54	93.	.000	.28	48	.000	.000	.000	.000	4	
6	11	240	.00	.00	.00	0	.0	.0	4.4	0	.000	.000	.000	.10	.10	10.51	93.	.000	.24	52	.000	.000	.000	.000	4	
6	12	60	.00	.00	.00	0	.0	.0	.0	0	.000	.000	.000	.05	.05	10.50	93.	.000	.20	54	.000	.000	.000	.000	4	
6	12	120	.00	.00	.00	0	.0	.0	9.1	0	.000	.000	.000	.20	.20	10.45	93.	.000	.17	57	.000	.000	.000	.000	4	
6	12	180	.00	.00	.00	0	.0	.0	12.8	0	.000	.000	.000	.29	.29	10.38	92.	.000	.14	59	.000	.000	.000	.000	4	
6	12	240	.00	.00	.00	0	.0	.0	5.4	0	.000	.000	.000	.12	.12	10.35	92.	.000	.12	60	.000	.000	.000	.000	4	
6	13	60	.09	.09	.00	0	.0	.0	.8	0	.000	.000	.000	.04	.04	10.34	92.	.000	.10	62	.000	.000	.000	.000	4	
6	13	120	.08	.08	.00	0	.0	.0	14.7	0	.000	.000	.000	.28	.28	10.27	92.	.000	.09	63	.000	.000	.000	.000	4	
6	13	180	.08	.08	.00	0	.0	.0	20.3	0	.000	.000	.000	.40	.40	10.17	91.	.000	.07	64	.000	.000	.000	.000	4	

6 13 240	.08	.08	.00	0	.0	.0	9.4	0	.000	.000	.000	.17	.17	10.13	91.	.000	.06	65	.000	.000	.000	.000	4
6 14 60	.01	.01	.00	0	.0	.0	6.8	0	.000	.000	.000	.14	.14	10.09	90.	.000	.05	66	.000	.000	.000	.000	4
6 14 120	.01	.01	.00	0	.0	.0	15.9	0	.000	.000	.000	.36	.36	10.00	90.	.000	.04	66	.000	.000	.000	.000	4
6 14 180	.01	.01	.00	0	.0	.0	19.6	0	.000	.000	.000	.46	.46	9.89	89.	.000	.04	67	.000	.000	.000	.000	4
6 14 240	.01	.01	.00	0	.0	.0	12.2	0	.000	.000	.000	.27	.27	9.82	88.	.000	.03	67	.000	.000	.000	.000	4
6 15 60	.06	.06	.00	0	.0	.0	1.6	0	.000	.000	.000	.05	.05	9.81	87.	.000	.03	67	.000	.000	.000	.000	4
6 15 120	.05	.05	.00	0	.0	.0	7.3	0	.000	.000	.000	.14	.14	9.77	87.	.000	.02	68	.000	.000	.000	.000	4
6 15 180	.05	.05	.00	0	.0	.0	10.0	0	.000	.000	.000	.19	.19	9.72	87.	.000	.02	68	.000	.000	.000	.000	4
6 15 240	.05	.05	.00	0	.0	.0	4.6	0	.000	.000	.000	.09	.09	9.70	87.	.000	.02	68	.000	.000	.000	.000	4
6 16 60	.16	.16	.00	0	.0	.0	.3	0	.000	.000	.000	.03	.03	9.69	86.	.000	.01	68	.000	.000	.000	.000	4
6 16 120	.14	.14	.00	0	.0	.0	7.0	0	.000	.000	.000	.10	.10	9.67	86.	.000	.01	69	.000	.000	.000	.000	4
6 16 180	.14	.14	.00	0	.0	.0	9.7	0	.000	.000	.000	.15	.15	9.63	86.	.000	.01	69	.000	.000	.000	.000	4
6 16 240	.14	.06	.00	0	.0	.0	4.3	0	.000	.000	.076	.07	.07	9.62	86.	.065	.05	69	.010	.010	.036	.009	4
6 17 60	.34	.02	.00	0	.0	.0	5.4	0	.000	.000	.325	.04	.04	9.66	86.	.279	.21	66	.046	.046	.149	.037	4
6 17 120	.34	.01	.00	0	.0	.0	11.1	0	.000	.000	.332	.09	.09	9.68	86.	.285	.36	56	.062	.062	.129	.032	4
6 17 180	.34	.02	.00	0	.0	.0	12.8	0	.000	.000	.320	.10	.10	9.70	86.	.276	.47	47	.073	.073	.104	.026	4
6 17 240	.34	.03	.00	0	.0	.0	8.4	0	.000	.000	.316	.06	.06	9.73	86.	.273	.57	39	.082	.082	.087	.022	4
6 18 60	.00	.00	.00	0	.0	.0	4.4	0	.000	.000	.000	.10	.10	9.71	87.	.000	.48	36	.000	.000	.000	.000	4
6 18 120	.00	.00	.00	0	.0	.0	12.7	0	.000	.000	.000	.29	.29	9.63	86.	.000	.41	39	.000	.000	.000	.000	4
6 18 180	.00	.00	.00	0	.0	.0	15.7	0	.000	.000	.000	.37	.37	9.54	86.	.000	.34	44	.000	.000	.000	.000	4

BASIN ZONE MM-YY AREA ELEV PP% TINTMX																							
GULLMUSK 4 6 8110320.0 415. 100.0 .51																							
COMPUTED LOWER CHURCHILL DRAINAGE																							
MO DAY HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE F
6 18 240	.00	.00	.00	0	.0	.0	9.4	0	.000	.000	.000	.21	.21	9.49	85.	.000	.29	48	.000	.000	.000	.000	4
6 19 60	.12	.12	.00	0	.0	.0	6.9	0	.000	.000	.000	.11	.11	9.46	84.	.000	.25	51	.000	.000	.000	.000	4
6 19 120	.12	.12	.00	0	.0	.0	18.7	0	.000	.000	.000	.32	.32	9.38	84.	.000	.21	54	.000	.000	.000	.000	4
6 19 180	.12	.12	.00	0	.0	.0	23.6	0	.000	.000	.000	.42	.42	9.28	83.	.000	.18	56	.000	.000	.000	.000	4
6 19 240	.12	.11	.00	0	.0	.0	14.1	0	.000	.000	.010	.23	.23	9.22	83.	.008	.15	58	.002	.002	.004	.001	4
6 20 60	.01	.01	.00	0	.0	.0	4.5	0	.000	.000	.000	.10	.10	9.20	82.	.000	.13	60	.000	.000	.000	.000	4
6 20 120	.01	.01	.00	0	.0	.0	11.1	0	.000	.000	.000	.24	.24	9.14	82.	.000	.11	61	.000	.000	.000	.000	4
6 20 180	.01	.01	.00	0	.0	.0	14.1	0	.000	.000	.000	.32	.32	9.06	81.	.000	.09	62	.000	.000	.000	.000	4
6 20 240	.01	.01	.00	0	.0	.0	8.5	0	.000	.000	.000	.18	.18	9.01	80.	.000	.08	64	.000	.000	.000	.000	4
6 21 60	.00	.00	.00	0	.0	.0	3.5	0	.000	.000	.000	.08	.08	8.99	80.	.000	.07	64	.000	.000	.000	.000	4
6 21 120	.00	.00	.00	0	.0	.0	13.6	0	.000	.000	.000	.31	.31	8.91	80.	.000	.06	65	.000	.000	.000	.000	4
6 21 180	.00	.00	.00	0	.0	.0	17.3	0	.000	.000	.000	.41	.41	8.81	79.	.000	.05	66	.000	.000	.000	.000	4
6 21 240	.00	.00	.00	0	.0	.0	9.2	0	.000	.000	.000	.20	.20	8.76	78.	.000	.04	66	.000	.000	.000	.000	4
6 22 60	.01	.01	.00	0	.0	.0	8.4	0	.000	.000	.000	.18	.18	8.72	78.	.000	.03	67	.000	.000	.000	.000	4
6 22 120	.01	.01	.00	0	.0	.0	14.8	0	.000	.000	.000	.34	.34	8.63	77.	.000	.03	67	.000	.000	.000	.000	4
6 22 180	.01	.01	.00	0	.0	.0	17.5	0	.000	.000	.000	.41	.41	8.53	77.	.000	.02	68	.000	.000	.000	.000	4
6 22 240	.01	.01	.00	0	.0	.0	12.1	0	.000	.000	.000	.27	.27	8.46	76.	.000	.02	68	.000	.000	.000	.000	4
6 23 60	.46	.46	.00	0	.0	.0	3.9	0	.000	.000	.000	.01	.01	8.46	75.	.000	.02	68	.000	.000	.000	.000	4
6 23 120	.46	.05	.00	0	.0	.0	8.0	0	.000	.000	.410	.03	.03	8.56	75.	.308	.20	68	.048	.048	.169	.042	4
6 23 180	.46	.01	.00	0	.0	.0	9.7	0	.000	.000	.455	.03	.03	8.66	76.	.345	.39	56	.074	.074	.157	.039	4
6 23 240	.46	.01	.00	0	.0	.0	6.3	0	.000	.000	.453	.02	.02	8.76	77.	.348	.54	45	.095	.095	.126	.032	4
6 24 60	.18	.01	.16	1	.0	.0	1.6	0	.000	.000	.010	.03	.03	8.75	78.	.008	.46	37	.002	.002	.002	.001	4 A
6 24 120	.16	.01	.00	0	.0	.0	5.6	1	.243	.160	.310	.08	.08	8.80	78.	.241	.54	40	.072	.072	.078	.019	4 D
6 24 180	.16	.02	.00	0	.0	.0	6.6	0	.000	.000	.138	.09	.09	8.81	78.	.108	.52	37	.034	.034	.032	.008	4

6	24	240	.16	.02	.00	0	.0	.0	3.6	0	.000	.000	.135	.05	.05	8.83	78.	.105	.51	37	.033	.033	.032	.008	4
6	25	60	.02	.01	.00	0	.0	.0	4.0	0	.000	.000	.007	.09	.09	8.80	78.	.005	.43	37	.002	.002	.002	.000	4
6	25	120	.02	.02	.00	0	.0	.0	8.0	0	.000	.000	.000	.16	.16	8.76	78.	.000	.37	42	.000	.000	.000	.000	4
6	25	180	.02	.02	.00	0	.0	.0	10.0	0	.000	.000	.000	.21	.21	8.71	78.	.000	.31	46	.000	.000	.000	.000	4
6	25	240	.02	.02	.00	0	.0	.0	6.0	0	.000	.000	.000	.12	.12	8.68	77.	.000	.26	50	.000	.000	.000	.000	4
6	26	60	.54	.09	.00	0	.0	.0	4.3	0	.000	.000	.455	.01	.01	8.78	77.	.350	.44	53	.082	.082	.149	.037	4
6	26	120	.54	.00	.00	0	.0	.0	10.0	0	.000	.000	.539	.02	.02	8.90	78.	.420	.63	42	.122	.122	.141	.035	4
6	26	180	.54	.01	.00	0	.0	.0	12.0	0	.000	.000	.535	.03	.03	9.00	79.	.423	.79	34	.138	.138	.118	.030	4
6	26	240	.54	.01	.00	0	.0	.0	7.3	0	.000	.000	.534	.02	.02	9.11	80.	.427	.93	31	.147	.147	.106	.026	4
6	27	60	.21	.00	.00	0	.0	.0	5.0	0	.000	.000	.203	.06	.06	9.13	81.	.164	.89	27	.059	.059	.036	.009	4
6	27	120	.21	.02	.00	0	.0	.0	8.2	0	.000	.000	.191	.10	.10	9.14	81.	.155	.85	28	.055	.055	.036	.009	4
6	27	180	.21	.02	.00	0	.0	.0	8.8	0	.000	.000	.182	.11	.11	9.15	81.	.148	.81	29	.052	.052	.035	.009	4
6	27	240	.21	.03	.00	0	.0	.0	6.6	0	.000	.000	.180	.08	.08	9.16	81.	.146	.77	30	.051	.051	.036	.009	4
6	28	60	.00	.00	.00	0	.0	.0	5.7	0	.000	.000	.000	.12	.12	9.13	81.	.000	.66	31	.000	.000	.000	.000	4
6	28	120	.00	.00	.00	0	.0	.0	12.1	0	.000	.000	.000	.27	.27	9.06	81.	.000	.55	34	.000	.000	.000	.000	4
6	28	180	.00	.00	.00	0	.0	.0	14.8	0	.000	.000	.000	.34	.34	8.98	80.	.000	.47	36	.000	.000	.000	.000	4
6	28	240	.00	.00	.00	0	.0	.0	9.4	0	.000	.000	.000	.20	.20	8.92	80.	.000	.40	39	.000	.000	.000	.000	4
6	29	60	.01	.01	.00	0	.0	.0	5.8	0	.000	.000	.000	.12	.12	8.89	79.	.000	.34	44	.000	.000	.000	.000	4
6	29	120	.01	.01	.00	0	.0	.0	17.0	0	.000	.000	.000	.39	.39	8.80	79.	.000	.28	48	.000	.000	.000	.000	4
6	29	180	.01	.01	.00	0	.0	.0	21.6	0	.000	.000	.000	.52	.52	8.67	78.	.000	.24	51	.000	.000	.000	.000	4
6	29	240	.01	.01	.00	0	.0	.0	12.4	0	.000	.000	.000	.28	.28	8.60	77.	.000	.20	54	.000	.000	.000	.000	4
6	30	60	.14	.14	.00	0	.0	.0	8.5	0	.000	.000	.000	.12	.12	8.57	76.	.000	.17	56	.000	.000	.000	.000	4
6	30	120	.14	.14	.00	0	.0	.0	14.2	0	.000	.000	.000	.22	.22	8.51	76.	.000	.15	58	.000	.000	.000	.000	4
6	30	180	.14	.14	.00	0	.0	.0	16.2	0	.000	.000	.000	.26	.26	8.45	75.	.000	.12	60	.000	.000	.000	.000	4
6	30	240	.14	.14	.00	0	.0	.0	11.5	0	.000	.000	.000	.18	.18	8.40	75.	.000	.10	62	.000	.000	.000	.000	4

14.99

3.79

6.936

4.22

18.010

4.22

15.981

5.703

3.660

5.703

.915

7	1	60	.07	.07	.00	0	.0	.0	6.0	0	.000	.000	.000	.11	.11	8.37	74.	.000	.09	63	.000	.000	.000	.000	4
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BASIN ZONE MM-YY AREA ELEV PP% TINTMX										COMPUTED LOWER CHURCHILL DRAINAGE																
GULLMUSK	4	7	8110320.0	415.	100.0	.51																				
MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F
7	1	120	.07	.07	.00	0	.0	.0	14.7	0	.000	.000	.000	.28	.28	8.30	74.	.000	.07	64	.000	.000	.000	.000	.000	4
7	1	180	.07	.07	.00	0	.0	.0	18.0	0	.000	.000	.000	.35	.35	8.22	73.	.000	.06	65	.000	.000	.000	.000	.000	4
7	1	240	.07	.07	.00	0	.0	.0	11.0	0	.000	.000	.000	.20	.20	8.16	73.	.000	.05	65	.000	.000	.000	.000	.000	4
7	2	60	.00	.00	.00	0	.0	.0	9.8	0	.000	.000	.000	.21	.21	8.11	72.	.000	.05	66	.000	.000	.000	.000	.000	4
7	2	120	.00	.00	.00	0	.0	.0	20.7	0	.000	.000	.000	.50	.50	7.99	72.	.000	.04	67	.000	.000	.000	.000	.000	4
7	2	180	.00	.00	.00	0	.0	.0	25.0	0	.000	.000	.000	.62	.62	7.83	71.	.000	.03	67	.000	.000	.000	.000	.000	4
7	2	240	.00	.00	.00	0	.0	.0	16.4	0	.000	.000	.000	.38	.38	7.74	69.	.000	.03	67	.000	.000	.000	.000	.000	4
7	3	60	.01	.01	.00	0	.0	.0	15.5	0	.000	.000	.000	.35	.35	7.65	68.	.000	.02	68	.000	.000	.000	.000	.000	4
7	3	120	.01	.01	.00	0	.0	.0	24.2	0	.000	.000	.000	.57	.57	7.51	67.	.000	.02	68	.000	.000	.000	.000	.000	4
7	3	180	.01	.01	.00	0	.0	.0	27.9	0	.000	.000	.000	.67	.67	7.34	66.	.000	.02	68	.000	.000	.000	.000	.000	4
7	3	240	.01	.01	.00	0	.0	.0	20.5	0	.000	.000	.000	.47	.47	7.22	64.	.000	.01	68	.000	.000	.000	.000	.000	4
7	4	60	.00	.00	.00	0	.0	.0	7.1	0	.000	.000	.000	.15	.15	7.18	63.	.000	.01	69	.000	.000	.000	.000	.000	4
7	4	120	.00	.00	.00	0	.0	.0	14.6	0	.000	.000	.000	.33	.33	7.10	62.	.000	.01	69	.000	.000	.000	.000	.000	4
7	4	180	.00	.00	.00	0	.0	.0	16.5	0	.000	.000	.000	.38	.38	7.00	61.	.000	.01	69	.000	.000	.000	.000	.000	4

7	4	240	.00	.00	.00	0	.0	.0	11.3	0	.000	.000	.000	.25	.25	6.94	60.	.000	.01	69	.000	.000	.000	.000	4
7	5	60	.00	.00	.00	0	.0	.0	5.0	0	.000	.000	.000	.11	.11	6.91	60.	.000	.01	69	.000	.000	.000	.000	4
7	5	120	.00	.00	.00	0	.0	.0	15.5	0	.000	.000	.000	.36	.36	6.82	59.	.000	.01	69	.000	.000	.000	.000	4
7	5	180	.00	.00	.00	0	.0	.0	19.2	0	.000	.000	.000	.45	.45	6.71	58.	.000	.00	69	.000	.000	.000	.000	4
7	5	240	.00	.00	.00	0	.0	.0	11.1	0	.000	.000	.000	.25	.25	6.65	57.	.000	.00	69	.000	.000	.000	.000	4
7	6	60	.10	.10	.00	0	.0	.0	11.0	0	.000	.000	.000	.18	.18	6.60	56.	.000	.00	69	.000	.000	.000	.000	4
7	6	120	.10	.10	.00	0	.0	.0	18.9	0	.000	.000	.000	.34	.34	6.52	56.	.000	.00	69	.000	.000	.000	.000	4
7	6	180	.10	.10	.00	0	.0	.0	22.2	0	.000	.000	.000	.41	.41	6.42	55.	.000	.00	69	.000	.000	.000	.000	4
7	6	240	.10	.10	.00	0	.0	.0	15.6	0	.000	.000	.000	.27	.27	6.35	54.	.000	.00	69	.000	.000	.000	.000	4
7	7	60	.04	.04	.00	0	.0	.0	8.9	0	.000	.000	.000	.17	.17	6.31	53.	.000	.00	69	.000	.000	.000	.000	4
7	7	120	.04	.04	.00	0	.0	.0	13.8	0	.000	.000	.000	.28	.28	6.24	53.	.000	.00	69	.000	.000	.000	.000	4
7	7	180	.04	.04	.00	0	.0	.0	15.8	0	.000	.000	.000	.33	.33	6.16	52.	.000	.00	69	.000	.000	.000	.000	4
7	7	240	.04	.04	.00	0	.0	.0	12.2	0	.000	.000	.000	.25	.25	6.09	51.	.000	.00	69	.000	.000	.000	.000	4
7	8	60	.00	.00	.00	0	.0	.0	8.3	0	.000	.000	.000	.17	.17	6.05	50.	.000	.00	69	.000	.000	.000	.000	4
7	8	120	.00	.00	.00	0	.0	.0	11.6	0	.000	.000	.000	.25	.25	5.99	50.	.000	.00	69	.000	.000	.000	.000	4
7	8	180	.00	.00	.00	0	.0	.0	13.6	0	.000	.000	.000	.30	.30	5.91	49.	.000	.00	69	.000	.000	.000	.000	4
7	8	240	.00	.00	.00	0	.0	.0	10.6	0	.000	.000	.000	.23	.23	5.85	48.	.000	.00	69	.000	.000	.000	.000	4
7	9	60	.03	.03	.00	0	.0	.0	7.0	0	.000	.000	.000	.14	.14	5.82	47.	.000	.00	69	.000	.000	.000	.000	4
7	9	120	.03	.03	.00	0	.0	.0	10.3	0	.000	.000	.000	.21	.21	5.77	47.	.000	.00	69	.000	.000	.000	.000	4
7	9	180	.03	.03	.00	0	.0	.0	12.0	0	.000	.000	.000	.25	.25	5.71	46.	.000	.00	69	.000	.000	.000	.000	4
7	9	240	.03	.03	.00	0	.0	.0	9.0	0	.000	.000	.000	.18	.18	5.66	46.	.000	.00	69	.000	.000	.000	.000	4
7	10	60	.03	.03	.00	0	.0	.0	4.7	0	.000	.000	.000	.10	.10	5.64	45.	.000	.00	69	.000	.000	.000	.000	4
7	10	120	.03	.03	.00	0	.0	.0	8.7	0	.000	.000	.000	.17	.17	5.60	45.	.000	.00	69	.000	.000	.000	.000	4
7	10	180	.03	.03	.00	0	.0	.0	9.7	0	.000	.000	.000	.19	.19	5.55	45.	.000	.00	69	.000	.000	.000	.000	4
7	10	240	.03	.03	.00	0	.0	.0	7.0	0	.000	.000	.000	.14	.14	5.51	44.	.000	.00	69	.000	.000	.000	.000	4
7	11	60	.02	.02	.00	0	.0	.0	5.4	0	.000	.000	.000	.11	.11	5.49	44.	.000	.00	69	.000	.000	.000	.000	4
7	11	120	.02	.02	.00	0	.0	.0	11.1	0	.000	.000	.000	.23	.23	5.43	43.	.000	.00	69	.000	.000	.000	.000	4
7	11	180	.02	.02	.00	0	.0	.0	13.8	0	.000	.000	.000	.30	.30	5.35	43.	.000	.00	70	.000	.000	.000	.000	4
7	11	240	.02	.02	.00	0	.0	.0	9.1	0	.000	.000	.000	.18	.18	5.31	42.	.000	.00	70	.000	.000	.000	.000	4
7	12	60	.01	.01	.00	0	.0	.0	7.9	0	.000	.000	.000	.16	.16	5.27	41.	.000	.00	70	.000	.000	.000	.000	4
7	12	120	.01	.01	.00	0	.0	.0	15.4	0	.000	.000	.000	.34	.34	5.18	41.	.000	.00	70	.000	.000	.000	.000	4
7	12	180	.01	.01	.00	0	.0	.0	18.7	0	.000	.000	.000	.42	.42	5.08	40.	.000	.00	70	.000	.000	.000	.000	4
7	12	240	.01	.01	.00	0	.0	.0	12.5	0	.000	.000	.000	.27	.27	5.01	39.	.000	.00	70	.000	.000	.000	.000	4
7	13	60	.00	.00	.00	0	.0	.0	5.0	0	.000	.000	.000	.11	.11	4.98	38.	.000	.00	70	.000	.000	.000	.000	4
7	13	120	.00	.00	.00	0	.0	.0	12.5	0	.000	.000	.000	.27	.27	4.92	38.	.000	.00	70	.000	.000	.000	.000	4
7	13	180	.00	.00	.00	0	.0	.0	14.9	0	.000	.000	.000	.33	.33	4.83	37.	.000	.00	70	.000	.000	.000	.000	4
7	13	240	.00	.00	.00	0	.0	.0	9.1	0	.000	.000	.000	.19	.19	4.79	37.	.000	.00	70	.000	.000	.000	.000	4
7	14	60	.00	.00	.00	0	.0	.0	4.0	0	.000	.000	.000	.09	.09	4.76	36.	.000	.00	70	.000	.000	.000	.000	4
7	14	120	.00	.00	.00	0	.0	.0	10.1	0	.000	.000	.000	.21	.21	4.71	36.	.000	.00	70	.000	.000	.000	.000	4
7	14	180	.00	.00	.00	0	.0	.0	12.1	0	.000	.000	.000	.26	.26	4.65	36.	.000	.00	70	.000	.000	.000	.000	4

BASIN		ZONE	MM-YY	AREA	ELEV	PP%	TINTMX	COMPUTED LOWER CHURCHILL DRAINAGE																			
GULLMUSK		4	7	8110320.0	415.	100.0	.51																				
MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F	
7	14	240	.00	.00	.00	0	.0	.0	7.7	0	.000	.000	.000	.16	.16	4.61	35.	.000	.00	70	.000	.000	.000	.000	.000	4	
7	15	60	.71	.51	.00	0	.0	.0	5.4	0	.000	.000	.201	.01	.01	4.73	35.	.070	.04	70	.010	.010	.039	.010	4		
7	15	120	.71	.00	.00	0	.0	.0	7.7	0	.000	.000	.708	.02	.02	5.18	36.	.254	.19	67	.042	.042	.137	.034	4		
7	15	180	.71	.00	.00	0	.0	.0	8.7	0	.000	.000	.707	.02	.02	5.60	40.	.282	.34	57	.060	.060	.130	.033	4		

7 15 240	.71	.00	.00	0	.0	.0	6.7	0	.000	.000	.707	.01	.01	5.99	45.	.315	.48	48	.081	.081	.122	.031	4
7 16 60	.16	.00	.00	0	.0	.0	4.6	0	.000	.000	.154	.06	.06	6.05	49.	.075	.45	39	.023	.023	.024	.006	4
7 16 120	.16	.02	.00	0	.0	.0	9.4	0	.000	.000	.141	.13	.13	6.09	50.	.070	.43	41	.021	.021	.023	.006	4
7 16 180	.16	.03	.00	0	.0	.0	10.8	0	.000	.000	.125	.15	.15	6.12	50.	.063	.40	42	.018	.018	.021	.005	4
7 16 240	.16	.04	.00	0	.0	.0	7.0	0	.000	.000	.120	.09	.09	6.16	50.	.060	.37	44	.017	.017	.021	.005	4
7 17 60	.00	.00	.00	0	.0	.0	3.6	0	.000	.000	.000	.08	.08	6.14	51.	.000	.32	46	.000	.000	.000	.000	4
7 17 120	.00	.00	.00	0	.0	.0	15.6	0	.000	.000	.000	.34	.34	6.05	51.	.000	.27	49	.000	.000	.000	.000	4
7 17 180	.00	.00	.00	0	.0	.0	20.3	0	.000	.000	.000	.46	.46	5.93	50.	.000	.23	52	.000	.000	.000	.000	4
7 17 240	.00	.00	.00	0	.0	.0	10.6	0	.000	.000	.000	.22	.22	5.88	48.	.000	.19	55	.000	.000	.000	.000	4
7 18 60	.00	.00	.00	0	.0	.0	8.6	0	.000	.000	.000	.18	.18	5.83	48.	.000	.16	57	.000	.000	.000	.000	4
7 18 120	.00	.00	.00	0	.0	.0	18.9	0	.000	.000	.000	.43	.43	5.73	47.	.000	.14	59	.000	.000	.000	.000	4
7 18 180	.00	.00	.00	0	.0	.0	22.9	0	.000	.000	.000	.53	.53	5.59	46.	.000	.12	61	.000	.000	.000	.000	4
7 18 240	.00	.00	.00	0	.0	.0	14.6	0	.000	.000	.000	.32	.32	5.51	45.	.000	.10	62	.000	.000	.000	.000	4
7 19 60	.00	.00	.00	0	.0	.0	12.7	0	.000	.000	.000	.27	.27	5.45	44.	.000	.08	63	.000	.000	.000	.000	4
7 19 120	.00	.00	.00	0	.0	.0	22.6	0	.000	.000	.000	.52	.52	5.31	43.	.000	.07	64	.000	.000	.000	.000	4
7 19 180	.00	.00	.00	0	.0	.0	25.9	0	.000	.000	.000	.61	.61	5.16	41.	.000	.06	65	.000	.000	.000	.000	4
7 19 240	.00	.00	.00	0	.0	.0	18.3	0	.000	.000	.000	.41	.41	5.06	40.	.000	.05	66	.000	.000	.000	.000	4
7 20 60	.00	.00	.00	0	.0	.0	15.3	0	.000	.000	.000	.33	.33	4.98	39.	.000	.04	66	.000	.000	.000	.000	4
7 20 120	.00	.00	.00	0	.0	.0	25.0	0	.000	.000	.000	.58	.58	4.83	38.	.000	.04	67	.000	.000	.000	.000	4
7 20 180	.00	.00	.00	0	.0	.0	28.3	0	.000	.000	.000	.67	.67	4.66	37.	.000	.03	67	.000	.000	.000	.000	4
7 20 240	.00	.00	.00	0	.0	.0	21.3	0	.000	.000	.000	.49	.49	4.54	35.	.000	.03	68	.000	.000	.000	.000	4
7 21 60	.76	.51	.00	0	.0	.0	13.3	0	.000	.000	.251	.03	.03	4.70	34.	.086	.07	68	.014	.014	.047	.012	4
7 21 120	.76	.01	.00	0	.0	.0	17.5	0	.000	.000	.754	.04	.04	5.17	36.	.268	.23	65	.047	.047	.140	.035	4
7 21 180	.76	.01	.00	0	.0	.0	18.8	0	.000	.000	.751	.04	.04	5.62	40.	.299	.38	55	.067	.067	.133	.033	4
7 21 240	.76	.01	.00	0	.0	.0	15.9	0	.000	.000	.751	.03	.03	6.02	45.	.336	.53	45	.091	.091	.123	.031	4
7 22 60	.26	.01	.00	0	.0	.0	6.0	0	.000	.000	.248	.06	.06	6.13	49.	.122	.52	37	.038	.038	.037	.009	4
7 22 120	.26	.01	.00	0	.0	.0	11.6	0	.000	.000	.242	.12	.12	6.22	51.	.122	.52	37	.038	.038	.037	.009	4
7 22 180	.26	.03	.00	0	.0	.0	12.9	0	.000	.000	.227	.13	.13	6.30	52.	.117	.51	37	.037	.037	.035	.009	4
7 22 240	.26	.03	.00	0	.0	.0	9.3	0	.000	.000	.223	.09	.09	6.38	52.	.117	.50	37	.036	.036	.035	.009	4
7 23 60	.01	.01	.00	0	.0	.0	5.4	0	.000	.000	.000	.11	.11	6.35	53.	.000	.43	37	.000	.000	.000	.000	4
7 23 120	.01	.01	.00	0	.0	.0	12.0	0	.000	.000	.000	.25	.25	6.29	53.	.000	.36	42	.000	.000	.000	.000	4
7 23 180	.01	.01	.00	0	.0	.0	14.6	0	.000	.000	.000	.31	.31	6.21	52.	.000	.30	46	.000	.000	.000	.000	4
7 23 240	.01	.01	.00	0	.0	.0	9.7	0	.000	.000	.000	.20	.20	6.17	51.	.000	.26	50	.000	.000	.000	.000	4
7 24 60	.01	.01	.00	0	.0	.0	7.0	0	.000	.000	.000	.14	.14	6.13	51.	.000	.22	53	.000	.000	.000	.000	4
7 24 120	.01	.01	.00	0	.0	.0	18.3	0	.000	.000	.000	.39	.39	6.03	51.	.000	.18	56	.000	.000	.000	.000	4
7 24 180	.01	.01	.00	0	.0	.0	22.6	0	.000	.000	.000	.50	.50	5.91	49.	.000	.16	58	.000	.000	.000	.000	4
7 24 240	.01	.01	.00	0	.0	.0	13.3	0	.000	.000	.000	.27	.27	5.84	48.	.000	.13	60	.000	.000	.000	.000	4
7 25 60	.00	.00	.00	0	.0	.0	6.9	0	.000	.000	.000	.14	.14	5.81	47.	.000	.11	61	.000	.000	.000	.000	4
7 25 120	.00	.00	.00	0	.0	.0	18.7	0	.000	.000	.000	.41	.41	5.70	47.	.000	.09	62	.000	.000	.000	.000	4
7 25 180	.00	.00	.00	0	.0	.0	23.4	0	.000	.000	.000	.53	.53	5.57	46.	.000	.08	63	.000	.000	.000	.000	4
7 25 240	.00	.00	.00	0	.0	.0	14.3	0	.000	.000	.000	.31	.31	5.49	44.	.000	.07	64	.000	.000	.000	.000	4
7 26 60	.13	.13	.00	0	.0	.0	13.3	0	.000	.000	.000	.19	.19	5.45	43.	.000	.06	65	.000	.000	.000	.000	4
7 26 120	.13	.13	.00	0	.0	.0	20.9	0	.000	.000	.000	.32	.32	5.36	43.	.000	.05	66	.000	.000	.000	.000	4
7 26 180	.13	.13	.00	0	.0	.0	23.2	0	.000	.000	.000	.36	.36	5.27	42.	.000	.04	66	.000	.000	.000	.000	4
7 26 240	.13	.13	.00	0	.0	.0	17.6	0	.000	.000	.000	.26	.26	5.21	41.	.000	.03	67	.000	.000	.000	.000	4
7 27 60	.28	.26	.00	0	.0	.0	9.3	0	.000	.000	.018	.08	.08	5.20	40.	.007	.03	67	.001	.001	.004	.001	4
7 27 120	.28	.02	.00	0	.0	.0	14.6	0	.000	.000	.260	.14	.14	5.32	40.	.104	.09	67	.017	.017	.057	.014	4
7 27 180	.28	.03	.00	0	.0	.0	16.6	0	.000	.000	.246	.16	.16	5.42	41.	.102	.14	64	.018	.018	.052	.013	4
7 27 240	.28	.04	.00	0	.0	.0	12.6	0	.000	.000	.241	.12	.12	5.53	43.	.103	.18	60	.020	.020	.050	.013	4

7 28 60 .35 .03 .00 0 .0 .0 7.4 0 .000 .000 .319 .05 .05 5.70 44. .140 .24 58 .029 .029 .065 .016 4

BASIN ZONE MM-YY AREA ELEV PP% TINTMX																									
GULLMUSK 4 7 8110320.0 415. 100.0 .51											COMPUTED LOWER CHURCHILL DRAINAGE														
MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE F
7	28	120	.35	.01	.00	0	.0	.0	9.7	0	.000	.000	.337	.07	.07	5.86	46.	.154	.30	54	.035	.035	.067	.017	4
7	28	180	.35	.02	.00	0	.0	.0	10.7	0	.000	.000	.332	.07	.07	6.02	48.	.158	.35	50	.039	.039	.064	.016	4
7	28	240	.35	.02	.00	0	.0	.0	8.7	0	.000	.000	.330	.06	.06	6.17	49.	.163	.40	47	.043	.043	.062	.016	4
7	29	60	.05	.01	.00	0	.0	.0	6.4	0	.000	.000	.033	.11	.11	6.16	51.	.017	.35	44	.005	.005	.006	.002	4
7	29	120	.05	.03	.00	0	.0	.0	11.1	0	.000	.000	.020	.20	.20	6.12	51.	.010	.30	47	.003	.003	.004	.001	4
7	29	180	.05	.05	.00	0	.0	.0	12.8	0	.000	.000	.000	.24	.24	6.06	50.	.000	.25	50	.000	.000	.000	.000	4
7	29	240	.05	.05	.00	0	.0	.0	9.1	0	.000	.000	.000	.16	.16	6.02	50.	.000	.21	53	.000	.000	.000	.000	4
7	30	60	.00	.00	.00	0	.0	.0	8.4	0	.000	.000	.000	.16	.16	5.98	49.	.000	.18	56	.000	.000	.000	.000	4
7	30	120	.00	.00	.00	0	.0	.0	14.8	0	.000	.000	.000	.31	.31	5.90	49.	.000	.15	58	.000	.000	.000	.000	4
7	30	180	.00	.00	.00	0	.0	.0	17.5	0	.000	.000	.000	.37	.37	5.81	48.	.000	.13	60	.000	.000	.000	.000	4
7	30	240	.00	.00	.00	0	.0	.0	12.1	0	.000	.000	.000	.25	.25	5.75	47.	.000	.11	61	.000	.000	.000	.000	4
7	31	60	.04	.04	.00	0	.0	.0	10.5	0	.000	.000	.000	.19	.19	5.70	46.	.000	.09	62	.000	.000	.000	.000	4
7	31	120	.04	.04	.00	0	.0	.0	17.9	0	.000	.000	.000	.35	.35	5.61	46.	.000	.08	64	.000	.000	.000	.000	4
7	31	180	.04	.04	.00	0	.0	.0	21.3	0	.000	.000	.000	.42	.42	5.51	45.	.000	.07	64	.000	.000	.000	.000	4
7	31	240	.04	.04	.00	0	.0	.0	15.2	0	.000	.000	.000	.29	.29	5.44	44.	.000	.06	65	.000	.000	.000	.000	4
12.27											.000			7.80		3.617				.848		1.537			
3.82											8.447			7.80								.848		.384	
8	1	60	.14	.14	.00	0	.0	.0	10.1	0	.000	.000	.000	.14	.14	5.40	43.	.000	.05	66	.000	.000	.000	.000	4
8	1	120	.14	.14	.00	0	.0	.0	16.7	0	.000	.000	.000	.24	.24	5.34	42.	.000	.04	66	.000	.000	.000	.000	4
8	1	180	.14	.14	.00	0	.0	.0	19.0	0	.000	.000	.000	.28	.28	5.27	42.	.000	.03	67	.000	.000	.000	.000	4
8	1	240	.14	.14	.00	0	.0	.0	14.4	0	.000	.000	.000	.21	.21	5.22	41.	.000	.03	67	.000	.000	.000	.000	4
8	2	60	.09	.09	.00	0	.0	.0	7.4	0	.000	.000	.000	.11	.11	5.19	40.	.000	.02	68	.000	.000	.000	.000	4
8	2	120	.09	.08	.00	0	.0	.0	10.8	0	.000	.000	.010	.17	.17	5.15	40.	.004	.02	68	.001	.001	.002	.001	4
8	2	180	.09	.04	.00	0	.0	.0	11.8	0	.000	.000	.049	.19	.19	5.14	40.	.019	.03	68	.003	.003	.011	.003	4
8	2	240	.09	.05	.00	0	.0	.0	9.1	0	.000	.000	.044	.14	.14	5.13	39.	.017	.04	67	.003	.003	.009	.002	4
8	3	60	.12	.03	.00	0	.0	.0	8.4	0	.000	.000	.083	.12	.12	5.15	39.	.033	.05	67	.005	.005	.018	.004	4
8	3	120	.12	.03	.00	0	.0	.0	11.1	0	.000	.000	.089	.16	.16	5.16	40.	.035	.07	66	.006	.006	.019	.005	4
8	3	180	.12	.04	.00	0	.0	.0	12.8	0	.000	.000	.078	.19	.19	5.16	40.	.031	.07	65	.005	.005	.016	.004	4
8	3	240	.12	.05	.00	0	.0	.0	10.1	0	.000	.000	.071	.14	.14	5.17	40.	.028	.08	65	.005	.005	.015	.004	4
8	4	60	.01	.01	.00	0	.0	.0	8.7	0	.000	.000	.000	.16	.16	5.13	40.	.000	.07	64	.000	.000	.000	.000	4
8	4	120	.01	.01	.00	0	.0	.0	13.7	0	.000	.000	.000	.27	.27	5.06	39.	.000	.06	65	.000	.000	.000	.000	4
8	4	180	.01	.01	.00	0	.0	.0	15.4	0	.000	.000	.000	.31	.31	4.98	39.	.000	.05	66	.000	.000	.000	.000	4
8	4	240	.01	.01	.00	0	.0	.0	11.7	0	.000	.000	.000	.23	.23	4.93	38.	.000	.04	66	.000	.000	.000	.000	4
8	5	60	.00	.00	.00	0	.0	.0	7.4	0	.000	.000	.000	.14	.14	4.89	38.	.000	.03	67	.000	.000	.000	.000	4
8	5	120	.00	.00	.00	0	.0	.0	13.8	0	.000	.000	.000	.28	.28	4.82	37.	.000	.03	67	.000	.000	.000	.000	4
8	5	180	.00	.00	.00	0	.0	.0	16.8	0	.000	.000	.000	.35	.35	4.73	37.	.000	.02	68	.000	.000	.000	.000	4
8	5	240	.00	.00	.00	0	.0	.0	11.1	0	.000	.000	.000	.22	.22	4.68	36.	.000	.02	68	.000	.000	.000	.000	4
8	6	60	.00	.00	.00	0	.0	.0	7.5	0	.000	.000	.000	.14	.14	4.64	35.	.000	.02	68	.000	.000	.000	.000	4
8	6	120	.00	.00	.00	0	.0	.0	17.1	0	.000	.000	.000	.35	.35	4.56	35.	.000	.02	68	.000	.000	.000	.000	4
8	6	180	.00	.00	.00	0	.0	.0	20.7	0	.000	.000	.000	.44	.44	4.45	34.	.000	.01	69	.000	.000	.000	.000	4
8	6	240	.00	.00	.00	0	.0	.0	13.1	0	.000	.000	.000	.26	.26	4.38	33.	.000	.01	69	.000	.000	.000	.000	4

8	7	60	.00	.00	.00	0	.0	.0	10.8	0	.000	.000	.000	.21	.21	4.33	33.	.000	.01	69	.000	.000	.000	.000	4
8	7	120	.00	.00	.00	0	.0	.0	18.1	0	.000	.000	.000	.37	.37	4.23	32.	.000	.01	69	.000	.000	.000	.000	4
8	7	180	.00	.00	.00	0	.0	.0	21.1	0	.000	.000	.000	.45	.45	4.12	32.	.000	.01	69	.000	.000	.000	.000	4
8	7	240	.00	.00	.00	0	.0	.0	15.1	0	.000	.000	.000	.31	.31	4.04	31.	.000	.01	69	.000	.000	.000	.000	4
8	8	60	.00	.00	.00	0	.0	.0	8.4	0	.000	.000	.000	.16	.16	4.01	30.	.000	.00	69	.000	.000	.000	.000	4
8	8	120	.00	.00	.00	0	.0	.0	18.4	0	.000	.000	.000	.38	.38	3.91	30.	.000	.00	69	.000	.000	.000	.000	4
8	8	180	.00	.00	.00	0	.0	.0	22.4	0	.000	.000	.000	.48	.48	3.79	29.	.000	.00	69	.000	.000	.000	.000	4
8	8	240	.00	.00	.00	0	.0	.0	14.4	0	.000	.000	.000	.29	.29	3.72	28.	.000	.00	69	.000	.000	.000	.000	4
8	9	60	.00	.00	.00	0	.0	.0	9.1	0	.000	.000	.000	.17	.17	3.68	27.	.000	.00	69	.000	.000	.000	.000	4
8	9	120	.00	.00	.00	0	.0	.0	19.4	0	.000	.000	.000	.40	.40	3.57	27.	.000	.00	69	.000	.000	.000	.000	4
8	9	180	.00	.00	.00	0	.0	.0	23.4	0	.000	.000	.000	.50	.50	3.45	26.	.000	.00	69	.000	.000	.000	.000	4

BASIN ZONE MM-YY AREA ELEV PP% TINTMX										COMPUTED LOWER CHURCHILL DRAINAGE																
MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F
8	9	240	.00	.00	.00	0	.0	.0	15.1	0	.000	.000	.000	.30	.30	3.37	25.	.000	.00	69	.000	.000	.000	.000	.000	4
8	10	60	.01	.01	.00	0	.0	.0	12.1	0	.000	.000	.000	.23	.23	3.32	24.	.000	.00	69	.000	.000	.000	.000	.000	4
8	10	120	.01	.01	.00	0	.0	.0	19.7	0	.000	.000	.000	.40	.40	3.22	24.	.000	.00	69	.000	.000	.000	.000	.000	4
8	10	180	.01	.01	.00	0	.0	.0	23.0	0	.000	.000	.000	.48	.48	3.10	23.	.000	.00	69	.000	.000	.000	.000	.000	4
8	10	240	.01	.01	.00	0	.0	.0	16.4	0	.000	.000	.000	.33	.33	3.01	22.	.000	.00	69	.000	.000	.000	.000	.000	4
8	11	60	.02	.02	.00	0	.0	.0	11.7	0	.000	.000	.000	.22	.22	2.96	21.	.000	.00	69	.000	.000	.000	.000	.000	4
8	11	120	.02	.02	.00	0	.0	.0	20.3	0	.000	.000	.000	.40	.40	2.86	21.	.000	.00	69	.000	.000	.000	.000	.000	4
8	11	180	.02	.02	.00	0	.0	.0	23.6	0	.000	.000	.000	.48	.47	2.74	20.	.000	.00	69	.000	.000	.000	.000	.000	4
8	11	240	.02	.02	.00	0	.0	.0	16.3	0	.000	.000	.000	.31	.31	2.67	19.	.000	.00	69	.000	.000	.000	.000	.000	4
8	12	60	.33	.33	.00	0	.0	.0	13.4	0	.000	.000	.000	.10	.09	2.64	18.	.000	.00	69	.000	.000	.000	.000	.000	4
8	12	120	.33	.20	.00	0	.0	.0	17.7	0	.000	.000	.126	.13	.13	2.71	18.	.023	.01	69	.003	.003	.013	.003	.003	4
8	12	180	.33	.03	.00	0	.0	.0	19.7	0	.000	.000	.297	.15	.15	2.92	19.	.056	.05	69	.009	.009	.031	.008	.008	4
8	12	240	.33	.04	.00	0	.0	.0	15.7	0	.000	.000	.293	.12	.12	3.12	21.	.060	.08	67	.010	.010	.032	.008	.008	4
8	13	60	.38	.03	.00	0	.0	.0	8.2	0	.000	.000	.346	.04	.04	3.38	22.	.077	.11	65	.013	.013	.040	.010	.010	4
8	13	120	.38	.01	.00	0	.0	.0	14.5	0	.000	.000	.364	.09	.09	3.63	24.	.089	.15	62	.017	.017	.045	.011	.011	4
8	13	180	.38	.02	.00	0	.0	.0	16.8	0	.000	.000	.354	.10	.10	3.87	27.	.094	.18	60	.019	.019	.045	.011	.011	4
8	13	240	.38	.03	.00	0	.0	.0	11.5	0	.000	.000	.350	.07	.07	4.10	29.	.100	.22	58	.021	.021	.047	.012	.012	4
8	14	60	.15	.02	.00	0	.0	.0	6.6	0	.000	.000	.135	.08	.08	4.17	31.	.041	.21	56	.009	.009	.018	.005	.005	4
8	14	120	.15	.02	.00	0	.0	.0	9.3	0	.000	.000	.131	.11	.11	4.24	31.	.041	.20	56	.009	.009	.019	.005	.005	4
8	14	180	.15	.03	.00	0	.0	.0	9.6	0	.000	.000	.123	.12	.12	4.29	32.	.039	.20	57	.008	.008	.018	.004	.004	4
8	14	240	.15	.03	.00	0	.0	.0	8.3	0	.000	.000	.122	.10	.10	4.35	32.	.039	.19	57	.008	.008	.018	.005	.005	4
8	15	60	.01	.01	.00	0	.0	.0	5.6	0	.000	.000	.000	.10	.10	4.32	33.	.000	.16	57	.000	.000	.000	.000	.000	4
8	15	120	.01	.01	.00	0	.0	.0	13.3	0	.000	.000	.000	.25	.25	4.26	32.	.000	.14	59	.000	.000	.000	.000	.000	4
8	15	180	.01	.01	.00	0	.0	.0	16.7	0	.000	.000	.000	.32	.32	4.18	32.	.000	.11	61	.000	.000	.000	.000	.000	4
8	15	240	.01	.01	.00	0	.0	.0	10.3	0	.000	.000	.000	.19	.19	4.13	31.	.000	.10	62	.000	.000	.000	.000	.000	4
8	16	60	.19	.19	.00	0	.0	.0	6.0	0	.000	.000	.000	.07	.07	4.12	31.	.000	.08	63	.000	.000	.000	.000	.000	4
8	16	120	.19	.04	.00	0	.0	.0	9.7	0	.000	.000	.141	.11	.11	4.19	31.	.043	.10	64	.008	.008	.022	.006	.006	4
8	16	180	.19	.03	.00	0	.0	.0	10.7	0	.000	.000	.158	.12	.12	4.27	31.	.049	.11	63	.009	.009	.025	.006	.006	4
8	16	240	.19	.03	.00	0	.0	.0	8.0	0	.000	.000	.155	.09	.09	4.35	32.	.049	.12	62	.009	.009	.025	.006	.006	4
8	17	60	.05	.02	.00	0	.0	.0	3.3	0	.000	.000	.031	.06	.06	4.36	33.	.010	.11	62	.002	.002	.005	.001	.001	4
8	17	120	.05	.01	.00	0	.0	.0	7.4	0	.000	.000	.038	.11	.11	4.35	33.	.012	.10	62	.002	.002	.006	.002	.002	4
8	17	180	.05	.03	.00	0	.0	.0	9.1	0	.000	.000	.023	.14	.14	4.33	33.	.008	.09	63	.001	.001	.004	.001	.001	4
8	17	240	.05	.04	.00	0	.0	.0	6.0	0	.000	.000	.016	.09	.09	4.32	33.	.005	.08	64	.001	.001	.003	.001	.001	4

8 18 60	.00	.00	.00	0	.0	.0	2.0	0	.000	.000	.000	.05	.05	4.31	32.	.000	.07	64	.000	.000	.000	.000	4
8 18 120	.00	.00	.00	0	.0	.0	11.8	0	.000	.000	.000	.22	.22	4.25	32.	.000	.06	65	.000	.000	.000	.000	4
8 18 180	.00	.00	.00	0	.0	.0	15.5	0	.000	.000	.000	.30	.30	4.18	32.	.000	.05	66	.000	.000	.000	.000	4
8 18 240	.00	.00	.00	0	.0	.0	7.4	0	.000	.000	.000	.13	.13	4.14	31.	.000	.04	66	.000	.000	.000	.000	4
8 19 60	.00	.00	.00	0	.0	.0	4.3	0	.000	.000	.000	.08	.08	4.12	31.	.000	.03	67	.000	.000	.000	.000	4
8 19 120	.00	.00	.00	0	.0	.0	12.4	0	.000	.000	.000	.23	.23	4.07	31.	.000	.03	67	.000	.000	.000	.000	4
8 19 180	.00	.00	.00	0	.0	.0	16.1	0	.000	.000	.000	.31	.31	3.99	30.	.000	.02	68	.000	.000	.000	.000	4
8 19 240	.00	.00	.00	0	.0	.0	9.7	0	.000	.000	.000	.18	.18	3.95	30.	.000	.02	68	.000	.000	.000	.000	4
8 20 60	.00	.00	.00	0	.0	.0	3.3	0	.000	.000	.000	.06	.06	3.93	29.	.000	.02	68	.000	.000	.000	.000	4
8 20 120	.00	.00	.00	0	.0	.0	16.0	0	.000	.000	.000	.30	.30	3.85	29.	.000	.02	68	.000	.000	.000	.000	4
8 20 180	.00	.00	.00	0	.0	.0	20.3	0	.000	.000	.000	.40	.40	3.75	28.	.000	.01	69	.000	.000	.000	.000	4
8 20 240	.00	.00	.00	0	.0	.0	10.3	0	.000	.000	.000	.19	.19	3.71	28.	.000	.01	69	.000	.000	.000	.000	4
8 21 60	.02	.02	.00	0	.0	.0	7.4	0	.000	.000	.000	.12	.12	3.68	27.	.000	.01	69	.000	.000	.000	.000	4
8 21 120	.02	.02	.00	0	.0	.0	15.0	0	.000	.000	.000	.27	.27	3.61	27.	.000	.01	69	.000	.000	.000	.000	4
8 21 180	.02	.02	.00	0	.0	.0	18.0	0	.000	.000	.000	.33	.33	3.53	26.	.000	.01	69	.000	.000	.000	.000	4
8 21 240	.02	.02	.00	0	.0	.0	11.7	0	.000	.000	.000	.20	.20	3.48	26.	.000	.01	69	.000	.000	.000	.000	4
8 22 60	.00	.00	.00	0	.0	.0	6.7	0	.000	.000	.000	.12	.12	3.45	25.	.000	.00	69	.000	.000	.000	.000	4
8 22 120	.00	.00	.00	0	.0	.0	17.3	0	.000	.000	.000	.33	.33	3.37	25.	.000	.00	69	.000	.000	.000	.000	4
8 22 180	.00	.00	.00	0	.0	.0	21.3	0	.000	.000	.000	.42	.42	3.26	24.	.000	.00	69	.000	.000	.000	.000	4
8 22 240	.00	.00	.00	0	.0	.0	13.0	0	.000	.000	.000	.24	.24	3.20	23.	.000	.00	69	.000	.000	.000	.000	4
8 23 60	.15	.15	.00	0	.0	.0	3.4	0	.000	.000	.000	.04	.04	3.19	23.	.000	.00	69	.000	.000	.000	.000	4

BASIN		ZONE	MM-YY	AREA	ELEV	PP%	TINTMX	COMPUTED LOWER CHURCHILL DRAINAGE																			
GULLMUSK		4	8 8110320.0	415.	100.0	.51																					
MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F	
8	23	120	.15	.15	.00	0	.0	.0	17.3	0	.000	.000	.000	.21	.21	3.14	23.	.000	.00	69	.000	.000	.000	.000	4		
8	23	180	.15	.15	.00	0	.0	.0	22.6	0	.000	.000	.000	.29	.29	3.06	22.	.000	.00	69	.000	.000	.000	.000	4		
8	23	240	.15	.15	.00	0	.0	.0	12.0	0	.000	.000	.000	.14	.14	3.03	22.	.000	.00	69	.000	.000	.000	.000	4		
8	24	60	.02	.02	.00	0	.0	.0	2.7	0	.000	.000	.000	.05	.05	3.01	21.	.000	.00	69	.000	.000	.000	.000	4		
8	24	120	.02	.02	.00	0	.0	.0	8.0	0	.000	.000	.000	.13	.13	2.98	21.	.000	.00	69	.000	.000	.000	.000	4		
8	24	180	.02	.02	.00	0	.0	.0	10.0	0	.000	.000	.000	.17	.17	2.94	21.	.000	.00	69	.000	.000	.000	.000	4		
8	24	240	.02	.02	.00	0	.0	.0	6.0	0	.000	.000	.000	.10	.10	2.92	21.	.000	.00	69	.000	.000	.000	.000	4		
8	25	60	.00	.00	.00	0	.0	.0	4.7	0	.000	.000	.000	.08	.08	2.90	21.	.000	.00	69	.000	.000	.000	.000	4		
8	25	120	.00	.00	.00	0	.0	.0	11.6	0	.000	.000	.000	.21	.20	2.85	20.	.000	.00	69	.000	.000	.000	.000	4		
8	25	180	.00	.00	.00	0	.0	.0	14.2	0	.000	.000	.000	.26	.25	2.78	20.	.000	.00	69	.000	.000	.000	.000	4		
8	25	240	.00	.00	.00	0	.0	.0	8.6	0	.000	.000	.000	.15	.14	2.75	19.	.000	.00	69	.000	.000	.000	.000	4		
8	26	60	.00	.00	.00	0	.0	.0	6.4	0	.000	.000	.000	.11	.11	2.72	19.	.000	.00	69	.000	.000	.000	.000	4		
8	26	120	.00	.00	.00	0	.0	.0	11.6	0	.000	.000	.000	.21	.20	2.67	19.	.000	.00	69	.000	.000	.000	.000	4		
8	26	180	.00	.00	.00	0	.0	.0	13.9	0	.000	.000	.000	.25	.24	2.61	18.	.000	.00	69	.000	.000	.000	.000	4		
8	26	240	.00	.00	.00	0	.0	.0	9.0	0	.000	.000	.000	.15	.15	2.57	18.	.000	.00	69	.000	.000	.000	.000	4		
8	27	60	.04	.04	.00	0	.0	.0	5.7	0	.000	.000	.000	.09	.08	2.55	18.	.000	.00	69	.000	.000	.000	.000	4		
8	27	120	.04	.04	.00	0	.0	.0	11.0	0	.000	.000	.000	.17	.17	2.51	17.	.000	.00	69	.000	.000	.000	.000	4		
8	27	180	.04	.04	.00	0	.0	.0	13.0	0	.000	.000	.000	.21	.20	2.46	17.	.000	.00	69	.000	.000	.000	.000	4		
8	27	240	.04	.04	.00	0	.0	.0	8.7	0	.000	.000	.000	.13	.13	2.43	17.	.000	.00	69	.000	.000	.000	.000	4		
8	28	60	.02	.02	.00	0	.0	.0	5.4	0	.000	.000	.000	.09	.08	2.41	17.	.000	.00	69	.000	.000	.000	.000	4		
8	28	120	.02	.02	.00	0	.0	.0	12.0	0	.000	.000	.000	.20	.19	2.36	17.	.000	.00	70	.000	.000	.000	.000	4		
8	28	180	.02	.02	.00	0	.0	.0	14.3	0	.000	.000	.000	.25	.23	2.30	16.	.000	.00	70	.000	.000	.000	.000	4		
8	28	240	.02	.02	.00	0	.0	.0	9.0	0	.000	.000	.000	.15	.14	2.27	16.	.000	.00	70	.000	.000	.000	.000	4		

8	29	60	.02	.02	.00	0	.0	.0	12.0	0	.000	.000	.000	.20	.19	2.22	16.	.000	.00	70	.000	.000	.000	.000	4
8	29	120	.02	.02	.00	0	.0	.0	18.5	0	.000	.000	.000	.33	.30	2.15	16.	.000	.00	70	.000	.000	.000	.000	4
8	29	180	.02	.02	.00	0	.0	.0	20.2	0	.000	.000	.000	.36	.33	2.06	16.	.000	.00	70	.000	.000	.000	.000	4
8	29	240	.02	.02	.00	0	.0	.0	16.1	0	.000	.000	.000	.28	.25	2.00	15.	.000	.00	70	.000	.000	.000	.000	4
8	30	60	.00	.00	.00	0	.0	.0	12.0	0	.000	.000	.000	.21	.19	1.95	15.	.000	.00	70	.000	.000	.000	.000	4
8	30	120	.00	.00	.00	0	.0	.0	21.3	0	.000	.000	.000	.40	.35	1.87	15.	.000	.00	70	.000	.000	.000	.000	4
8	30	180	.00	.00	.00	0	.0	.0	24.6	0	.000	.000	.000	.47	.40	1.77	15.	.000	.00	70	.000	.000	.000	.000	4
8	30	240	.00	.00	.00	0	.0	.0	17.3	0	.000	.000	.000	.31	.25	1.70	14.	.000	.00	70	.000	.000	.000	.000	4
8	31	60	.00	.00	.00	0	.0	.0	9.7	0	.000	.000	.000	.16	.13	1.67	14.	.000	.00	70	.000	.000	.000	.000	4
8	31	120	.00	.00	.00	0	.0	.0	19.7	0	.000	.000	.000	.36	.28	1.60	14.	.000	.00	70	.000	.000	.000	.000	4
8	31	180	.00	.00	.00	0	.0	.0	22.7	0	.000	.000	.000	.43	.32	1.52	14.	.000	.00	70	.000	.000	.000	.000	4
8	31	240	.00	.00	.00	0	.0	.0	15.7	0	.000	.000	.000	.28	.20	1.47	13.	.000	.00	70	.000	.000	.000	.000	4

7.01 .000 6.77 1.004 .186 .505
3.38 3.625 6.58 .186 .126

9	1	60	.00	.00	.00	0	.0	.0	10.1	0	.000	.000	.000	.17	.12	1.44	13.	.000	.00	70	.000	.000	.000	.000	4
9	1	120	.00	.00	.00	0	.0	.0	19.6	0	.000	.000	.000	.36	.24	1.38	13.	.000	.00	70	.000	.000	.000	.000	4
9	1	180	.00	.00	.00	0	.0	.0	23.3	0	.000	.000	.000	.44	.29	1.31	13.	.000	.00	70	.000	.000	.000	.000	4
9	1	240	.00	.00	.00	0	.0	.0	15.5	0	.000	.000	.000	.27	.17	1.27	13.	.000	.00	70	.000	.000	.000	.000	4
9	2	60	.00	.00	.00	0	.0	.0	12.4	0	.000	.000	.000	.21	.13	1.24	13.	.000	.00	70	.000	.000	.000	.000	4
9	2	120	.00	.00	.00	0	.0	.0	21.3	0	.000	.000	.000	.39	.23	1.18	12.	.000	.00	70	.000	.000	.000	.000	4
9	2	180	.00	.00	.00	0	.0	.0	25.3	0	.000	.000	.000	.48	.27	1.11	12.	.000	.00	70	.000	.000	.000	.000	4
9	2	240	.00	.00	.00	0	.0	.0	17.7	0	.000	.000	.000	.32	.17	1.07	12.	.000	.00	70	.000	.000	.000	.000	4
9	3	60	.00	.00	.00	0	.0	.0	11.0	0	.000	.000	.000	.19	.10	1.04	12.	.000	.00	70	.000	.000	.000	.000	4
9	3	120	.00	.00	.00	0	.0	.0	18.9	0	.000	.000	.000	.34	.18	1.00	12.	.000	.00	70	.000	.000	.000	.000	4
9	3	180	.00	.00	.00	0	.0	.0	22.2	0	.000	.000	.000	.41	.20	.95	12.	.000	.00	70	.000	.000	.000	.000	4
9	3	240	.00	.00	.00	0	.0	.0	15.6	0	.000	.000	.000	.27	.13	.91	11.	.000	.00	70	.000	.000	.000	.000	4
9	4	60	.01	.01	.00	0	.0	.0	15.0	0	.000	.000	.000	.25	.12	.89	11.	.000	.00	70	.000	.000	.000	.000	4
9	4	120	.01	.01	.00	0	.0	.0	21.9	0	.000	.000	.000	.39	.17	.84	11.	.000	.00	70	.000	.000	.000	.000	4
9	4	180	.01	.01	.00	0	.0	.0	24.2	0	.000	.000	.000	.43	.18	.80	11.	.000	.00	70	.000	.000	.000	.000	4

BASIN ZONE MM-YY AREA ELEV PP% TINTMX										COMPUTED LOWER CHURCHILL DRAINAGE																
GULLMUSK 4 9 8110320.0 415.100.0 .51																										
MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE F	
9	4	240	.01	.01	.00	0	.0	.0	19.3	0	.000	.000	.000	.33	.13	.76	11.	.000	.00	70	.000	.000	.000	.000	.000	4
9	5	60	.04	.04	.00	0	.0	.0	9.4	0	.000	.000	.000	.14	.05	.75	11.	.000	.00	70	.000	.000	.000	.000	.000	4
9	5	120	.04	.04	.00	0	.0	.0	15.7	0	.000	.000	.000	.25	.09	.73	11.	.000	.00	70	.000	.000	.000	.000	.000	4
9	5	180	.04	.04	.00	0	.0	.0	18.0	0	.000	.000	.000	.29	.10	.70	11.	.000	.00	70	.000	.000	.000	.000	.000	4
9	5	240	.04	.04	.00	0	.0	.0	13.0	0	.000	.000	.000	.20	.07	.68	11.	.000	.00	70	.000	.000	.000	.000	.000	4
9	6	60	.11	.11	.00	0	.0	.0	7.4	0	.000	.000	.000	.09	.03	.68	10.	.000	.00	70	.000	.000	.000	.000	.000	4
9	6	120	.11	.11	.00	0	.0	.0	9.4	0	.000	.000	.000	.11	.04	.67	10.	.000	.00	70	.000	.000	.000	.000	.000	4
9	6	180	.11	.11	.00	0	.0	.0	10.4	0	.000	.000	.000	.13	.04	.66	10.	.000	.00	70	.000	.000	.000	.000	.000	4
9	6	240	.11	.11	.00	0	.0	.0	8.7	0	.000	.000	.000	.10	.03	.65	10.	.000	.00	70	.000	.000	.000	.000	.000	4
9	7	60	.21	.19	.00	0	.0	.0	9.4	0	.000	.000	.022	.09	.03	.66	10.	.002	.00	70	.000	.000	.000	.001	.000	4
9	7	120	.21	.02	.00	0	.0	.0	15.8	0	.000	.000	.186	.15	.05	.81	10.	.019	.01	69	.003	.003	.003	.011	.003	4
9	7	180	.21	.04	.00	0	.0	.0	18.2	0	.000	.000	.169	.18	.07	.95	11.	.019	.02	69	.003	.003	.003	.010	.003	4
9	7	240	.21	.05	.00	0	.0	.0	13.1	0	.000	.000	.163	.13	.06	1.08	11.	.019	.03	68	.003	.003	.003	.010	.003	4

9	8	60	.00	.00	.00	0	.0	.0	12.5	0	.000	.000	.000	.21	.11	1.05	12.	.000	.03	68	.000	.000	.000	.000	4
9	8	120	.00	.00	.00	0	.0	.0	19.5	0	.000	.000	.000	.34	.18	1.00	12.	.000	.02	68	.000	.000	.000	.000	4
9	8	180	.00	.00	.00	0	.0	.0	22.5	0	.000	.000	.000	.41	.20	.95	12.	.000	.02	68	.000	.000	.000	.000	4
9	8	240	.00	.00	.00	0	.0	.0	16.5	0	.000	.000	.000	.28	.14	.92	11.	.000	.02	68	.000	.000	.000	.000	4
9	9	60	.02	.02	.00	0	.0	.0	11.0	0	.000	.000	.000	.17	.08	.90	11.	.000	.01	69	.000	.000	.000	.000	4
9	9	120	.02	.02	.00	0	.0	.0	15.7	0	.000	.000	.000	.25	.11	.87	11.	.000	.01	69	.000	.000	.000	.000	4
9	9	180	.02	.02	.00	0	.0	.0	18.1	0	.000	.000	.000	.30	.13	.84	11.	.000	.01	69	.000	.000	.000	.000	4
9	9	240	.02	.02	.00	0	.0	.0	13.7	0	.000	.000	.000	.22	.09	.82	11.	.000	.01	69	.000	.000	.000	.000	4
9	10	60	.09	.09	.00	0	.0	.0	8.0	0	.000	.000	.000	.10	.04	.81	11.	.000	.01	69	.000	.000	.000	.000	4
9	10	120	.09	.09	.00	0	.0	.0	12.6	0	.000	.000	.000	.16	.07	.79	11.	.000	.01	69	.000	.000	.000	.000	4
9	10	180	.09	.09	.00	0	.0	.0	14.9	0	.000	.000	.000	.20	.08	.77	11.	.000	.00	69	.000	.000	.000	.000	4
9	10	240	.09	.09	.00	0	.0	.0	10.6	0	.000	.000	.000	.13	.05	.76	11.	.000	.00	69	.000	.000	.000	.000	4
9	11	60	.00	.00	.00	0	.0	.0	3.6	0	.000	.000	.000	.06	.02	.75	11.	.000	.00	69	.000	.000	.000	.000	4
9	11	120	.00	.00	.00	0	.0	.0	9.3	0	.000	.000	.000	.15	.06	.74	11.	.000	.00	69	.000	.000	.000	.000	4
9	11	180	.00	.00	.00	0	.0	.0	11.3	0	.000	.000	.000	.18	.07	.72	11.	.000	.00	69	.000	.000	.000	.000	4
9	11	240	.00	.00	.00	0	.0	.0	6.6	0	.000	.000	.000	.10	.04	.71	11.	.000	.00	69	.000	.000	.000	.000	4
9	12	60	.00	.00	.00	0	.0	.0	4.1	0	.000	.000	.000	.07	.02	.71	11.	.000	.00	69	.000	.000	.000	.000	4
9	12	120	.00	.00	.00	0	.0	.0	10.7	0	.000	.000	.000	.17	.06	.69	11.	.000	.00	69	.000	.000	.000	.000	4
9	12	180	.00	.00	.00	0	.0	.0	13.0	0	.000	.000	.000	.21	.07	.67	10.	.000	.00	69	.000	.000	.000	.000	4
9	12	240	.00	.00	.00	0	.0	.0	7.7	0	.000	.000	.000	.12	.04	.66	10.	.000	.00	69	.000	.000	.000	.000	4
9	13	60	.06	.06	.00	0	.0	.0	6.4	0	.000	.000	.000	.08	.03	.66	10.	.000	.00	69	.000	.000	.000	.000	4
9	13	120	.06	.06	.00	0	.0	.0	10.0	0	.000	.000	.000	.13	.04	.64	10.	.000	.00	69	.000	.000	.000	.000	4
9	13	180	.06	.06	.00	0	.0	.0	11.3	0	.000	.000	.000	.15	.05	.63	10.	.000	.00	69	.000	.000	.000	.000	4
9	13	240	.06	.06	.00	0	.0	.0	8.7	0	.000	.000	.000	.11	.04	.62	10.	.000	.00	69	.000	.000	.000	.000	4
9	14	60	.07	.07	.00	0	.0	.0	7.0	0	.000	.000	.000	.09	.03	.62	10.	.000	.00	69	.000	.000	.000	.000	4
9	14	120	.07	.07	.00	0	.0	.0	8.7	0	.000	.000	.000	.11	.03	.61	10.	.000	.00	69	.000	.000	.000	.000	4
9	14	180	.07	.07	.00	0	.0	.0	9.4	0	.000	.000	.000	.12	.04	.60	10.	.000	.00	69	.000	.000	.000	.000	4
9	14	240	.07	.07	.00	0	.0	.0	7.7	0	.000	.000	.000	.10	.03	.59	10.	.000	.00	69	.000	.000	.000	.000	4
9	15	60	.08	.08	.00	0	.0	.0	6.0	0	.000	.000	.000	.08	.02	.59	10.	.000	.00	69	.000	.000	.000	.000	4
9	15	120	.08	.08	.00	0	.0	.0	9.7	0	.000	.000	.000	.12	.04	.58	10.	.000	.00	69	.000	.000	.000	.000	4
9	15	180	.08	.08	.00	0	.0	.0	11.4	0	.000	.000	.000	.15	.04	.57	10.	.000	.00	69	.000	.000	.000	.000	4
9	15	240	.08	.04	.00	0	.0	.0	8.7	0	.000	.000	.034	.11	.03	.59	10.	.003	.00	69	.001	.001	.002	.000	4
9	16	60	.11	.03	.00	0	.0	.0	6.0	0	.000	.000	.080	.07	.02	.66	10.	.008	.01	69	.001	.001	.005	.001	4
9	16	120	.11	.02	.00	0	.0	.0	10.0	0	.000	.000	.090	.12	.04	.73	10.	.009	.01	69	.001	.001	.005	.001	4
9	16	180	.11	.03	.00	0	.0	.0	11.7	0	.000	.000	.078	.14	.05	.78	11.	.008	.01	69	.001	.001	.005	.001	4
9	16	240	.11	.03	.00	0	.0	.0	8.0	0	.000	.000	.072	.09	.03	.84	11.	.008	.02	69	.001	.001	.004	.001	4
9	17	60	.12	.02	.00	0	.0	.0	3.0	0	.000	.000	.102	.04	.01	.93	11.	.011	.02	68	.002	.002	.006	.002	4
9	17	120	.12	.01	.00	0	.0	.0	7.7	0	.000	.000	.115	.08	.04	1.02	11.	.013	.03	68	.002	.002	.007	.002	4
9	17	180	.12	.02	.00	0	.0	.0	9.7	0	.000	.000	.104	.10	.05	1.10	12.	.012	.03	68	.002	.002	.007	.002	4
9	17	240	.12	.03	.00	0	.0	.0	6.0	0	.000	.000	.098	.06	.03	1.18	12.	.012	.03	68	.002	.002	.006	.002	4
9	18	60	.00	.00	.00	0	.0	.0	1.9	0	.000	.000	.000	.04	.02	1.17	12.	.000	.03	67	.000	.000	.000	.000	4

BASIN ZONE MM-YY AREA ELEV PP% TINTMX										COMPUTED LOWER CHURCHILL DRAINAGE																		
GULLMUSK 4 9 8110320.0 415. 100.0 .51										MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F			
MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F		
9	18	120	.00	.00	.00	0	.0	.0	7.9	0	.000	.000	.000	.12	.07	1.15	12.	.000	.02	68	.000	.000	.000	.000	.000	4		
9	18	180	.00	.00	.00	0	.0	.0	10.6	0	.000	.000	.000	.16	.09	1.13	12.	.000	.02	68	.000	.000	.000	.000	.000	4		
9	18	240	.00	.00	.00	0	.0	.0	5.6	0	.000	.000	.000	.08	.05	1.12	12.	.000	.02	68	.000	.000	.000	.000	.000	4		

9 19 60	.07	.07	.00	0	.0	.0	6.0	0	.000	.000	.000	.07	.04	1.11	12.	.000	.01	68	.000	.000	.000	.000	4	
9 19 120	.07	.05	.00	0	.0	.0	9.6	0	.000	.000	.024	.12	.07	1.11	12.	.003	.01	69	.000	.000	.002	.000	4	
9 19 180	.07	.03	.00	0	.0	.0	10.9	0	.000	.000	.044	.14	.08	1.13	12.	.005	.01	69	.001	.001	.003	.001	4	
9 19 240	.07	.03	.00	0	.0	.0	8.3	0	.000	.000	.039	.10	.06	1.15	12.	.005	.02	69	.001	.001	.003	.001	4	
9 20 60	.91	.03	.00	0	.0	.0	4.6	0	.000	.000	.885	.01	.00	1.93	12.	.107	.08	69	.017	.017	.059	.015	4	
9 20 120	.91	.00	.00	0	.0	.0	7.3	0	.000	.000	.908	.01	.01	2.70	15.	.136	.15	64	.024	.024	.071	.018	4	
9 20 180	.91	.00	.00	0	.0	.0	8.0	0	.000	.000	.907	.01	.01	3.43	19.	.170	.23	60	.034	.034	.082	.020	4	
9 20 240	.91	.00	.00	0	.0	.0	6.3	0	.000	.000	.907	.01	.01	4.11	25.	.226	.34	55	.051	.051	.100	.025	4	
9 21 60	.27	.00	.00	0	.0	.0	2.6	0	.000	.000	.266	.02	.02	4.29	31.	.081	.33	48	.021	.021	.032	.008	4	
9 21 120	.27	.01	.00	0	.0	.0	5.3	0	.000	.000	.263	.04	.04	4.46	32.	.084	.33	48	.022	.022	.033	.008	4	
9 21 180	.27	.01	.00	0	.0	.0	6.3	0	.000	.000	.259	.04	.04	4.62	34.	.087	.34	48	.022	.022	.034	.008	4	
9 21 240	.27	.01	.00	0	.0	.0	4.3	0	.000	.000	.257	.03	.03	4.78	35.	.090	.34	48	.023	.023	.035	.009	4	
9 22 60	.02	.01	.00	1	.0	.0	1.1	0	.000	.000	.010	.03	.03	4.78	36.	.004	.29	48	.001	.001	.001	.000	4	A
9 22 120	.02	.01	.00	0	.0	.0	4.9	1	.243	.004	.016	.07	.07	4.77	36.	.006	.25	51	.001	.001	.002	.001	4	D
9 22 180	.02	.02	.00	0	.0	.0	6.2	0	.000	.000	.002	.09	.09	4.75	36.	.001	.21	54	.000	.000	.000	.000	4	
9 22 240	.02	.02	.00	0	.0	.0	3.3	0	.000	.000	.000	.05	.05	4.74	36.	.000	.18	56	.000	.000	.000	.000	4	
9 23 60	.01	.01	.00	0	.0	.0	.0	0	.000	.000	.000	.03	.03	4.73	36.	.000	.15	58	.000	.000	.000	.000	4	
9 23 120	.01	.01	.00	0	.0	.0	5.0	0	.000	.000	.000	.07	.07	4.71	36.	.000	.13	60	.000	.000	.000	.000	4	
9 23 180	.01	.01	.00	0	.0	.0	6.6	0	.000	.000	.000	.09	.09	4.69	36.	.000	.11	61	.000	.000	.000	.000	4	
9 23 240	.01	.01	.00	0	.0	.0	3.0	0	.000	.000	.000	.05	.05	4.68	36.	.000	.09	63	.000	.000	.000	.000	4	
9 24 60	.00	.00	.00	0	.0	.0	-.9	0	.000	.000	.000	.03	.03	4.67	35.	.000	.08	64	.000	.000	.000	.000	4	
9 24 120	.00	.00	.00	0	.0	.0	5.7	0	.000	.000	.000	.08	.08	4.65	35.	.000	.07	65	.000	.000	.000	.000	4	
9 24 180	.00	.00	.00	0	.0	.0	8.0	0	.000	.000	.000	.11	.11	4.62	35.	.000	.06	65	.000	.000	.000	.000	4	
9 24 240	.00	.00	.00	0	.0	.0	2.7	0	.000	.000	.000	.05	.05	4.61	35.	.000	.05	66	.000	.000	.000	.000	4	
9 25 60	.02	.02	.00	0	.0	.0	-3.6	0	.000	.000	.000	.02	.02	4.61	35.	.000	.04	66	.000	.000	.000	.000	4	
9 25 120	.01	.01	.00	0	.0	.0	4.4	0	.000	.000	.000	.06	.06	4.59	35.	.000	.03	67	.000	.000	.000	.000	4	
9 25 180	.01	.01	.00	0	.0	.0	7.4	0	.000	.000	.000	.10	.10	4.56	35.	.000	.03	67	.000	.000	.000	.000	4	
9 25 240	.02	.02	.00	0	.0	.0	1.4	0	.000	.000	.000	.04	.04	4.55	34.	.000	.02	68	.000	.000	.000	.000	4	
9 26 60	.01	.01	.00	0	.0	.0	2.3	0	.000	.000	.000	.04	.04	4.54	34.	.000	.02	68	.000	.000	.000	.000	4	
9 26 120	.01	.01	.00	0	.0	.0	5.7	0	.000	.000	.000	.08	.08	4.52	34.	.000	.02	68	.000	.000	.000	.000	4	
9 26 180	.01	.01	.00	0	.0	.0	6.7	0	.000	.000	.000	.09	.09	4.50	34.	.000	.01	68	.000	.000	.000	.000	4	
9 26 240	.01	.01	.00	0	.0	.0	4.0	0	.000	.000	.000	.06	.06	4.49	34.	.000	.01	69	.000	.000	.000	.000	4	
9 27 60	.05	.05	.00	0	.0	.0	-2.0	0	.000	.000	.000	.02	.02	4.48	34.	.000	.01	69	.000	.000	.000	.000	4	
9 27 120	.04	.04	.00	0	.0	.0	6.4	0	.000	.000	.000	.08	.08	4.46	34.	.000	.01	69	.000	.000	.000	.000	4	
9 27 180	.04	.04	.00	0	.0	.0	9.4	0	.000	.000	.000	.12	.12	4.43	34.	.000	.01	69	.000	.000	.000	.000	4	
9 27 240	.04	.04	.00	0	.0	.0	2.7	0	.000	.000	.000	.04	.04	4.42	33.	.000	.01	69	.000	.000	.000	.000	4	
9 28 60	.41	.05	.35	1	.0	.0	1.2	0	.000	.000	.010	.01	.01	4.42	33.	.003	.01	69	.001	.001	.002	.000	4	A
9 28 120	.37	.00	.05	0	.0	.0	3.4	0	.358	.294	.669	.01	.01	4.87	33.	.223	.14	69	.034	.034	.124	.031	4	R
9 28 180	.37	.00	.00	0	.0	.0	4.0	1	.358	.045	.409	.02	.02	5.12	37.	.151	.21	60	.030	.030	.074	.018	4	R
9 28 240	.37	.00	.00	0	.0	.0	2.1	0	.000	.000	.362	.01	.01	5.34	39.	.142	.27	56	.031	.031	.064	.016	4	
9 29 60	.33	.00	.00	0	.0	.0	3.6	0	.000	.000	.325	.02	.02	5.52	42.	.135	.31	52	.032	.032	.057	.014	4	
9 29 120	.33	.01	.00	0	.0	.0	7.0	0	.000	.000	.323	.04	.04	5.69	44.	.141	.35	50	.035	.035	.057	.014	4	
9 29 180	.33	.01	.00	0	.0	.0	8.0	0	.000	.000	.319	.04	.04	5.86	46.	.146	.39	47	.038	.038	.055	.014	4	
9 29 240	.33	.01	.00	0	.0	.0	6.0	0	.000	.000	.318	.03	.03	6.02	47.	.151	.42	45	.041	.041	.055	.014	4	
9 30 60	.19	.01	.00	0	.0	.0	4.7	0	.000	.000	.185	.04	.04	6.10	49.	.091	.41	43	.026	.026	.031	.008	4	
9 30 120	.19	.01	.00	0	.0	.0	8.4	0	.000	.000	.183	.07	.07	6.17	50.	.092	.40	43	.026	.026	.032	.008	4	
9 30 180	.19	.02	.00	0	.0	.0	9.4	0	.000	.000	.176	.08	.08	6.24	51.	.090	.40	44	.025	.025	.032	.008	4	
9 30 240	.19	.02	.00	0	.0	.0	6.7	0	.000	.000	.173	.06	.06	6.31	52.	.090	.39	44	.025	.025	.032	.008	4	

12.69		.344	3.99		2.603	.583	1.150
3.14		9.552	2.11			.583	.287

OVERALL TOTALS FOR ZONE 4

66.62		46.834	26.06		63.191	22.011	15.335
17.12		87.492	23.99			22.011	3.834

Next output is summary listing for whole watershed listing runoff generated and discharge from watershed from each zone and total from the watershed.

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL																	
GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE																	
AREA BASE-TEMP ZONES																	
MAR-1981	21500.	.0	6														
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ
31	240			90	36						6.0	0	6.000	8.000	13.000	.000	27.000
OBS 1****10****15****20																	
.000																	
APR-1981																	
1	60	.00	.00	90	36	6.0-16	.000	.00	.01	6.0	49	50	6.004	8.000	13.001	.000	27.004
1	120	.00	.00	90	36	6.0-2	.000	.00	.02	6.0	49	53	6.025	8.000	13.003	.000	27.028
1	180	.00	.00	90	36	6.0-3	.269	.03	.03	6.0	49	55	6.114	8.001	13.018	.000	27.133
1	240	.00	.00	90	36	6.0-8	.000	.00	.02	6.0	49	57	6.375	8.005	13.046	.000	27.426
2	60	.02	.02	90	36	6.0-3	.000	.00	.02	6.0	49	58	6.884	8.016	13.075	.001	27.976
2	120	.02	.02	90	36	6.0-4	.258	.03	.04	6.0	49	60	7.644	8.040	13.120	.001	28.805
2	180	.01	.01	90	35	6.0-7	.260	.69	.07	6.7	50	60	9.413	8.091	13.550	.003	31.057
2	240	.02	.02	90	35	6.0-1	.267	.01	.02	6.7	57	37	14.430	8.213	14.341	.007	36.991
3	60	.08	.08	90	35	6.0-12	.000	.01	.01	6.7	57	40	24.496	8.499	15.110	.010	48.116
3	120	.08	.08	90	35	6.0-4	.000	.01	.01	6.7	57	44	38.891	9.068	15.858	.014	63.831
3	180	.08	.08	90	35	6.0-2	.000	.01	.02	6.7	57	48	55.263	10.033	16.584	.018	81.898
3	240	.08	.08	90	35	6.0-8	.000	.01	.01	6.7	57	51	71.237	11.468	17.290	.021	100.017
4	60	.01	.01	90	35	6.0-15	.000	.01	.01	6.7	57	54	85.040	13.402	17.977	.025	116.444
4	120	.01	.01	90	35	6.0-5	.000	.01	.02	6.7	57	56	95.631	15.821	18.645	.029	130.126
4	180	.01	.01	90	35	6.0-1	.000	.01	.02	6.7	57	58	102.614	18.673	19.295	.033	140.614
4	240	.01	.01	90	35	6.0-8	.000	.01	.02	6.7	57	60	106.062	21.881	19.927	.037	147.907
5	60	.16	.16	90	35	6.0-16	.000	.01	.01	6.7	57	61	106.355	25.351	20.542	.040	152.289
5	120	.16	.02	90	35	6.0-8	.000	.01	.01	6.8	57	62	104.034	28.978	21.141	.044	154.198
5	180	.16	.00	90	35	6.0-6	.000	.01	.01	6.8	57	63	99.694	32.659	21.724	.048	154.126
5	240	.16	.00	90	35	6.0-12	.000	.01	.01	6.8	58	64	93.915	36.295	22.291	.052	152.553
6	60	.20	.00	90	35	6.0-9	.000	.01	.01	6.8	58	65	87.215	39.796	22.843	.056	149.911
6	120	.20	.00	90	35	6.0-4	.000	.01	.01	6.8	58	65	80.035	43.085	23.381	.060	146.561
6	180	.20	.00	90	36	6.0-2	.000	.01	.01	6.8	58	66	72.726	46.098	23.904	.063	142.791
6	240	.20	.00	90	36	6.0-6	.000	.01	.01	6.8	58	66	65.555	48.786	24.412	.067	138.821
7	60	.11	.00	90	36	6.0-7	.000	.01	.01	6.8	58	67	58.715	51.113	24.908	.071	134.807
7	120	.11	.00	90	36	6.0-1	.000	.01	.02	6.8	58	67	52.334	53.056	25.389	.075	130.855

7 180	.11	.00	90	36	6.0	1	.240	.01	.02	6.8	58	67	46.488	54.607	25.858	.079	127.032	.000	CAAAAA
7 240	.11	.00	90	36	6.0	-3	.000	.01	.01	6.8	58	67	41.212	55.764	26.314	.083	123.373	.000	AAAAAA
8 60	.01	.00	90	36	6.0	-12	.000	.01	.01	6.8	58	68	36.511	56.537	26.758	.087	119.893	.000	AAAAAA
8 120	.01	.00	90	36	6.0	-1	.000	.01	.02	6.8	58	68	32.369	56.942	27.189	.091	116.591	.000	AAAAAA
8 180	.01	.00	90	36	6.0	3	.240	.01	.03	6.8	58	68	28.752	57.002	27.608	.095	113.458	.000	QCCCAA
8 240	.01	.01	90	36	6.0	-6	.000	.01	.02	6.8	58	68	25.622	56.743	28.016	.099	110.479	.000	SSSSAA
9 60	.03	.00	90	36	6.0	-2	.000	.01	.02	6.8	58	68	22.931	56.193	28.413	.103	107.640	.000	AAAAAA
9 120	.02	.00	90	36	6.0	3	.240	.01	.04	6.8	58	68	20.636	55.385	28.799	.107	104.928	.000	DQCCAA
9 180	.02	.01	90	36	6.0	5	.242	.06	.05	6.8	58	68	18.741	54.351	29.206	.111	102.409	.000	DDDDDC
9 240	.03	.01	90	36	6.0	1	.244	.01	.02	6.8	58	66	17.345	53.125	29.631	.116	100.216	.000	AAAAAA
10 60	.41	.01	90	36	6.0	-6	.000	.01	.00	6.8	58	67	16.522	51.744	30.044	.120	98.430	.000	AAAAAA
10 120	.41	.00	90	37	6.0	-2	.000	.01	.00	6.8	58	67	16.199	50.245	30.445	.124	97.014	.000	AAAAAA
10 180	.41	.00	90	37	6.0	-2	.000	.01	.01	6.8	58	67	16.202	48.664	30.835	.129	95.830	.000	AAAAAA
10 240	.41	.00	90	38	6.0	-3	.000	.01	.00	6.8	58	67	16.358	47.031	31.213	.133	94.734	.000	AAAAAA
11 60	.01	.00	90	38	6.0	-10	.000	.01	.02	6.8	58	67	16.529	45.373	31.579	.138	93.619	.000	AAAAAA
11 120	.01	.00	90	38	6.0	-3	.000	.01	.02	6.8	58	68	16.630	43.711	31.935	.142	92.418	.000	AAAAAA
11 180	.01	.00	90	38	6.0	0	.000	.01	.02	6.8	58	68	16.613	42.062	32.280	.146	91.102	.000	AAAAAA
11 240	.01	.01	90	38	6.0	-6	.000	.01	.02	6.8	58	68	16.466	40.438	32.615	.151	89.670	.000	AAAAAA
12 60	.00	.00	90	38	6.0	-11	.000	.01	.01	6.8	58	68	16.196	38.850	32.939	.155	88.141	.000	SSSSSS

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE

AREA BASE-TEMP ZONES

APR-1981 21500. .0 6																			FLAGS BY ZONE	
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL	OBS	1***5***10***15***20
12	120	.00	.00	90	38	6.0	-5	.000	.01	.02	6.8	58	68	15.823	37.303	33.254	.160	86.540	.000	SSSSSS
12	180	.00	.00	90	38	6.0	-2	.000	.01	.02	6.8	58	68	15.372	35.802	33.559	.164	84.898	.000	SSSSSS
12	240	.00	.00	90	38	6.0	-8	.000	.01	.02	6.8	58	68	14.871	34.350	33.854	.169	83.244	.000	SSSSSS
13	60	.00	.00	90	38	6.0	-15	.000	.01	.01	6.8	58	68	14.343	32.949	34.140	.173	81.606	.000	SSSSSS
13	120	.00	.00	90	38	6.0	-3	.000	.01	.02	6.8	58	68	13.810	31.600	34.418	.178	80.005	.000	SSSSSS
13	180	.00	.00	90	38	6.0	2	.240	.01	.03	6.8	58	68	13.287	30.302	34.686	.182	78.458	.000	CCSSSS
13	240	.00	.00	90	38	6.0	-8	.000	.01	.02	6.8	58	68	12.789	29.056	34.945	.187	76.977	.000	SSSSSS
14	60	.06	.04	90	38	6.0	-5	.000	.01	.02	6.8	58	68	12.322	27.861	35.197	.192	75.572	.000	AAAAAA
14	120	.06	.00	90	38	6.0	4	.241	.01	.04	6.8	58	68	11.895	26.717	35.441	.196	74.249	.000	DCCCCA
14	180	.05	.01	90	37	6.0	6	.243	.09	.06	6.8	58	68	11.593	25.624	35.730	.201	73.148	.000	DDDDDD
14	240	.06	.01	90	37	6.0	1	.245	.01	.02	6.8	58	65	11.661	24.584	36.063	.206	72.513	.000	AAAAAA
15	60	.28	.01	90	38	6.0	-19	.000	.01	.01	6.8	58	65	12.296	23.606	36.385	.211	72.498	.000	AAAAAA
15	120	.28	.00	90	38	6.0	-5	.000	.01	.01	6.8	58	66	13.435	22.702	36.696	.216	73.049	.000	AAAAAA
15	180	.28	.00	90	38	6.0	0	.000	.01	.01	6.8	58	66	14.835	21.883	36.997	.221	73.936	.000	AAAAAA
15	240	.28	.00	90	39	6.0	-11	.000	.01	.01	6.8	59	67	16.249	21.155	37.287	.227	74.918	.000	AAAAAA
16	60	.00	.00	90	39	6.0	-21	.000	.01	.01	6.8	59	67	17.488	20.521	37.567	.232	75.809	.000	SSSSSS
16	120	.00	.00	90	39	6.0	-14	.000	.01	.01	6.8	59	67	18.438	19.980	37.838	.237	76.493	.000	SSSSSS
16	180	.00	.00	90	39	6.0	-11	.000	.01	.02	6.8	59	67	19.051	19.525	38.099	.242	76.917	.000	SSSSSS
16	240	.00	.00	90	39	6.0	-17	.000	.01	.01	6.8	59	68	19.327	19.147	38.352	.247	77.073	.000	SSSSSS
17	60	.02	.01	90	38	6.0	-21	.000	.01	.01	6.8	59	68	19.300	18.838	38.595	.252	76.984	.000	SAAAAA
17	120	.02	.00	90	38	6.0	-6	.000	.01	.02	6.8	59	68	19.020	18.584	38.829	.258	76.690	.000	AAAAAA
17	180	.02	.00	90	38	6.0	-1	.000	.01	.02	6.8	59	68	18.546	18.374	39.055	.263	76.237	.000	AAAAAA

17	240	.02	.01	90	39	6.0-12	.000	.01	.01	6.8	59	68	17.932	18.197	39.273	.268	75.670	.000	AAAAAA
18	60	.21	.00	90	39	6.0-17	.000	.01	.01	6.9	59	68	17.232	18.042	39.482	.273	75.029	.000	AAAAAA
18	120	.21	.00	90	39	6.0 -7	.000	.01	.01	6.9	59	68	16.486	17.901	39.684	.278	74.349	.000	AAAAAA
18	180	.21	.00	90	39	6.0 -3	.000	.01	.01	6.9	59	68	15.730	17.764	39.878	.284	73.656	.000	AAAAAA
18	240	.21	.00	90	39	6.0-11	.000	.01	.01	6.9	59	68	14.992	17.627	40.064	.289	72.971	.000	AAAAAA
19	60	.49	.00	90	40	6.0 -6	.000	.01	.00	6.9	59	68	14.288	17.483	40.243	.294	72.308	.000	AAAAAA
19	120	.49	.00	90	40	6.0 -2	.000	.01	.00	6.9	59	68	13.633	17.328	40.415	.299	71.675	.000	AAAAAA
19	180	.49	.00	90	41	6.0 0	.000	.01	.00	6.9	59	68	13.033	17.160	40.580	.305	71.078	.000	AAAAAA
19	240	.49	.00	90	41	6.0 -4	.000	.01	.00	6.9	59	68	12.492	16.978	40.738	.310	70.519	.000	AAAAAA
20	60	.10	.00	90	41	6.0 -6	.000	.01	.01	6.9	59	68	12.011	16.781	40.890	.315	69.997	.000	AAAAAA
20	120	.10	.00	90	41	6.0 -2	.000	.01	.02	6.9	59	68	11.587	16.568	41.035	.321	69.511	.000	AAAAAA
20	180	.10	.00	90	41	6.0 0	.000	.01	.02	6.9	59	68	11.218	16.342	41.174	.326	69.060	.000	AAAAAA
20	240	.10	.00	90	42	6.0 -4	.000	.01	.02	6.9	59	68	10.899	16.102	41.307	.331	68.639	.000	AAAAAA
21	60	.34	.00	90	42	6.0 -6	.000	.01	.01	6.9	59	68	10.625	15.852	41.433	.337	68.246	.000	AAAAAA
21	120	.34	.00	90	42	6.0 0	.000	.01	.01	6.9	59	68	10.391	15.591	41.554	.342	67.879	.000	AAAAAA
21	180	.33	.00	90	43	6.0 3	.246	.01	.01	6.9	59	68	10.200	15.324	41.674	.347	67.545	.000	RQCCAA
21	240	.34	.00	90	43	6.0 -2	.000	.01	.01	6.9	59	68	10.066	15.051	41.792	.353	67.262	.000	AAAAAA
22	60	.03	.00	90	43	6.0 2	.240	.01	.03	6.9	59	68	10.002	14.777	41.905	.358	67.043	.000	AQCAAA
22	120	.03	.01	90	43	6.0 4	.241	.01	.05	6.9	59	68	10.013	14.503	42.018	.363	66.898	.000	DDQQQC
22	180	.02	.01	90	43	6.0 5	.242	.07	.05	6.9	59	68	10.164	14.235	42.167	.369	66.935	.000	DDDDQD
22	240	.03	.01	90	43	6.0 3	.243	.03	.04	6.9	59	65	10.661	13.978	42.361	.375	67.375	.000	DDAAAA
23	60	.01	.01	90	43	6.0 1	.000	.01	.02	6.9	59	65	11.708	13.745	42.561	.381	68.395	.000	SSSAAA
23	120	.01	.01	90	43	6.0 5	.243	.08	.05	7.0	59	66	13.366	13.550	42.794	.387	70.097	.000	DDDDQD
23	180	.01	.01	90	42	6.0 7	.245	.15	.07	7.0	60	63	15.789	13.414	43.141	.394	72.737	.000	DDDDDD
23	240	.01	.01	90	42	6.0 3	.245	.03	.04	7.1	61	58	19.396	13.365	43.569	.401	76.730	.000	DDSSSS
24	60	.02	.02	90	42	6.0 -1	.000	.01	.02	7.1	61	59	24.408	13.438	43.993	.408	82.247	.000	SSSSAA
24	120	.02	.01	90	42	6.0 4	.243	.03	.05	7.1	61	60	30.462	13.675	44.416	.415	88.968	.000	DDACAA
24	180	.02	.01	90	42	6.0 6	.245	.12	.06	7.1	61	60	37.011	14.108	44.898	.423	96.440	.000	DDDDDA
24	240	.02	.01	90	42	6.0 2	.250	.01	.03	7.1	62	57	43.798	14.766	45.425	.431	104.420	.000	SSAAAA

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE

AREA BASE-TEMP ZONES

APR-1981 21500. 0 6																			FLAGS BY ZONE																
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL	OBS	1***5***10***15***20															
25	60	.09	.01	90	42	6.0	-2	.000	.01	.02	7.1	62	58	50.623	15.667	45.935	.439	112.664	.000	AAAAAA															
25	120	.08	.00	90	42	6.0	2	.248	.01	.03	7.1	62	60	57.018	16.823	46.427	.447	120.715	.000	AACAAA															
25	180	.08	.01	90	42	6.0	4	.243	.05	.04	7.1	62	61	62.462	18.230	46.922	.454	128.068	.000	DDDDAA															
25	240	.09	.01	90	42	6.0	1	.000	.01	.02	7.1	62	61	66.686	19.869	47.420	.463	134.437	.000	AAAAAA															
26	60	.00	.00	90	42	6.0	-7	.000	.01	.02	7.1	62	62	69.616	21.710	47.899	.471	139.695	.000	SSSSSS															
26	120	.00	.00	90	42	6.0	2	.249	.01	.03	7.1	62	63	71.207	23.714	48.360	.479	143.760	.000	CCSSSS															
26	180	.00	.00	90	42	6.0	4	.241	.04	.05	7.1	62	64	71.492	25.837	48.820	.487	146.635	.000	DDDDSC															
26	240	.00	.00	90	42	6.0	-2	.000	.01	.02	7.1	62	63	70.657	28.027	49.279	.495	148.458	.000	SSSSSS															
27	60	.02	.02	90	42	6.0	-3	.000	.01	.02	7.1	62	64	68.954	30.236	49.721	.503	149.414	.000	SSSSSS															
27	120	.02	.02	90	42	6.0	1	.250	.01	.03	7.1	62	65	66.565	32.416	50.146	.511	149.639	.000	CSAAAA															
27	180	.02	.01	90	42	6.0	3	.241	.01	.04	7.1	62	65	63.622	34.524	50.556	.519	149.222	.000	DACCRA															
27	240	.02	.01	90	42	6.0	0	.000	.01	.02	7.1	62	66	60.258	36.520	50.952	.528	148.258	.000	AAAAAA															
28	60	.00	.00	90	42	6.0	-3	.000	.01	.02	7.1	62	66	56.607	38.369	51.332	.536	146.844	.000	SSSSSS															
28	120	.00	.00	90	42	6.0	4	.241	.02	.05	7.1	62	66	52.802	40.040	51.702	.544	145.088	.000	DDCCCS															
28	180	.00	.00	90	42	6.0	7	.243	.15	.08	7.2	62	66	49.124	41.514	52.148	.553	143.338	.000	DDDDDD															
28	240	.00	.00	90	42	6.0	1	.252	.01	.03	7.2	62	61	46.126	42.779	52.661	.562	142.128	.000	SSSSSS															
29	60	.00	.00	90	42	6.0	-4	.000	.01	.02	7.2	62	62	44.242	43.844	53.154	.571	141.811	.000	SSSSSS															
29	120	.00	.00	90	42	6.0	6	.242	.09	.07	7.2	62	63	43.487	44.726	53.672	.580	142.466	.000	DDDDDD															
29	180	.00	.00	90	41	6.0	10	.246	.28	.13	7.4	63	61	44.030	45.456	54.360	.590	144.435	.000	DDDDDD															
29	240	.00	.00	90	41	6.0	1	.257	.01	.03	7.4	64	51	46.598	46.077	55.166	.601	148.441	.000	SSSSSS															
30	60	.21	.11	90	41	6.0	1	.257	.01	.02	7.4	64	54	51.587	46.653	55.942	.611	154.794	.000	AAAAAA															
30	120	.19	.00	90	41	6.0	4	.245	.07	.03	7.4	64	56	58.391	47.256	56.717	.622	162.986	.000	DDDDAA															
30	180	.18	.01	90	41	6.0	5	.246	.17	.03	7.5	64	56	66.202	47.952	57.565	.633	172.352	.000	DDDDAA															
30	240	.19	.01	90	41	6.0	3	.247	.02	.02	7.5	65	51	74.740	48.799	58.461	.645	182.644	.000	DAAAAA															
																			V O L U M E - C E N T I M E T E R S			MELT MI		PET G-MLT											
11.44								2.92								.41				.43				1.19				2.6		5.1		.7		1.20	
				1.17								.69								.34				.00				.00							
MAY-1981																																			
1	60	.02	.01	90	41	6.0	2	.255	.01	.03	7.5	65	54	83.766	49.847	59.329	.656	193.598	.000	AAAAAA															
1	120	.01	.01	90	41	6.0	6	.246	.13	.06	7.5	65	56	92.709	51.138	60.225	.668	204.739	.000	DDDDDD															
1	180	.01	.01	90	41	6.0	8	.249	.21	.09	7.6	66	53	101.383	52.698	61.240	.680	216.001	.000	DDDDDD															
1	240	.02	.02	90	41	6.0	4	.249	.06	.05	7.6	67	47	110.378	54.552	62.333	.693	227.956	.000	DDSSSS															
2	60	.01	.01	90	41	6.0	0	.000	.01	.02	7.6	67	48	120.139	56.727	63.407	.706	240.979	.000	SSSSSS															
2	120	.01	.01	90	41	6.0	6	.249	.15	.07	7.7	67	51	130.318	59.249	64.503	.720	254.790	.000	DDDDDD															
2	180	.01	.01	90	40	6.0	9	.253	.28	.12	7.8	67	49	140.722	62.137	65.737	.734	269.330	.000	DDDDDD															
2	240	.01	.01	90	40	6.0	4	.253	.07	.05	7.8	68	41	152.061	65.411	67.064	.748	285.284	.000	DDSSSS															
3	60	.02	.02	90	40	6.0	1	.272	.01	.02	7.8	69	43	164.830	69.100	68.364	.763	303.057	.000	SSSSSS															
3	120	.02	.02	90	40	6.0	6	.253	.13	.06	7.8	69	47	178.330	73.234	69.663	.778	322.004	.000	DDDDDA															
3	180	.02	.02	90	40	6.0	7	.255	.22	.09	7.9	69	45	191.673	77.827	71.043	.793	341.337	.000	DDDDDD															
3	240	.02	.02	90	40	6.0	4	.256	.06	.04	7.9	70	41	204.773	82.882	72.473	.809	360.937	.000	DDSSSA															
4	60	.04	.03	90	40	6.0	-1	.000	.01	.02	7.9	70	43	217.560	88.393	73.866	.825	380.644	.000	SSSAAA															

VOLUME - CENTIMETERS

MELT MI PET G-MLT

2.6 5.1 .7 1.20

4	120	.04	.01	90	39	6.0	8	.255	.24	.09	8.0	70	47	229.442	94.344	75.302	.841	399.930	.000	DDDDDD
4	180	.04	.02	90	39	6.0	12	.260	.44	.16	8.1	71	42	240.779	100.708	76.934	.859	419.280	.000	DDDDDD
4	240	.04	.04	90	38	6.0	5	.260	.11	.05	8.2	72	34	253.670	107.479	78.691	.877	440.717	.000	DDDDAA
5	60	.08	.01	90	38	6.0	4	.261	.06	.04	8.2	72	35	269.774	114.683	80.427	.895	465.779	.000	DDAAAA
5	120	.07	.01	90	38	6.0	10	.264	.40	.11	8.3	72	38	288.964	122.373	82.240	.914	494.491	.000	DDDDDD
5	180	.07	.03	90	37	6.0	12	.268	.50	.14	8.4	73	33	311.609	130.619	84.255	.934	527.417	.000	DDDDDD
5	240	.07	.04	90	37	6.0	7	.270	.26	.07	8.5	75	28	339.896	139.524	86.399	.955	566.774	.000	DDDDDD
6	60	.26	.02	90	37	6.0	1	.295	.01	.01	8.5	75	28	375.020	149.242	88.526	.976	613.765	.000	AAAAAA
6	120	.23	.00	90	37	6.0	5	.269	.30	.03	8.6	75	31	414.944	159.941	90.654	.997	666.535	.000	DDDDDA

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE

AREA BASE-TEMP ZONES

MAY-1981		21500.	.0	6																	FLAGS BY ZONE	
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL	OBS	1***5***10***15***20		
6	180	.23	.01	90	37	6.0	7	.270	.43	.05	8.7	76	30	456.794	171.756	92.888	1.019	722.458	.000	DDDDDD		
6	240	.25	.01	90	37	6.0	3	.270	.07	.02	8.7	77	27	499.272	184.789	95.161	1.042	780.264	.000	DDAAAA		
7	60	.23	.01	90	37	6.0	-4	.000	.01	.01	8.7	77	29	540.766	199.097	97.362	1.064	838.290	.000	AAAAAA		
7	120	.23	.00	90	37	6.0	0	.000	.01	.01	8.7	77	32	577.586	214.673	99.481	1.087	892.827	.000	AAAAAA		
7	180	.23	.00	90	38	6.0	2	.285	.01	.02	8.7	77	35	605.427	231.400	101.520	1.109	939.456	.000	AQAAAA		
7	240	.23	.00	90	38	6.0	-1	.000	.01	.01	8.7	77	38	621.255	249.049	103.481	1.132	974.917	.000	AAAAAA		
8	60	.03	.00	90	38	6.0	-5	.000	.01	.02	8.7	77	41	623.877	267.288	105.367	1.154	997.686	.000	AAAAAA		
8	120	.03	.00	90	38	6.0	3	.255	.01	.04	8.7	77	45	613.720	285.717	107.182	1.176	1007.795	.000	DDCCCA		
8	180	.03	.01	90	38	6.0	6	.257	.14	.07	8.7	77	48	592.564	303.906	108.978	1.198	1006.646	.000	DDDDDD		
8	240	.03	.02	90	38	6.0	0	.000	.01	.02	8.7	77	46	563.214	321.429	110.754	1.221	996.618	.000	AAAAAA		
9	60	.10	.01	90	38	6.0	-2	.000	.01	.02	8.7	77	50	528.576	337.898	112.460	1.243	980.177	.000	AAAAAA		
9	120	.09	.00	90	38	6.0	4	.252	.05	.04	8.7	77	52	490.886	352.978	114.114	1.266	959.244	.000	DDDACAA		
9	180	.08	.01	90	37	6.0	7	.254	.26	.06	8.8	77	53	452.177	366.397	115.831	1.289	935.694	.000	DDDDDD		
9	240	.10	.02	90	38	6.0	2	.278	.01	.03	8.8	78	46	414.787	377.956	117.594	1.312	911.650	.000	AAAAAA		
10	60	.03	.01	90	38	6.0	-5	.000	.01	.02	8.8	78	49	380.473	387.540	119.287	1.336	888.635	.000	AAAAAA		
10	120	.02	.00	90	37	6.0	5	.250	.06	.05	8.8	78	52	349.634	395.105	120.931	1.359	867.030	.000	DDDDCC		
10	180	.02	.01	90	37	6.0	8	.252	.27	.09	8.8	78	52	322.270	400.661	122.648	1.383	846.963	.000	DDDDDD		
10	240	.03	.02	90	37	6.0	1	.284	.01	.03	8.8	78	45	298.921	404.271	124.413	1.408	829.013	.000	SSAAAA		
11	60	.00	.00	90	37	6.0	-6	.000	.01	.02	8.8	78	48	279.860	406.045	126.105	1.432	813.442	.000	SSSSSS		
11	120	.00	.00	90	37	6.0	3	.247	.01	.05	8.8	78	51	264.239	406.125	127.727	1.456	799.548	.000	DDSCCS		
11	180	.00	.00	90	37	6.0	7	.249	.20	.09	8.8	78	53	250.904	404.666	129.369	1.481	786.420	.000	DDDDDD		
11	240	.00	.00	90	37	6.0	-1	.000	.01	.02	8.8	78	49	239.389	401.821	131.028	1.506	773.744	.000	SSSSSS		
12	60	.00	.00	90	37	6.0	-4	.000	.01	.02	8.8	78	51	229.492	397.751	132.615	1.531	761.389	.000	SSSSSS		
12	120	.00	.00	90	37	6.0	7	.247	.17	.09	8.9	78	54	220.779	392.614	134.208	1.556	749.156	.000	DDDDDD		
12	180	.00	.00	90	36	6.0	11	.252	.44	.16	8.9	79	50	213.652	386.567	135.990	1.582	737.791	.000	DDDDDD		
12	240	.00	.00	90	36	6.0	3	.255	.04	.04	8.9	79	38	209.921	379.785	137.891	1.609	729.206	.000	DDSSSS		
13	60	.28	.13	90	36	6.0	2	.265	.01	.02	8.9	79	41	210.838	372.476	139.724	1.636	724.674	.000	AAAAAA		
13	120	.25	.00	90	36	6.0	7	.253	.43	.04	9.0	79	44	216.119	364.862	141.641	1.664	724.287	.000	DDDDDD		
13	180	.25	.01	90	35	6.0	9	.256	.51	.06	9.1	80	35	226.400	357.178	143.796	1.693	729.067	.000	DDDDDD		
13	240	.25	.01	90	35	6.0	5	.257	.35	.03	9.2	81	30	244.578	349.695	146.103	1.723	742.099	.000	DDDDDA		
14	60	.18	.01	90	35	6.0	3	.257	.06	.03	9.2	82	28	272.959	342.745	148.412	1.753	765.870	.000	DDAAAA		
14	120	.16	.01	90	35	6.0	6	.258	.31	.04	9.3	82	31	310.547	336.693	150.715	1.784	799.740	.000	DDDDDD		

14	180	.16	.01	90	35	6.0	7	.260	.37	.05	9.3	82	29	354.584	331.889	153.093	1.815	841.382	.000	DDDDDD
14	240	.16	.01	90	35	6.0	5	.261	.26	.04	9.4	83	27	403.115	328.642	155.522	1.847	889.126	.000	DDDDDA
15	60	.01	.01	90	35	6.0	4	.261	.10	.05	9.4	83	27	454.445	327.215	157.929	1.879	941.468	.000	DDDDSS
15	120	.01	.01	90	34	6.0	9	.264	.38	.12	9.4	83	29	506.109	327.811	160.348	1.912	996.181	.000	DDDDDD
15	180	.01	.01	90	34	6.0	11	.268	.50	.16	9.5	84	27	556.608	330.563	162.872	1.945	1051.987	.000	DDDDDD
15	240	.01	.01	90	33	6.0	7	.270	.28	.09	9.5	84	24	606.730	335.554	165.463	1.979	1109.726	.000	DDDDDD
16	60	.10	.09	90	33	6.0	5	.270	.13	.04	9.5	85	25	657.268	342.847	168.027	2.013	1170.155	.000	DDDDAA
16	120	.10	.01	90	33	6.0	11	.274	.56	.11	9.6	85	26	707.398	352.471	170.632	2.048	1232.549	.000	DDDDDD
16	180	.10	.03	90	32	6.0	13	.278	.72	.16	9.7	85	23	757.534	364.427	173.396	2.084	1297.441	.000	DDDDDD
16	240	.10	.04	90	31	6.0	8	.280	.41	.08	9.7	86	20	811.074	378.725	176.260	2.121	1368.180	.000	DDDDDD
17	60	.21	.02	90	31	6.0	7	.281	.43	.05	9.8	86	20	871.129	395.428	179.148	2.158	1447.862	.000	DDDDDD
17	120	.21	.01	90	30	6.0	11	.285	.70	.09	9.9	87	20	938.428	414.641	182.106	2.196	1537.371	.000	LDDDDD
17	180	.21	.02	90	30	6.0	12	.289	.79	.11	9.9	88	18	1013.684	436.498	185.178	2.235	1637.595	.000	LDDDDD
17	240	.21	.03	90	29	6.0	9	.290	.57	.07	10.0	88	15	1098.774	461.181	188.317	2.274	1750.546	.000	LDDDDD
18	60	.25	.02	90	29	6.0	3	.290	.07	.02	10.0	89	15	1193.148	488.900	191.406	2.314	1875.769	.000	DDAAAA
18	120	.22	.01	90	29	6.0	7	.290	.49	.05	10.0	89	18	1290.860	519.832	194.444	2.354	2007.490	.000	LDDDDD
18	180	.22	.01	90	29	6.0	8	.292	.57	.06	10.1	89	17	1384.413	554.027	197.510	2.395	2138.345	.000	LDDDDD
18	240	.22	.02	90	28	6.0	6	.292	.41	.04	10.1	90	16	1469.734	591.392	200.588	2.436	2264.150	.000	LDDDDD
19	60	.07	.01	90	28	6.0	0	.000	.01	.02	10.1	90	17	1544.490	631.714	203.591	2.477	2382.272	.000	AAAAAA

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE

AREA BASE-TEMP ZONES																		FLAGS BY ZONE		
MAY-1981	21500.	.0	6															OBS	1****5***10***15***20	
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL		
19	120	.06	.01	90	28	6.0	5	.290	.20	.05	10.1	90	20	1604.386	674.647	206.495	2.518	2488.046	.000	LDDDDA
19	180	.06	.01	90	28	6.0	6	.290	.30	.07	10.1	90	21	1644.580	719.687	209.355	2.560	2576.181	.000	LDDDDD
19	240	.07	.02	90	28	6.0	3	.294	.04	.03	10.1	90	21	1662.791	766.171	212.146	2.601	2643.709	.000	DAAAAA
20	60	.03	.01	90	28	6.0	-2	.000	.01	.02	10.1	90	24	1658.563	813.326	214.817	2.642	2689.347	.000	AAAAAA
20	120	.02	.01	90	28	6.0	4	.285	.04	.04	10.1	90	26	1631.707	860.290	217.371	2.684	2712.052	.000	DDAACA
20	180	.02	.01	90	28	6.0	5	.285	.13	.05	10.1	90	29	1583.177	906.146	219.843	2.725	2711.890	.000	DDDDAC
20	240	.03	.01	90	28	6.0	1	.307	.01	.03	10.1	90	30	1515.906	949.968	222.228	2.766	2690.867	.000	AAAAAA
21	60	.00	.00	90	28	6.0	-3	.000	.01	.02	10.1	90	33	1433.841	990.873	224.498	2.807	2652.019	.000	SSSSSS
21	120	.00	.00	225	28	6.0	4	.279	.07	.05	10.1	90	36	1340.871	1028.062	226.674	2.848	2598.454	.000	DDDDSC
21	180	.00	.00	225	27	6.0	7	.279	.30	.10	10.1	90	38	1241.310	1060.846	228.854	2.889	2533.900	.000	DDDDDD
21	240	.00	.00	225	27	6.0	1	.301	.01	.03	10.1	90	34	1140.274	1088.690	231.021	2.931	2462.916	.000	SSSSSS
22	60	.00	.00	225	27	6.0	-3	.000	.01	.02	10.1	90	37	1042.015	1111.226	233.078	2.972	2389.292	.000	SSSSSS
22	120	.00	.00	225	27	6.0	8	.276	.28	.11	10.1	90	40	948.945	1128.255	235.124	3.014	2315.339	.000	DDDDDD
22	180	.00	.00	225	26	6.0	12	.280	.61	.19	10.1	90	37	863.930	1139.735	237.353	3.057	2244.075	.000	DDDDDD
22	240	.00	.00	225	26	6.0	4	.280	.09	.05	10.1	90	30	791.492	1145.806	239.680	3.101	2180.078	.000	DDSSSS
23	60	.00	.00	225	26	6.0	-1	.000	.01	.02	10.1	90	31	734.390	1146.790	241.911	3.144	2126.235	.000	SSSSSS
23	120	.00	.00	225	26	6.0	13	.281	.62	.21	10.1	90	34	691.948	1143.148	244.205	3.188	2082.489	.000	LDDDDD
23	180	.00	.00	225	25	6.0	18	.288	.98	.32	10.2	90	28	664.925	1135.443	246.792	3.234	2050.395	.000	LDDDDD
23	240	.00	.00	225	24	6.0	7	.289	.31	.09	10.2	90	22	658.142	1124.377	249.537	3.281	2035.337	.000	DDDDDD
24	60	.00	.00	225	24	6.0	3	.288	.05	.05	10.2	91	22	674.317	1110.802	252.212	3.329	2040.659	.000	DDSSSS
24	120	.00	.00	225	24	6.0	10	.291	.49	.15	10.2	91	24	709.427	1095.642	254.860	3.376	2063.305	.000	LDDDDD
24	180	.00	.00	225	23	6.0	13	.294	.67	.20	10.2	91	23	757.525	1079.786	257.602	3.424	2098.337	.000	LDDDDD

24	240	.00	.00	225	22	6.0	7	.295	.33	.10	10.2	91	21	815.6181064	.058	260.388	3.4732143	.537	.000	LDDDD		
25	60	.00	.00	225	22	6.0	2	.307	.01	.04	10.2	91	21	880.8461049	.209	263.092	3.5222196	.669	.000	SSSSS		
25	120	.00	.00	225	22	6.0	9	.295	.41	.12	10.2	91	24	947.3321035	.868	265.738	3.5712252	.509	.000	LDDDD		
25	180	.00	.00	225	21	6.0	12	.298	.61	.18	10.2	91	231009	.7311024	.494	268.443	3.6212306	.289	.000	LDDDD		
25	240	.00	.00	225	21	6.0	6	.298	.23	.07	10.2	91	211066	.7731015	.394	271.162	3.6712357	.000	.000	LDDDD		
26	60	.00	.00	225	21	6.0	-2	.000	.01	.02	10.2	91	221118	.0411008	.755	273.782	3.7212404	.298	.000	SSSSS		
26	120	.00	.00	225	21	6.0	3	.294	.03	.05	10.2	91	251160	.0341004	.629	276.271	3.7712444	.705	.000	DSSCS		
26	180	.00	.00	225	21	6.0	6	.294	.20	.07	10.2	91	271187	.7691002	.896	278.677	3.8212473	.163	.000	DDDDS		
26	240	.00	.00	225	21	6.0	1	.000	.01	.03	10.2	91	281198	.1991003	.256	280.996	3.8712486	.322	.000	SSSSS		
27	60	.00	.00	225	21	6.0	-3	.000	.01	.02	10.2	91	301190	.5411005	.261	283.188	3.9212482	.911	.000	SSSSS		
27	120	.00	.00	335	20	6.0	10	.290	.39	.13	10.2	91	331165	.8491008	.365	285.364	3.9712463	.549	.000	DDDDD		
27	180	.00	.00	335	20	6.0	15	.294	.76	.24	10.2	91	301129	.1331011	.995	287.714	4.0222432	.865	.000	DDDD		
27	240	.00	.00	335	19	6.0	5	.294	.14	.06	10.2	91	251089	.4021015	.658	290.153	4.0742399	.287	.000	DDSS		
28	60	.00	.00	335	19	6.0	7	.295	.30	.09	10.2	91	261054	.4131019	.016	292.545	4.1272370	.100	.000	DDDD		
28	120	.00	.00	335	18	6.0	17	.298	.87	.29	10.2	91	261028	.5801021	.891	295.051	4.1802349	.702	.000	LDDD		
28	180	.00	.00	335	17	6.0	20	.303	1.09	.38	10.3	91	221017	.8251024	.284	297.790	4.2342344	.134	.000	LDDD		
28	240	.00	.00	335	16	6.0	13	.304	.66	.20	10.3	91	171031	.1191026	.429	300.655	4.2902362	.492	.000	LDDD		
29	60	.00	.00	335	16	6.0	8	.304	.35	.10	10.3	91	161074	.0691028	.826	303.494	4.3462410	.735	.000	LDDD		
29	120	.00	.00	335	15	6.0	19	.307	1.01	.35	10.3	91	171145	.1081032	.155	306.350	4.4022488	.015	.000	LDDD		
29	180	.00	.00	335	13	6.0	24	.310	1.31	.46	10.3	91	151241	.5961037	.195	309.305	4.4592592	.555	.000	LDDD		
29	240	.00	.00	335	12	6.0	15	.311	.78	.25	10.3	91	141364	.7541044	.808	312.301	4.5172726	.380	.000	LDDD		
30	60	.19	.19	335	12	6.0	6	.311	.23	.04	10.3	91	141513	.2641055	.935	315.231	4.5752889	.006	.000	LDDD		
30	120	.19	.19	335	11	6.0	17	.313	.87	.18	10.3	91	171677	.4721071	.469	318.123	4.6343071	.699	.000	LDDD		
30	180	.19	.18	415	10	6.0	21	.315	1.20	.23	10.4	91	151846	.3961092	.125	321.072	4.6933264	.285	.000	DDDD		
30	240	.19	.06	415	9	6.0	12	.315	.74	.12	10.4	92	142015	.5521118	.418	324.046	4.7523462	.768	.000	DDD		
31	60	.01	.01	415	9	6.0	2	.000	.01	.03	10.4	92	142181	.6841150	.700	326.929	4.8123664	.125	.000	SSS		
31	120	.01	.01	415	9	6.0	7	.314	.25	.08	10.4	92	182334	.5361189	.089	329.687	4.8723858	.184	.000	DDD		
31	180	.01	.01	415	9	6.0	9	.314	.42	.13	10.4	92	192460	.0981233	.342	332.376	4.9314030	.748	.000	DDD		
31	240	.01	.01	415	8	6.0	5	.314	.13	.06	10.4	92	202548	.5671282	.815	334.986	4.9914171	.360	.000	DSS		
VOLUME - CENTIMETERS																				MELT	MI	PET G-MLT
8.19		33.92		9.85		2.27		19.53		33.6		39.4		2.6		1.22						
1.79		2.56		7.39		.03		.00														

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE

AREA BASE-TEMP ZONES

JUN-1981 21500. .0 6																			FLAGS BY ZONE	
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL	OBS	1***5***10***15***20
1	60	.00	.00	415	8	6.0	-1	.000	.01	.03	10.4	92	222595	.2471336	.513	337.464	5.0514274	.274	.000	SSS
1	120	.00	.00	415	8	6.0	7	.312	.27	.10	10.4	92	242598	.4251393	.159	339.841	5.1104336	.535	.000	DDD
1	180	.00	.00	415	8	6.0	10	.313	.46	.15	10.4	92	252560	.8361451	.286	342.202	5.1704359	.494	.000	DDD
1	240	.00	.00	415	8	6.0	4	.312	.10	.05	10.4	92	252490	.2441509	.368	344.516	5.2304349	.357	.000	SSS
2	60	.00	.00	415	8	6.0	3	.313	.02	.04	10.4	91	272395	.2111565	.931	346.705	5.2904313	.137	.000	SSS
2	120	.00	.00	415	7	6.0	11	.312	.51	.17	10.4	91	292282	.4881619	.619	348.862	5.3504256	.319	.000	DDD
2	180	.00	.00	415	6	6.0	14	.313	.63	.24	10.4	91	272160	.0991669	.246	351.103	5.4114185	.860	.000	LDD
2	240	.00	.00	415	6	6.0	8	.313	.33	.10	10.4	91	252038	.6151713	.882	353.371	5.4724111	.341	.000	DDD
3	60	.20	.20	415	6	6.0	3	.315	.03	.03	10.4	91	261926	.2031752	.903	355.552	5.5344040	.192	.000	SSS

3	120	.18	.08	415	5	6.0	9	.313	.50	.08	10.4	91	281825.3031785.958	357.688	5.5953974.544	.000	DDD
3	180	.18	.02	415	5	6.0	12	.313	.60	.11	10.4	91	271736.4321812.909	359.889	5.6583914.887	.000	LDD
3	240	.18	.03	415	5	6.0	6	.313	.37	.05	10.4	91	241661.7991833.819	362.121	5.7203863.459	.000	DDD
4	60	.07	.01	90	5	6.0	1	.000	.01	.03	10.4	92	241602.4441848.938	364.274	5.7833821.439	.000	AAAAAA
4	120	.06	.01	415	5	6.0	6	.301	.27	.07	10.4	91	261554.9541858.642	366.336	5.8463785.778	.000	DDDDDD
4	180	.06	.02	415	4	6.0	8	.312	.32	.10	10.4	92	271513.9361863.338	368.368	5.9093751.551	.000	LDD
4	240	.06	.02	415	4	6.0	4	.312	.09	.04	10.4	91	271475.4791863.420	370.336	5.9723715.208	.000	AAA
5	60	.03	.01	90	4	6.0	2	.000	.01	.03	10.4	91	281436.4241859.252	372.183	6.0353673.894	.000	AAAAAA
5	120	.02	.01	415	4	6.0	9	.300	.28	.12	10.4	91	311393.5291851.138	373.958	6.0983624.723	.000	DDDLDD
5	180	.02	.02	415	4	6.0	12	.312	.34	.19	10.4	91	301345.6931839.326	375.733	6.1613566.913	.000	LDD
5	240	.02	.02	415	3	6.0	7	.311	.18	.08	10.4	91	301294.9171824.037	377.482	6.2243502.660	.000	LDD
6	60	.30	.05	90	4	6.0	0	.000	.01	.01	10.4	91	311243.5481805.501	379.134	6.2883434.470	.000	AAAAAA
6	120	.26	.00	415	3	6.0	7	.299	.44	.05	10.4	91	331192.4571783.961	380.781	6.3513363.550	.000	DDDLDD
6	180	.26	.01	415	3	6.0	9	.311	.48	.07	10.4	91	291143.2671759.670	382.531	6.4163291.883	.000	LDD
6	240	.26	.02	415	3	6.0	5	.310	.25	.03	10.4	91	261099.6401732.925	384.315	6.4813223.360	.000	LAA
7	60	.38	.01	415	3	6.0	5	.336	.36	.02	10.5	92	261064.8021704.094	386.104	6.5463161.545	.000	RAA
7	120	.38	.00	535	3	6.0	9	.359	.70	.04	10.5	92	251040.7431673.612	387.983	6.6123108.950	.000	RRR
7	180	.38	.01	535	2	6.0	11	.358	.57	.05	10.5	92	221030.2831641.990	389.973	6.6793068.924	.000	RR
7	240	.38	.01	535	2	6.0	7	.358	.45	.03	10.6	92	201036.5961609.827	391.999	6.7463045.167	.000	RR
8	60	.44	.01	535	2	6.0	5	.307	.29	.01	10.6	92	201060.0541577.797	394.009	6.8143038.674	.000	AA
8	120	.44	.00	535	2	6.0	6	.362	.50	.02	10.6	93	201097.3461546.586	396.013	6.8823046.827	.000	RR
8	180	.44	.00	535	2	6.0	7	.362	.53	.02	10.7	93	191144.1761516.831	398.042	6.9503065.999	.000	RR
8	240	.44	.00	535	2	6.0	6	.359	.47	.01	10.7	93	181197.6481489.095	400.084	7.0193093.845	.000	RA
9	60	.07	.00	535	2	6.0	5	.306	.12	.05	10.7	93	181255.0381463.859	402.067	7.0883128.053	.000	DA
9	120	.07	.01	535	2	6.0	9	.307	.21	.11	10.7	93	201311.3721441.488	403.950	7.1573163.967	.000	DD
9	180	.07	.03	535	2	6.0	11	.307	.24	.14	10.7	93	221360.2691422.172	405.754	7.2263195.421	.000	DD
9	240	.07	.03	535	2	6.0	7	.307	.15	.08	10.6	93	231396.7181405.911	407.471	7.2953217.395	.000	DD
10	60	.01	.01	535	1	6.0	5	.307	.06	.06	10.6	93	251417.6191392.518	409.076	7.3633226.576	.000	DA
10	120	.01	.01	535	1	6.0	9	.307	.15	.13	10.6	93	271421.0751381.645	410.576	7.4323220.728	.000	DD
10	180	.01	.01	535	1	6.0	10	.308	.16	.15	10.6	93	291406.8871372.813	411.989	7.5003199.189	.000	LD
10	240	.01	.01	535	1	6.0	7	.308	.11	.10	10.6	92	311376.8941365.459	413.313	7.5693163.234	.000	DD
11	60	.00	.00	535	1	6.0	4	.307	.01	.05	10.6	92	341333.7651358.986	414.525	7.6373114.912	.000	SS
11	120	.00	.00	535	1	6.0	10	.308	.12	.16	10.5	92	371279.8141352.794	415.634	7.7053055.947	.000	LD
11	180	.00	.00	535	1	6.0	12	.309	.11	.21	10.5	92	401217.3521346.304	416.661	7.7732988.089	.000	LD
11	240	.00	.00	535	1	6.0	7	.308	.09	.09	10.5	92	421149.1781338.984	417.601	7.8402913.604	.000	LD
12	60	.00	.00	535	1	6.0	3	.000	.00	.04	10.4	92	441077.9131330.372	418.438	7.9082834.630	.000	SS
12	120	.00	.00	535	1	6.0	12	.308	.08	.19	10.4	92	461005.3091320.081	419.176	7.9752752.540	.000	LD
12	180	.00	.00	535	1	6.0	15	.310	.07	.28	10.3	91	47 932.6411307.805	419.831	8.0422668.320	.000	LD
12	240	.00	.00	535	0	6.0	8	.310	.13	.11	10.3	91	48 861.4141293.317	420.419	8.1092583.259	.000	DD
13	60	.09	.09	535	0	6.0	3	.309	.01	.04	10.3	91	49 793.2451276.476	420.927	8.1762498.823	.000	SS
13	120	.08	.08	685	0	6.0	17	.311	.19	.27	10.3	91	51 729.4161257.229	421.374	8.2422416.262	.000	DD
13	180	.08	.08	685	0	6.0	23	.308	.03	.40	10.2	91	50 670.9461235.606	421.765	8.3092336.627	.000	D

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE

AREA BASE-TEMP ZONES

JUN-1981 21500 .0 6

FLAGS BY ZONE

DA HR PCPN INT SNOWLINE WE LR TA MR RG ET SMI ROP BFP SURF SUBSF BASEF LOWERZ TOTAL OBS 1***5***10***15***20

13	240	.08	.08	685	0	6.0	12	.309	.01	.16	10.1	90	52	618.3011211	711	422.056	8.3762260	.444	.000	D
14	60	.01	.01	685	0	6.0	9	.309	.01	.14	10.1	90	53	570.8341185	700	422.247	8.4422187	.223	.000	D
14	120	.01	.01	685	0	6.0	18	.311	.02	.36	10.0	89	55	527.2401157	756	422.342	8.5072115	.846	.000	D
14	180	.01	.01	685	0	6.0	22	.313	.02	.45	9.9	89	56	486.3911128	072	422.345	8.5732045	.381	.000	L
14	240	.01	.01	685	0	6.0	15	.314	.01	.27	9.8	88	57	447.6211096	843	422.257	8.6381975	.358	.000	L
15	60	.06	.06	685	0	6.0	4	.313	.00	.05	9.8	87	59	410.5861064	264	422.079	8.7031905	.632	.000	S
15	120	.05	.05	685	0	6.0	10	.313	.01	.13	9.8	87	60	375.0821030	529	421.814	8.7681836	.193	.000	D
15	180	.05	.05	685	0	6.0	13	.314	.01	.19	9.7	87	62	341.032	995.826	421.465	8.8321767	.155	.000	L
15	240	.05	.05	685	0	6.0	7	.314	.00	.09	9.7	87	63	308.516	960.337	421.035	8.8961698	.784	.000	D
16	60	.16	.16	685	0	6.0	3	.000	.00	.03	9.7	86	64	277.678	924.243	420.525	8.9601631	.406	.000	S
16	120	.14	.13	685	0	6.0	10	.313	.01	.10	9.7	86	65	248.647	887.717	419.938	9.0241565	.326	.000	L
16	180	.14	.11	685	0	6.0	12	.313	.03	.14	9.6	86	65	221.578	850.930	419.290	9.0871500	.885	.000	L
16	240	.14	.05	685	0	6.0	7	.313	.07	.06	9.6	86	65	196.762	814.049	418.620	9.1501438	.582	.000	D
17	60	.34	.02	685	0	6.0	8	.356	.29	.04	9.7	86	63	174.879	777.243	418.074	9.2141379	.409	.000	R
17	120	.34	.01	685	0	6.0	14	.357	.30	.09	9.7	86	53	157.417	740.696	417.741	9.2791325	.133	.000	R
17	180	.34	.02		0	6.0	15	.356	.28	.10	9.7	86	45	146.611	704.628	417.570	9.3451278	.153	.000	R
17	240	.34	.03		0	6.0	11	.000	.27	.06	9.7	86	39	144.638	669.307	417.511	9.4111240	.866	.000	
18	60	.00	.00		0	6.0	7	.000	.00	.10	9.7	87	36	152.348	635.046	417.455	9.4771214	.327	.000	
18	120	.00	.00		0	6.0	15	.000	.00	.29	9.6	86	39	168.042	602.172	417.308	9.5431197	.066	.000	
18	180	.00	.00		0	6.0	18	.000	.00	.36	9.6	86	43	187.784	570.973	417.073	9.6091185	.438	.000	
18	240	.00	.00		0	6.0	12	.000	.00	.20	9.5	85	47	207.267	541.651	416.752	9.6751175	.345	.000	
19	60	.12	.12		0	6.0	9	.000	.00	.10	9.5	85	50	223.206	514.315	416.349	9.7401163	.609	.000	
19	120	.12	.12		0	6.0	21	.000	.00	.31	9.4	84	53	233.670	488.973	415.865	9.8051148	.312	.000	
19	180	.12	.11		0	6.0	26	.000	.01	.41	9.3	84	56	237.946	465.558	415.306	9.8691128	.679	.000	
19	240	.12	.11		0	6.0	17	.000	.01	.23	9.2	83	58	236.250	443.940	414.680	9.9341104	.803	.000	
20	60	.01	.01		0	6.0	7	.000	.00	.10	9.2	82	59	229.390	423.952	413.985	9.9981077	.325	.000	
20	120	.01	.01		0	6.0	14	.000	.00	.24	9.2	82	61	218.430	405.405	413.219	10.0611047	.115	.000	
20	180	.01	.01		0	6.0	17	.000	.00	.32	9.1	81	62	204.463	388.102	412.384	10.1251015	.075	.000	
20	240	.01	.01		0	6.0	11	.000	.00	.18	9.0	81	63	188.510	371.853	411.483	10.188	982.034	.000	
21	60	.00	.00		0	6.0	6	.000	.00	.08	9.0	80	64	171.470	356.479	410.517	10.251	948.717	.000	
21	120	.00	.00		0	6.0	16	.000	.00	.31	8.9	80	65	154.094	341.821	409.488	10.314	915.716	.000	
21	180	.00	.00		0	6.0	20	.000	.00	.40	8.8	79	66	136.980	327.738	408.399	10.376	883.493	.000	
21	240	.00	.00		0	6.0	12	.000	.00	.20	8.8	78	67	120.576	314.116	407.252	10.438	852.382	.000	
22	60	.01	.01		0	6.0	11	.000	.00	.18	8.7	78	67	105.196	300.863	406.048	10.500	822.606	.000	
22	120	.01	.01		0	6.0	17	.000	.00	.33	8.7	77	68	91.036	287.907	404.790	10.561	794.294	.000	
22	180	.01	.01		0	6.0	20	.000	.00	.40	8.6	77	68	78.203	275.199	403.479	10.622	767.503	.000	
22	240	.01	.01		0	6.0	15	.000	.00	.27	8.5	76	68	66.725	262.706	402.118	10.683	742.232	.000	
23	60	.46	.46		0	6.0	6	.000	.00	.01	8.5	75	69	56.579	250.412	400.708	10.744	718.442	.000	
23	120	.46	.05		0	6.0	11	.000	.31	.03	8.6	75	69	47.979	238.313	399.437	10.805	696.533	.000	
23	180	.46	.01		0	6.0	12	.000	.35	.03	8.7	76	57	42.085	226.433	398.474	10.867	677.859	.000	
23	240	.46	.01		0	6.0	9	.000	.35	.02	8.6	77	45	41.300	214.841	397.763	10.931	664.835	.000	
24	60	.18	.01	415	0	6.0	4	.000	.02	.03	8.8	78	37	48.029	203.673	397.132	10.995	659.828	.000	AAA
24	120	.16	.01		0	6.0	8	.243	.22	.08	8.8	78	40	62.879	193.120	396.518	11.059	663.576	.000	DDD
24	180	.16	.02		0	6.0	9	.000	.11	.09	8.8	78	37	84.664	183.402	395.949	11.123	675.138	.000	
24	240	.16	.02		0	6.0	6	.000	.11	.05	8.8	78	38	111.443	174.735	395.379	11.187	692.744	.000	
25	60	.02	.01		0	6.0	7	.000	.01	.08	8.8	78	38	140.747	167.303	394.776	11.251	714.077	.000	
25	120	.02	.02		0	6.0	11	.000	.00	.16	8.8	78	42	169.605	161.238	394.105	11.315	736.263	.000	
25	180	.02	.02		0	6.0	13	.000	.00	.21	8.7	78	47	195.042	156.597	393.367	11.379	756.385	.000	

25	240	.02	.02	0	6.0	9	.000	.00	.12	8.7	77	50	214.786	153.354	392.564	11.442	772.146	.000
26	60	.54	.08	0	6.0	7	.000	.35	.01	8.8	77	53	228.109	151.411	391.862	11.506	782.888	.000
26	120	.54	.00	0	6.0	13	.000	.42	.02	8.9	78	42	236.910	150.635	391.414	11.570	790.529	.000

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE

AREA BASE-TEMP ZONES

JUN-1981		21500.	.0	6															FLAGS BY ZONE	
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL	OBS	1****5***10***15***20

26	180	.54	.01	0	6.0	15	.000	.42	.03	9.0	79	35	245.761	150.915	391.177	11.636	799.489	.000	
26	240	.54	.01	0	6.0	10	.000	.43	.02	9.1	80	31	260.194	152.222	391.108	11.703	815.227	.000	
27	60	.21	.00	0	6.0	8	.000	.16	.06	9.1	81	28	284.253	154.630	391.110	11.770	841.762	.000	
27	120	.21	.02	0	6.0	11	.000	.16	.10	9.2	81	29	318.456	158.293	391.104	11.837	879.691	.000	
27	180	.21	.02	0	6.0	11	.000	.15	.11	9.2	81	30	359.832	163.391	391.090	11.904	926.217	.000	
27	240	.21	.03	0	6.0	9	.000	.15	.08	9.2	81	31	403.956	170.065	391.068	11.971	977.060	.000	
28	60	.00	.00	0	6.0	8	.000	.00	.12	9.1	82	31	446.453	178.385	390.998	12.038	1027.875	.000	
28	120	.00	.00	0	6.0	15	.000	.00	.27	9.1	81	34	483.161	188.326	390.845	12.105	1074.436	.000	
28	180	.00	.00	0	6.0	17	.000	.00	.34	9.0	81	37	510.420	199.749	390.609	12.171	1112.948	.000	
28	240	.00	.00	0	6.0	12	.000	.00	.20	8.9	80	40	525.863	212.410	390.293	12.237	1140.804	.000	
29	60	.01	.01	0	6.0	8	.000	.00	.12	8.9	79	45	528.779	225.973	389.901	12.303	1156.955	.000	
29	120	.01	.01	0	6.0	20	.000	.00	.39	8.8	79	48	519.847	240.044	389.433	12.368	1161.692	.000	
29	180	.01	.01	0	6.0	24	.000	.00	.51	8.7	78	52	500.696	254.198	388.893	12.433	1156.220	.000	
29	240	.01	.01	0	6.0	15	.000	.00	.27	8.6	77	55	473.447	268.015	388.283	12.498	1142.242	.000	
30	60	.14	.14	0	6.0	11	.000	.00	.12	8.6	76	57	440.367	281.098	387.604	12.562	1121.633	.000	
30	120	.14	.14	0	6.0	17	.000	.00	.22	8.5	76	59	403.618	293.097	386.860	12.627	1096.201	.000	
30	180	.14	.14	0	6.0	19	.000	.00	.26	8.5	76	61	365.100	303.715	386.052	12.690	1067.557	.000	
30	240	.14	.14	0	6.0	14	.000	.00	.17	8.4	75	62	326.388	312.717	385.183	12.754	1037.041	.000	

14.97

3.74

17.48

4.15

VOLUME - CENTIMETERS

9.18

4.79

25.21

MELT MI PET G-MLT

8.7

19.7

4.2 .31

JUL-1981

1	60	.07	.07	0	6.0	9	.000	.00	.11	8.4	75	63	288.703	319.934	384.254	12.817	1005.708	.000	
1	120	.07	.07	0	6.0	17	.000	.00	.28	8.3	74	64	252.941	325.260	383.267	12.880	974.348	.000	
1	180	.07	.07	0	6.0	21	.000	.00	.35	8.2	74	65	219.701	328.645	382.225	12.943	943.513	.000	
1	240	.07	.07	0	6.0	14	.000	.00	.20	8.2	73	66	189.340	330.093	381.129	13.005	913.566	.000	
2	60	.00	.00	0	6.0	12	.000	.00	.21	8.1	72	67	162.015	329.653	379.981	13.067	884.716	.000	
2	120	.00	.00	0	6.0	23	.000	.00	.49	8.0	72	67	137.734	327.413	378.782	13.129	857.059	.000	
2	180	.00	.00	0	6.0	28	.000	.00	.61	7.9	71	68	116.395	323.490	377.536	13.190	830.610	.000	
2	240	.00	.00	0	6.0	19	.000	.00	.38	7.8	69	68	97.823	318.022	376.242	13.251	805.338	.000	
3	60	.01	.01	0	6.0	18	.000	.00	.34	7.7	68	68	81.798	311.167	374.903	13.312	781.180	.000	
3	120	.01	.01	0	6.0	27	.000	.00	.57	7.5	68	69	68.077	303.089	373.521	13.373	758.060	.000	
3	180	.01	.01	0	6.0	30	.000	.00	.67	7.4	66	69	56.412	293.958	372.096	13.433	735.899	.000	
3	240	.01	.01	0	6.0	23	.000	.00	.47	7.3	64	69	46.556	283.944	370.631	13.493	714.624	.000	
4	60	.00	.00	0	6.0	10	.000	.00	.15	7.2	63	69	38.276	273.212	369.128	13.553	694.168	.000	
4	120	.00	.00	0	6.0	17	.000	.00	.33	7.1	63	69	31.358	261.921	367.587	13.612	674.478	.000	
4	180	.00	.00	0	6.0	19	.000	.00	.38	7.0	62	69	25.605	250.221	366.010	13.671	655.507	.000	

4	240	.00	.00	0	6.0	14	.0000	.00	.25	7.0	61	69	20.842	238.251	364.399	13.730	637.222	.000
5	60	.00	.00	0	6.0	8	.0000	.00	.11	7.0	60	70	16.916	226.137	362.754	13.788	619.596	.000
5	120	.00	.00	0	6.0	18	.0000	.00	.35	6.9	60	70	13.691	213.994	361.078	13.847	602.610	.000
5	180	.00	.00	0	6.0	22	.0000	.00	.45	6.8	59	70	11.053	201.923	359.371	13.905	586.250	.000
5	240	.00	.00	0	6.0	14	.0000	.00	.24	6.7	58	70	8.900	190.011	357.635	13.962	570.509	.000
6	60	.10	.10	0	6.0	14	.0000	.00	.18	6.6	57	70	7.151	178.337	355.871	14.020	555.377	.000
6	120	.10	.10	0	6.0	21	.0000	.00	.33	6.6	56	70	5.732	166.962	354.080	14.077	540.851	.000
6	180	.10	.10	0	6.0	25	.0000	.00	.40	6.5	55	70	4.585	155.941	352.263	14.133	526.923	.000
6	240	.10	.10	0	6.0	18	.0000	.00	.27	6.4	54	70	3.661	145.315	350.423	14.190	513.589	.000
7	60	.04	.04	0	6.0	11	.0000	.00	.17	6.4	54	70	2.917	135.119	348.559	14.246	500.841	.000
7	120	.04	.04	0	6.0	16	.0000	.00	.28	6.3	53	70	2.320	125.375	346.672	14.302	488.670	.000
7	180	.04	.04	0	6.0	18	.0000	.00	.32	6.2	52	70	1.842	116.102	344.765	14.358	477.067	.000
7	240	.04	.04	0	6.0	15	.0000	.00	.24	6.1	51	70	1.461	107.307	342.838	14.413	466.019	.000

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE

AREA BASE-TEMP ZONES

JUL-1981 21500. .0 6																			FLAGS BY ZONE	
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL	OBS	1****5****10****15****20
8	60	.00	.00		0	6.0	11	.0000	.00	.17	6.1	51	70	1.156	98.996	340.891	14.468	455.512	.000	
8	120	.00	.00		0	6.0	14	.0000	.00	.25	6.0	50	70	.914	91.167	338.927	14.523	445.531	.000	
8	180	.00	.00		0	6.0	16	.0000	.00	.30	6.0	50	70	.721	83.815	336.945	14.578	436.058	.000	
8	240	.00	.00		0	6.0	13	.0000	.00	.23	5.9	49	70	.568	76.929	334.948	14.632	427.076	.000	
9	60	.03	.03		0	6.0	10	.0000	.00	.13	5.9	48	70	.447	70.497	332.935	14.686	418.565	.000	
9	120	.03	.03		0	6.0	13	.0000	.00	.20	5.8	48	70	.351	64.505	330.908	14.740	410.504	.000	
9	180	.03	.03		0	6.0	15	.0000	.00	.24	5.8	47	70	.276	58.936	328.867	14.793	402.872	.000	
9	240	.03	.03		0	6.0	12	.0000	.00	.17	5.7	47	70	.216	53.772	326.814	14.846	395.648	.000	
10	60	.03	.03		0	6.0	7	.0000	.00	.09	5.7	46	70	.169	48.993	324.749	14.899	388.811	.000	
10	120	.03	.03		0	6.0	11	.0000	.00	.17	5.7	46	70	.133	44.581	322.673	14.952	382.338	.000	
10	180	.03	.03		0	6.0	12	.0000	.00	.19	5.6	45	70	.104	40.514	320.587	15.004	376.209	.000	
10	240	.03	.03		0	6.0	10	.0000	.00	.13	5.6	45	70	.081	36.773	318.492	15.056	370.402	.000	
11	60	.02	.02		0	6.0	8	.0000	.00	.11	5.5	45	70	.063	33.338	316.388	15.108	364.897	.000	
11	120	.02	.02		0	6.0	14	.0000	.00	.23	5.5	44	70	.049	30.190	314.276	15.160	359.674	.000	
11	180	.02	.02		0	6.0	16	.0000	.00	.29	5.4	44	70	.038	27.308	312.156	15.211	354.713	.000	
11	240	.02	.02		0	6.0	12	.0000	.00	.18	5.4	43	70	.030	24.674	310.030	15.262	349.997	.000	
12	60	.01	.01		0	6.0	10	.0000	.00	.16	5.3	42	70	.023	22.272	307.899	15.313	345.506	.000	
12	120	.01	.01		0	6.0	18	.0000	.00	.34	5.2	42	70	.018	20.083	305.762	15.363	341.226	.000	
12	180	.01	.01		0	6.0	21	.0000	.00	.42	5.1	41	70	.014	18.091	303.620	15.413	337.139	.000	
12	240	.01	.01		0	6.0	15	.0000	.00	.27	5.1	40	70	.011	16.282	301.474	15.463	333.230	.000	
13	60	.00	.00		0	6.0	8	.0000	.00	.10	5.0	39	70	.008	14.640	299.325	15.513	329.486	.000	
13	120	.00	.00		0	6.0	15	.0000	.00	.27	5.0	39	70	.006	13.151	297.173	15.563	325.894	.000	
13	180	.00	.00		0	6.0	17	.0000	.00	.33	4.9	38	70	.005	11.804	295.019	15.612	322.440	.000	
13	240	.00	.00		0	6.0	12	.0000	.00	.19	4.9	38	70	.004	10.586	292.863	15.661	319.114	.000	
14	60	.00	.00		0	6.0	7	.0000	.00	.08	4.8	37	70	.003	9.486	290.706	15.709	315.904	.000	
14	120	.00	.00		0	6.0	13	.0000	.00	.21	4.8	37	70	.002	8.493	288.548	15.758	312.802	.000	
14	180	.00	.00		0	6.0	15	.0000	.00	.26	4.7	37	70	.002	7.598	286.391	15.806	309.796	.000	
14	240	.00	.00		0	6.0	10	.0000	.00	.15	4.7	36	70	.001	6.793	284.233	15.854	306.881	.000	

15	60	.71	.51	0	6.0	8	.000	.07	.01	4.8	36	70	.063	6.069	282.120	15.902	304.153	.000
15	120	.71	.00	0	6.0	10	.000	.26	.02	5.2	37	67	.615	5.424	280.206	15.950	302.195	.000
15	180	.71	.00	0	6.0	11	.000	.29	.02	5.7	41	57	2.899	4.874	278.586	16.000	302.358	.000
15	240	.71	.00	0	6.0	9	.000	.32	.01	6.0	45	48	9.022	4.470	277.232	16.050	306.775	.000
16	60	.16	.00	0	6.0	7	.000	.08	.06	6.1	50	40	21.061	4.320	276.018	16.101	317.500	.000
16	120	.16	.02	0	6.0	12	.000	.07	.13	6.1	50	41	39.535	4.573	274.830	16.152	335.090	.000
16	180	.16	.03	0	6.0	13	.000	.06	.15	6.2	51	42	62.917	5.397	273.665	16.203	358.183	.000
16	240	.16	.04	0	6.0	10	.000	.06	.09	6.2	51	44	88.672	6.941	272.521	16.254	384.389	.000
17	60	.00	.00	0	6.0	6	.000	.00	.08	6.2	51	46	114.238	9.310	271.374	16.305	411.228	.000
17	120	.00	.00	0	6.0	18	.000	.00	.34	6.1	51	49	137.322	12.552	270.201	16.355	436.431	.000
17	180	.00	.00	0	6.0	23	.000	.00	.46	6.0	50	53	156.080	16.654	269.002	16.406	458.141	.000
17	240	.00	.00	0	6.0	13	.000	.00	.22	5.9	49	55	169.378	21.542	267.780	16.456	475.155	.000
18	60	.00	.00	0	6.0	11	.000	.00	.17	5.9	48	57	176.866	27.093	266.534	16.505	486.998	.000
18	120	.00	.00	0	6.0	21	.000	.00	.42	5.8	48	59	178.818	33.151	265.265	16.555	493.789	.000
18	180	.00	.00	0	6.0	25	.000	.00	.53	5.6	47	61	175.929	39.536	263.976	16.604	496.045	.000
18	240	.00	.00	0	6.0	17	.000	.00	.32	5.6	45	62	169.113	46.063	262.666	16.653	494.495	.000
19	60	.00	.00	0	6.0	15	.000	.00	.27	5.5	44	64	159.348	52.553	261.336	16.701	489.939	.000
19	120	.00	.00	0	6.0	25	.000	.00	.52	5.4	44	65	147.573	58.839	259.988	16.750	483.150	.000
19	180	.00	.00	0	6.0	28	.000	.00	.61	5.2	42	65	134.620	64.774	258.623	16.798	474.814	.000
19	240	.00	.00	0	6.0	21	.000	.00	.41	5.1	41	66	121.185	70.235	257.240	16.846	465.505	.000
20	60	.00	.00	0	6.0	18	.000	.00	.33	5.0	40	67	107.815	75.126	255.841	16.893	455.674	.000
20	120	.00	.00	0	6.0	28	.000	.00	.58	4.9	39	67	94.921	79.373	254.426	16.941	445.661	.000
20	180	.00	.00	0	6.0	31	.000	.00	.67	4.7	38	68	82.788	82.930	252.997	16.988	435.703	.000

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE

AREA BASE-TEMP ZONES

JUL-1981 21500. .0 6																			FLAGS BY ZONE	
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL	OBS	1***5***10***15***20
20	240	.00	.00		0	6.0	24	.0000	.00	.48	4.6	36	68	71.598	85.773	251.555	17.034	425.960	.000	
21	60	.76	.51		0	6.0	16	.0000	.09	.03	4.8	35	68	61.529	87.896	250.151	17.081	416.657	.000	
21	120	.76	.01		0	6.0	20	.0000	.27	.04	5.2	36	65	53.122	89.320	248.943	17.129	408.513	.000	
21	180	.76	.01		0	6.0	21	.0000	.31	.04	5.7	41	55	47.771	90.096	248.020	17.177	403.064	.000	
21	240	.76	.01		0	6.0	18	.0000	.34	.03	6.1	45	45	47.757	90.330	247.353	17.227	402.667	.000	
22	60	.26	.01		0	6.0	9	.0000	.12	.06	6.2	50	38	55.356	90.195	246.826	17.277	409.655	.000	
22	120	.26	.01		0	6.0	14	.0000	.12	.12	6.3	51	38	71.331	89.924	246.342	17.327	424.925	.000	
22	180	.26	.03		0	6.0	15	.0000	.12	.13	6.3	52	38	94.407	89.779	245.898	17.378	447.462	.000	
22	240	.26	.03		0	6.0	12	.0000	.12	.09	6.4	53	38	122.193	90.015	245.492	17.428	475.127	.000	
23	60	.01	.01		0	6.0	8	.0000	.00	.11	6.4	54	38	151.995	90.849	245.083	17.478	505.405	.000	
23	120	.01	.01		0	6.0	15	.0000	.00	.25	6.3	53	42	180.883	92.442	244.631	17.528	535.484	.000	
23	180	.01	.01		0	6.0	17	.0000	.00	.31	6.2	53	47	205.962	94.876	244.139	17.578	562.555	.000	
23	240	.01	.01		0	6.0	12	.0000	.00	.19	6.2	52	50	225.048	98.153	243.607	17.628	584.435	.000	
24	60	.01	.01		0	6.0	10	.0000	.00	.13	6.2	51	53	237.037	102.193	243.036	17.677	599.944	.000	
24	120	.01	.01		0	6.0	21	.0000	.00	.39	6.1	51	56	241.805	106.860	242.429	17.726	608.820	.000	
24	180	.01	.01		0	6.0	25	.0000	.00	.50	5.9	50	58	239.946	111.975	241.786	17.775	611.482	.000	
24	240	.01	.01		0	6.0	16	.0000	.00	.27	5.9	49	60	232.489	117.336	241.108	17.823	608.757	.000	
25	60	.00	.00		0	6.0	9	.0000	.00	.14	5.8	48	61	220.659	122.738	240.397	17.871	601.666	.000	

25 120	.00	.00	0 6.0 21	.000	.00	.41	5.7	47	63	205.701	127.981	239.654	17.919	591.256	.000
25 180	.00	.00	0 6.0 26	.000	.00	.53	5.6	46	64	188.764	132.887	238.880	17.967	578.498	.000
25 240	.00	.00	0 6.0 17	.000	.00	.30	5.5	45	65	170.839	137.301	238.075	18.014	564.229	.000
26 60	.13	.13	0 6.0 16	.000	.00	.19	5.5	44	66	152.731	141.095	237.242	18.061	549.129	.000
26 120	.13	.13	0 6.0 23	.000	.00	.32	5.4	44	66	135.059	144.175	236.380	18.108	533.722	.000
26 180	.13	.13	0 6.0 26	.000	.00	.36	5.3	43	67	118.269	146.474	235.492	18.155	518.390	.000
26 240	.13	.13	0 6.0 20	.000	.00	.26	5.3	42	67	102.659	147.956	234.577	18.201	503.393	.000
27 60	.28	.26	0 6.0 12	.000	.01	.08	5.2	41	68	88.411	148.608	233.643	18.247	488.909	.000
27 120	.28	.02	0 6.0 17	.000	.11	.14	5.4	41	68	75.725	148.443	232.754	18.293	475.215	.000
27 180	.28	.03	0 6.0 19	.000	.10	.16	5.5	42	64	65.028	147.496	231.961	18.340	462.825	.000
27 240	.28	.04	0 6.0 15	.000	.10	.12	5.6	43	61	56.947	145.832	231.254	18.387	452.419	.000
28 60	.35	.03	0 6.0 10	.000	.14	.05	5.7	44	58	52.085	143.542	230.645	18.434	444.705	.000
28 120	.35	.01	0 6.0 12	.000	.16	.07	5.9	46	54	50.942	140.746	230.150	18.481	440.318	.000
28 180	.35	.02	0 6.0 13	.000	.16	.07	6.1	48	51	53.934	137.588	229.764	18.529	439.815	.000
28 240	.35	.02	0 6.0 11	.000	.16	.06	6.2	50	47	61.331	134.237	229.477	18.577	443.622	.000
29 60	.05	.01	0 6.0 9	.000	.02	.11	6.2	51	44	72.942	130.874	229.222	18.625	451.664	.000
29 120	.05	.03	0 6.0 14	.000	.01	.20	6.2	51	48	87.608	127.678	228.936	18.673	462.896	.000
29 180	.05	.05	0 6.0 15	.000	.00	.23	6.1	51	51	103.267	124.804	228.612	18.721	475.403	.000
29 240	.05	.05	0 6.0 12	.000	.00	.16	6.1	50	54	117.729	122.358	228.246	18.769	487.102	.000
30 60	.00	.00	0 6.0 11	.000	.00	.16	6.0	50	56	129.324	120.393	227.841	18.816	496.375	.000
30 120	.00	.00	0 6.0 17	.000	.00	.31	5.9	49	58	137.095	118.912	227.398	18.863	502.267	.000
30 180	.00	.00	0 6.0 20	.000	.00	.37	5.8	48	60	140.749	117.870	226.917	18.910	504.446	.000
30 240	.00	.00	0 6.0 15	.000	.00	.25	5.8	47	62	140.492	117.197	226.400	18.956	503.045	.000
31 60	.04	.04	0 6.0 13	.000	.00	.19	5.7	47	63	136.845	116.796	225.848	19.002	498.492	.000
31 120	.04	.04	0 6.0 20	.000	.00	.34	5.7	46	64	130.489	116.566	225.263	19.048	491.366	.000
31 180	.04	.04	0 6.0 24	.000	.00	.42	5.5	45	65	122.143	116.403	224.645	19.094	482.285	.000
31 240	.04	.04	0 6.0 18	.000	.00	.29	5.5	44	66	112.492	116.209	223.995	19.139	471.835	.000
V O L U M E - C E N T I M E T E R S															
12.25			3.68			.99				3.60		6.18	MELT	MI	PET G-MLT
	3.81					7.71				1.39		.20	.0	8.4	7.7 .00

AUG-1981

1 60	.13	.13	0 6.0 13	.000	.00	.14	5.4	43	66	102.135	115.897	223.315	19.185	460.531	.000
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SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE

AREA BASE-TEMP ZONES

AUG-1981 21500. .0 6																			FLAGS BY ZONE	
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL	OBS	1***5***10***15***20
1	120	.13	.13		0	6.0	19	.000	.00	.24	5.4	43	67	91.568	115.393	222.605	19.230	448.796	.000	
1	180	.13	.13		0	6.0	22	.000	.00	.28	5.3	42	67	81.177	114.641	221.867	19.274	436.959	.000	
1	240	.13	.13		0	6.0	17	.000	.00	.20	5.3	42	68	71.246	113.596	221.102	19.319	425.263	.000	
2	60	.09	.09		0	6.0	10	.000	.00	.11	5.2	41	68	61.969	112.233	220.310	19.363	413.875	.000	
2	120	.09	.06		0	6.0	13	.000	.01	.17	5.2	41	68	53.476	110.539	219.502	19.407	402.923	.000	
2	180	.09	.05		0	6.0	14	.000	.02	.19	5.2	41	68	45.876	108.513	218.686	19.450	392.526	.000	
2	240	.09	.05		0	6.0	12	.000	.02	.14	5.2	40	68	39.277	106.168	217.868	19.494	382.807	.000	
3	60	.12	.03		0	6.0	11	.000	.03	.11	5.2	40	67	33.767	103.527	217.057	19.538	373.888	.000	

3 120 .12 .03	0 6.0 14 .000 .04 .16 5.2 40 66	29.423 100.623 216.262	19.581 365.889	.000
3 180 .12 .04	0 6.0 15 .000 .03 .19 5.2 41 66	26.303 97.500 215.482	19.624 358.909	.000
3 240 .12 .05	0 6.0 13 .000 .03 .14 5.2 41 65	24.399 94.205 214.714	19.668 352.985	.000
4 60 .01 .01	0 6.0 11 .000 .00 .16 5.2 41 65	23.584 90.792 213.936	19.711 348.023	.000
4 120 .01 .01	0 6.0 16 .000 .00 .27 5.1 40 65	23.574 87.312 213.135	19.754 343.774	.000
4 180 .01 .01	0 6.0 18 .000 .00 .31 5.0 40 66	23.977 83.815 212.310	19.796 339.898	.000
4 240 .01 .01	0 6.0 14 .000 .00 .23 5.0 39 67	24.429 80.339 211.462	19.838 336.068	.000
5 60 .00 .00	0 6.0 10 .000 .00 .14 4.9 38 67	24.667 76.914 210.592	19.881 332.054	.000
5 120 .00 .00	0 6.0 16 .000 .00 .28 4.9 38 68	24.545 73.563 209.702	19.922 327.732	.000
5 180 .00 .00	0 6.0 19 .000 .00 .35 4.8 37 68	24.014 70.297 208.791	19.964 323.066	.000
5 240 .00 .00	0 6.0 14 .000 .00 .22 4.7 37 68	23.092 67.126 207.861	20.005 318.084	.000
6 60 .00 .00	0 6.0 10 .000 .00 .14 4.7 36 69	21.841 64.051 206.912	20.046 312.851	.000
6 120 .00 .00	0 6.0 20 .000 .00 .35 4.6 36 69	20.341 61.072 205.945	20.087 307.446	.000
6 180 .00 .00	0 6.0 23 .000 .00 .44 4.5 35 69	18.678 58.187 204.962	20.128 301.955	.000
6 240 .00 .00	0 6.0 16 .000 .00 .26 4.4 34 69	16.931 55.392 203.962	20.168 296.453	.000
7 60 .00 .00	0 6.0 13 .000 .00 .21 4.4 33 69	15.169 52.684 202.946	20.208 291.007	.000
7 120 .00 .00	0 6.0 21 .000 .00 .37 4.3 33 69	13.447 50.058 201.915	20.248 285.668	.000
7 180 .00 .00	0 6.0 24 .000 .00 .44 4.2 32 69	11.806 47.511 200.871	20.288 280.476	.000
7 240 .00 .00	0 6.0 18 .000 .00 .30 4.1 31 70	10.275 45.042 199.812	20.327 275.457	.000
8 60 .00 .00	0 6.0 11 .000 .00 .15 4.1 31 70	8.872 42.648 198.740	20.367 270.627	.000
8 120 .00 .00	0 6.0 21 .000 .00 .37 4.0 30 70	7.605 40.327 197.656	20.406 265.994	.000
8 180 .00 .00	0 6.0 25 .000 .00 .47 3.9 30 70	6.475 38.080 196.561	20.444 261.561	.000
8 240 .00 .00	0 6.0 17 .000 .00 .28 3.8 29 70	5.480 35.907 195.454	20.483 257.323	.000
9 60 .00 .00	0 6.0 12 .000 .00 .17 3.7 28 70	4.611 33.807 194.336	20.521 253.276	.000
9 120 .00 .00	0 6.0 22 .000 .00 .40 3.6 28 70	3.860 31.782 193.209	20.559 249.410	.000
9 180 .00 .00	0 6.0 26 .000 .00 .49 3.5 27 70	3.216 29.831 192.072	20.597 245.716	.000
9 240 .00 .00	0 6.0 18 .000 .00 .30 3.4 26 70	2.667 27.956 190.926	20.634 242.184	.000
10 60 .01 .01	0 6.0 15 .000 .00 .23 3.4 25 70	2.203 26.158 189.771	20.672 238.804	.000
10 120 .01 .01	0 6.0 22 .000 .00 .39 3.3 25 70	1.813 24.436 188.609	20.709 235.566	.000
10 180 .01 .01	0 6.0 26 .000 .00 .47 3.2 24 70	1.486 22.792 187.439	20.745 232.462	.000
10 240 .01 .01	0 6.0 19 .000 .00 .31 3.1 23 70	1.214 21.224 186.262	20.782 229.482	.000
11 60 .02 .02	0 6.0 14 .000 .00 .21 3.0 22 70	.989 19.734 185.079	20.818 226.619	.000
11 120 .02 .02	0 6.0 23 .000 .00 .39 2.9 22 70	.803 18.319 183.889	20.855 223.866	.000
11 180 .02 .02	0 6.0 26 .000 .00 .46 2.8 21 70	.650 16.980 182.694	20.890 221.214	.000
11 240 .02 .02	0 6.0 19 .000 .00 .30 2.8 20 70	.525 15.715 181.494	20.926 218.660	.000
12 60 .33 .33	0 6.0 16 .000 .00 .09 2.7 20 70	.423 14.522 180.289	20.962 216.195	.000
12 120 .33 .20	0 6.0 20 .000 .02 .12 2.8 20 70	.361 13.400 179.095	20.997 213.853	.000
12 180 .33 .03	0 6.0 22 .000 .06 .14 3.0 20 69	.452 12.349 177.948	21.032 211.781	.000
12 240 .33 .04	0 6.0 18 .000 .06 .11 3.2 22 67	.964 11.372 176.869	21.068 210.273	.000
13 60 .37 .03	0 6.0 11 .000 .08 .04 3.5 23 65	2.271 10.479 175.866	21.103 209.719	.000
13 120 .37 .01	0 6.0 17 .000 .09 .08 3.7 25 62	4.756 9.691 174.949	21.139 210.536	.000
13 180 .37 .02	0 6.0 19 .000 .10 .10 3.9 27 60	8.759 9.039 174.123	21.175 213.096	.000
13 240 .37 .02	0 6.0 14 .000 .10 .07 4.2 29 58	14.531 8.565 173.384	21.211 217.692	.000

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE

AREA BASE-TEMP ZONES

AUG-1981 21500 .0 6

FLAGS BY ZONE

Appendix B: SSARR Input and Output for Calibration Year 1981

Page 52 of 58

DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL	OBS	1***5***10***15***20
14	60	.15	.02		0	6.0	9	.000	.04	.08	4.2	31	56	22.119	8.320	172.702	21.248	224.389	.000	
14	120	.15	.02		0	6.0	12	.000	.04	.11	4.3	32	56	31.199	8.357	172.043	21.284	232.882	.000	
14	180	.15	.03		0	6.0	12	.000	.04	.12	4.4	32	57	41.088	8.725	171.405	21.320	242.538	.000	
14	240	.15	.03		0	6.0	11	.000	.04	.10	4.4	33	57	51.017	9.458	170.788	21.356	252.620	.000	
15	60	.01	.01		0	6.0	8	.000	.00	.10	4.4	33	58	60.294	10.574	170.172	21.392	262.433	.000	
15	120	.01	.01		0	6.0	16	.000	.00	.25	4.3	33	59	68.286	12.071	169.536	21.428	271.321	.000	
15	180	.01	.01		0	6.0	19	.000	.00	.32	4.3	33	61	74.441	13.923	168.881	21.464	278.709	.000	
15	240	.01	.01		0	6.0	13	.000	.00	.19	4.2	32	62	78.413	16.086	168.209	21.499	284.207	.000	
16	60	.18	.18		0	6.0	9	.000	.00	.06	4.2	31	64	80.121	18.498	167.518	21.534	287.671	.000	
16	120	.18	.04		0	6.0	12	.000	.05	.11	4.3	31	65	79.752	21.086	166.838	21.569	289.245	.000	
16	180	.18	.03		0	6.0	13	.000	.05	.12	4.3	32	64	77.790	23.776	166.194	21.604	289.365	.000	
16	240	.18	.03		0	6.0	11	.000	.05	.08	4.4	33	63	74.933	26.496	165.589	21.640	288.658	.000	
17	60	.05	.02		0	6.0	6	.000	.01	.06	4.4	33	62	71.839	29.188	164.999	21.675	287.700	.000	
17	120	.05	.01		0	6.0	10	.000	.01	.11	4.4	33	63	68.880	31.804	164.402	21.709	286.795	.000	
17	180	.05	.03		0	6.0	12	.000	.01	.14	4.4	33	63	66.119	34.309	163.798	21.744	285.970	.000	
17	240	.05	.04		0	6.0	9	.000	.01	.09	4.4	33	64	63.454	36.675	163.182	21.778	285.090	.000	
18	60	.00	.00		0	6.0	5	.000	.00	.05	4.4	33	65	60.744	38.875	162.552	21.813	283.984	.000	
18	120	.00	.00		0	6.0	14	.000	.00	.22	4.3	33	65	57.859	40.888	161.905	21.847	282.499	.000	
18	180	.00	.00		0	6.0	18	.000	.00	.29	4.3	32	66	54.712	42.693	161.241	21.881	280.527	.000	
18	240	.00	.00		0	6.0	10	.000	.00	.13	4.2	32	67	51.276	44.274	160.561	21.914	278.025	.000	
19	60	.00	.00		0	6.0	7	.000	.00	.08	4.2	32	67	47.583	45.616	159.865	21.948	275.012	.000	
19	120	.00	.00		0	6.0	15	.000	.00	.23	4.1	31	68	43.706	46.706	159.155	21.981	271.547	.000	
19	180	.00	.00		0	6.0	19	.000	.00	.31	4.1	31	68	39.736	47.538	158.430	22.014	267.717	.000	
19	240	.00	.00		0	6.0	12	.000	.00	.17	4.0	30	68	35.770	48.107	157.691	22.046	263.615	.000	
20	60	.00	.00		0	6.0	6	.000	.00	.06	4.0	30	69	31.897	48.415	156.939	22.079	259.330	.000	
20	120	.00	.00		0	6.0	19	.000	.00	.30	3.9	30	69	28.189	48.467	156.175	22.111	254.943	.000	
20	180	.00	.00		0	6.0	23	.000	.00	.39	3.8	29	69	24.705	48.272	155.399	22.143	250.519	.000	
20	240	.00	.00		0	6.0	13	.000	.00	.18	3.8	28	69	21.483	47.843	154.611	22.175	246.112	.000	
21	60	.02	.02		0	6.0	10	.000	.00	.12	3.8	28	69	18.546	47.195	153.812	22.207	241.760	.000	
21	120	.02	.02		0	6.0	18	.000	.00	.26	3.7	28	69	15.902	46.347	153.003	22.238	237.490	.000	
21	180	.02	.02		0	6.0	21	.000	.00	.32	3.6	27	69	13.550	45.317	152.184	22.269	233.320	.000	
21	240	.02	.02		0	6.0	14	.000	.00	.20	3.6	27	70	11.478	44.127	151.355	22.300	229.261	.000	
22	60	.00	.00		0	6.0	9	.000	.00	.11	3.5	26	70	9.671	42.799	150.517	22.331	225.319	.000	
22	120	.00	.00		0	6.0	20	.000	.00	.32	3.5	26	70	8.107	41.354	149.671	22.362	221.493	.000	
22	180	.00	.00		0	6.0	24	.000	.00	.41	3.4	25	70	6.764	39.813	148.816	22.392	217.785	.000	
22	240	.00	.00		0	6.0	16	.000	.00	.23	3.3	24	70	5.619	38.197	147.954	22.422	214.191	.000	
23	60	.15	.15		0	6.0	6	.000	.00	.04	3.3	24	70	4.648	36.525	147.084	22.452	210.709	.000	
23	120	.15	.15		0	6.0	20	.000	.00	.21	3.2	24	70	3.830	34.815	146.208	22.482	207.335	.000	
23	180	.15	.15		0	6.0	25	.000	.00	.29	3.2	23	70	3.145	33.085	145.325	22.511	204.066	.000	
23	240	.15	.15		0	6.0	15	.000	.00	.14	3.1	23	70	2.574	31.349	144.436	22.540	200.899	.000	
24	60	.02	.02		0	6.0	5	.000	.00	.05	3.1	23	70	2.099	29.622	143.541	22.570	197.831	.000	
24	120	.02	.02		0	6.0	11	.000	.00	.12	3.1	22	70	1.707	27.915	142.640	22.598	194.861	.000	
24	180	.02	.02		0	6.0	13	.000	.00	.16	3.0	22	70	1.384	26.240	141.735	22.627	191.986	.000	
24	240	.02	.02		0	6.0	9	.000	.00	.09	3.0	22	70	1.120	24.604	140.825	22.656	189.205	.000	
25	60	.00	.00		0	6.0	7	.000	.00	.08	3.0	22	70	.903	23.017	139.911	22.684	186.515	.000	
25	120	.00	.00		0	6.0	14	.000	.00	.20	3.0	22	70	.727	21.483	138.993	22.712	183.915	.000	
25	180	.00	.00		0	6.0	17	.000	.00	.25	2.9	21	70	.584	20.008	138.071	22.740	181.403	.000	

25	240	.00	.00	0	6.0	11	.000	.00	.14	2.9	21	70	.468	18.596	137.146	22.767	178.977	.000
26	60	.00	.00	0	6.0	9	.000	.00	.10	2.8	20	70	.374	17.249	136.217	22.795	176.635	.000
26	120	.00	.00	0	6.0	14	.000	.00	.19	2.8	20	70	.298	15.968	135.286	22.822	174.375	.000
26	180	.00	.00	0	6.0	16	.000	.00	.24	2.7	20	70	.238	14.756	134.353	22.849	172.195	.000

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMUPUTED LOWER CHURCHILL DRAINAGE

AREA BASE-TEMP ZONES

AUG-1981		21500.	.0	6															FLAGS BY ZONE		
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL	OBS	1***5***10***15***20	

26	240	.00	.00	0	6.0	12	.000	.00	.14	2.7	19	70	.189	13.611	133.417	22.876	170.093	.000		
27	60	.04	.04	0	6.0	8	.000	.00	.08	2.7	19	70	.150	12.533	132.479	22.903	168.065	.000		
27	120	.04	.04	0	6.0	14	.000	.00	.16	2.6	19	70	.119	11.522	131.540	22.929	166.110	.000		
27	180	.04	.04	0	6.0	16	.000	.00	.19	2.6	19	70	.094	10.575	130.599	22.955	164.224	.000		
27	240	.04	.04	0	6.0	11	.000	.00	.12	2.5	18	70	.074	9.692	129.657	22.982	162.405	.000		
28	60	.02	.02	0	6.0	8	.000	.00	.08	2.5	18	70	.059	8.869	128.715	23.007	160.649	.000		
28	120	.02	.02	0	6.0	15	.000	.00	.18	2.5	18	70	.046	8.104	127.771	23.033	158.954	.000		
28	180	.02	.02	0	6.0	17	.000	.00	.22	2.4	18	70	.036	7.395	126.827	23.059	157.317	.000		
28	240	.02	.02	0	6.0	12	.000	.00	.13	2.4	18	70	.029	6.739	125.883	23.084	155.735	.000		
29	60	.02	.02	0	6.0	15	.000	.00	.18	2.3	17	70	.022	6.133	124.939	23.109	154.204	.000		
29	120	.02	.02	0	6.0	21	.000	.00	.29	2.3	17	70	.018	5.575	123.995	23.134	152.722	.000		
29	180	.02	.02	0	6.0	23	.000	.00	.32	2.2	17	70	.014	5.061	123.052	23.159	151.285	.000		
29	240	.02	.02	0	6.0	19	.000	.00	.24	2.1	16	70	.011	4.590	122.109	23.183	149.892	.000		
30	60	.00	.00	0	6.0	15	.000	.00	.18	2.1	16	70	.008	4.157	121.167	23.207	148.540	.000		
30	120	.00	.00	0	6.0	24	.000	.00	.34	2.0	16	70	.007	3.762	120.226	23.232	147.225	.000		
30	180	.00	.00	0	6.0	27	.000	.00	.39	1.9	15	70	.005	3.400	119.286	23.256	145.946	.000		
30	240	.00	.00	0	6.0	20	.000	.00	.25	1.8	15	70	.004	3.070	118.347	23.279	144.700	.000		
31	60	.00	.00	0	6.0	12	.000	.00	.13	1.8	15	70	.003	2.769	117.410	23.303	143.485	.000		
31	120	.00	.00	0	6.0	22	.000	.00	.28	1.7	15	70	.002	2.495	116.475	23.326	142.298	.000		
31	180	.00	.00	0	6.0	25	.000	.00	.32	1.7	14	70	.002	2.246	115.541	23.350	141.139	.000		
31	240	.00	.00	0	6.0	18	.000	.00	.20	1.6	14	70	.001	2.020	114.610	23.373	140.004	.000		

VOLUME - CENTIMETERS

MELT MI PET G-MLT

7.00

1.05

.27

2.10

3.10

.0

3.6

6.7 .00

3.36

6.46

.46

.27

.00

SEP-1981

1	60	.00	.00	0	6.0	13	.000	.00	.12	1.6	14	70	.001	1.815	113.680	23.395	138.892	.000		
1	120	.00	.00	0	6.0	22	.000	.00	.25	1.5	14	70	.001	1.630	112.753	23.418	137.802	.000		
1	180	.00	.00	0	6.0	26	.000	.00	.30	1.4	13	70	.001	1.462	111.828	23.440	136.732	.000		
1	240	.00	.00	0	6.0	18	.000	.00	.18	1.4	13	70	.000	1.311	110.906	23.463	135.680	.000		
2	60	.00	.00	0	6.0	15	.000	.00	.14	1.4	13	70	.000	1.174	109.986	23.485	134.646	.000		
2	120	.00	.00	0	6.0	24	.000	.00	.25	1.3	13	70	.000	1.051	109.070	23.507	133.627	.000		
2	180	.00	.00	0	6.0	28	.000	.00	.29	1.2	13	70	.000	.940	108.156	23.529	132.624	.000		
2	240	.00	.00	0	6.0	20	.000	.00	.18	1.2	12	70	.000	.840	107.245	23.550	131.635	.000		
3	60	.00	.00	0	6.0	14	.000	.00	.10	1.2	12	70	.000	.750	106.337	23.571	130.659	.000		
3	120	.00	.00	0	6.0	21	.000	.00	.18	1.1	12	70	.000	.669	105.433	23.593	129.695	.000		
3	180	.00	.00	0	6.0	25	.000	.00	.22	1.1	12	70	.000	.597	104.532	23.614	128.742	.000		

3	240	.00	.00	0	6.0	18	.000	.00	.14	1.0	12	70	.000	.532	103.634	23.635	127.800	.000
4	60	.01	.01	0	6.0	18	.000	.00	.12	1.0	12	70	.000	.473	102.740	23.655	126.869	.000
4	120	.01	.01	0	6.0	24	.000	.00	.18	.9	12	70	.000	.421	101.850	23.676	125.947	.000
4	180	.01	.01	0	6.0	27	.000	.00	.20	.9	11	70	.000	.375	100.963	23.696	125.034	.000
4	240	.01	.01	0	6.0	22	.000	.00	.14	.9	11	70	.000	.333	100.080	23.716	124.130	.000
5	60	.04	.04	0	6.0	12	.000	.00	.06	.8	11	70	.000	.296	99.201	23.736	123.233	.000
5	120	.04	.04	0	6.0	18	.000	.00	.10	.8	11	70	.000	.263	98.327	23.756	122.345	.000
5	180	.04	.04	0	6.0	21	.000	.00	.11	.8	11	70	.000	.233	97.456	23.775	121.464	.000
5	240	.04	.04	0	6.0	16	.000	.00	.08	.8	11	70	.000	.207	96.589	23.795	120.591	.000
6	60	.11	.11	0	6.0	10	.000	.00	.03	.8	11	70	.000	.183	95.726	23.814	119.724	.000
6	120	.11	.11	0	6.0	12	.000	.00	.04	.8	11	70	.000	.162	94.868	23.833	118.864	.000
6	180	.11	.11	0	6.0	13	.000	.00	.05	.7	11	70	.000	.144	94.014	23.852	118.010	.000
6	240	.11	.11	0	6.0	11	.000	.00	.04	.7	11	70	.000	.127	93.165	23.871	117.163	.000
7	60	.21	.18	0	6.0	12	.000	.00	.03	.7	11	70	.002	.113	92.321	23.890	116.326	.000

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE

AREA BASE-TEMP ZONES

SEP-1981	21500.	.0	6											FLAGS BY ZONE						
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL	OBS	1***5***10***15***20
7	120	.21	.02		0	6.0	18	.000	.02	.06	.9	11	70	.030	.100	91.496	23.908	115.534	.000	
7	180	.21	.04		0	6.0	21	.000	.02	.08	1.0	11	69	.158	.090	90.699	23.926	114.874	.000	
7	240	.21	.04		0	6.0	16	.000	.02	.06	1.2	12	69	.493	.087	89.928	23.945	114.453	.000	
8	60	.00	.00		0	6.0	15	.000	.00	.11	1.1	12	68	1.109	.094	89.172	23.963	114.339	.000	
8	120	.00	.00		0	6.0	22	.000	.00	.19	1.1	12	68	1.977	.121	88.419	23.981	114.498	.000	
8	180	.00	.00		0	6.0	25	.000	.00	.21	1.0	12	69	2.977	.173	87.668	23.999	114.816	.000	
8	240	.00	.00		0	6.0	19	.000	.00	.14	1.0	12	69	3.964	.255	86.920	24.017	115.155	.000	
9	60	.02	.02		0	6.0	14	.000	.00	.08	1.0	12	69	4.826	.368	86.174	24.034	115.402	.000	
9	120	.02	.02		0	6.0	18	.000	.00	.12	.9	12	69	5.490	.513	85.432	24.052	115.487	.000	
9	180	.02	.02		0	6.0	21	.000	.00	.14	.9	11	69	5.929	.685	84.693	24.069	115.376	.000	
9	240	.02	.02		0	6.0	16	.000	.00	.10	.9	11	69	6.144	.881	83.956	24.086	115.067	.000	
10	60	.09	.09		0	6.0	11	.000	.00	.04	.9	11	69	6.158	1.093	83.223	24.103	114.577	.000	
10	120	.09	.09		0	6.0	15	.000	.00	.07	.9	11	70	6.004	1.316	82.493	24.120	113.933	.000	
10	180	.09	.09		0	6.0	17	.000	.00	.08	.8	11	70	5.721	1.542	81.767	24.136	113.166	.000	
10	240	.09	.09		0	6.0	13	.000	.00	.05	.8	11	70	5.345	1.766	81.043	24.153	112.308	.000	
11	60	.00	.00		0	6.0	6	.000	.00	.02	.8	11	70	4.912	1.982	80.324	24.169	111.386	.000	
11	120	.00	.00		0	6.0	12	.000	.00	.06	.8	11	70	4.448	2.184	79.607	24.185	110.424	.000	
11	180	.00	.00		0	6.0	14	.000	.00	.07	.8	11	70	3.977	2.369	78.894	24.201	109.440	.000	
11	240	.00	.00		0	6.0	9	.000	.00	.04	.8	11	70	3.515	2.533	78.185	24.217	108.450	.000	
12	60	.00	.00		0	6.0	7	.000	.00	.02	.8	11	70	3.077	2.675	77.479	24.232	107.463	.000	
12	120	.00	.00		0	6.0	13	.000	.00	.06	.8	11	70	2.669	2.792	76.777	24.248	106.486	.000	
12	180	.00	.00		0	6.0	16	.000	.00	.08	.7	11	70	2.297	2.885	76.079	24.263	105.524	.000	
12	240	.00	.00		0	6.0	10	.000	.00	.04	.7	11	70	1.962	2.953	75.385	24.278	104.578	.000	
13	60	.06	.06		0	6.0	9	.000	.00	.03	.7	11	70	1.665	2.997	74.694	24.293	103.649	.000	
13	120	.06	.06		0	6.0	13	.000	.00	.05	.7	11	70	1.404	3.018	74.007	24.308	102.737	.000	
13	180	.06	.06		0	6.0	14	.000	.00	.05	.7	11	70	1.178	3.017	73.324	24.323	101.842	.000	
13	240	.06	.06		0	6.0	11	.000	.00	.04	.7	10	70	.983	2.997	72.645	24.337	100.962	.000	

14	60	.07	.07		0	6.0	10	.000	.00	.03	.7	10	70	.816	2.958	71.970	24.351	100.096	.000
14	120	.07	.07		0	6.0	11	.000	.00	.04	.7	10	70	.675	2.903	71.299	24.366	99.244	.000
14	180	.07	.07		0	6.0	12	.000	.00	.04	.7	10	70	.556	2.835	70.632	24.380	98.403	.000
14	240	.07	.07		0	6.0	10	.000	.00	.03	.6	10	70	.456	2.754	69.969	24.394	97.574	.000
15	60	.08	.08		0	6.0	9	.000	.00	.02	.6	10	70	.373	2.664	69.311	24.407	96.755	.000
15	120	.08	.07		0	6.0	12	.000	.00	.04	.6	10	70	.305	2.565	68.656	24.421	95.947	.000
15	180	.08	.06		0	6.0	14	.000	.00	.05	.6	10	70	.253	2.460	68.008	24.434	95.155	.000
15	240	.08	.04		0	6.0	11	.000	.00	.03	.7	10	70	.223	2.351	67.366	24.448	94.388	.000
16	60	.11	.03		0	6.0	9	.000	.01	.02	.7	10	70	.234	2.239	66.736	24.461	93.670	.000
16	120	.11	.02		0	6.0	13	.000	.01	.04	.8	11	69	.318	2.128	66.121	24.474	93.040	.000
16	180	.11	.03		0	6.0	14	.000	.01	.05	.9	11	69	.515	2.019	65.520	24.487	92.541	.000
16	240	.11	.03		0	6.0	11	.000	.01	.04	.9	11	69	.854	1.918	64.932	24.500	92.204	.000
17	60	.12	.02	685	0	6.0	6	.000	.01	.02	1.0	11	69	1.344	1.829	64.359	24.513	92.045	.000
17	120	.12	.01		0	6.0	10	.243	.01	.04	1.1	12	69	1.982	1.758	63.804	24.525	92.069	.000
17	180	.12	.02		0	6.0	12	.000	.01	.05	1.2	12	68	2.766	1.709	63.267	24.538	92.280	.000
17	240	.12	.03		0	6.0	9	.000	.01	.04	1.2	12	68	3.690	1.689	62.746	24.551	92.676	.000
18	60	.00	.00		0	6.0	4	.000	.00	.02	1.2	12	68	4.721	1.703	62.234	24.563	93.222	.000
18	120	.00	.00		0	6.0	10	.000	.00	.07	1.2	12	68	5.784	1.756	61.724	24.575	93.839	.000
18	180	.00	.00		0	6.0	13	.000	.00	.09	1.2	12	68	6.771	1.850	61.214	24.587	94.423	.000
18	240	.00	.00		0	6.0	8	.000	.00	.05	1.2	12	69	7.583	1.984	60.707	24.599	94.873	.000
19	60	.07	.07		0	6.0	9	.000	.00	.04	1.2	12	69	8.158	2.155	60.200	24.611	95.125	.000
19	120	.07	.05		0	6.0	12	.000	.00	.07	1.2	12	69	8.476	2.359	59.698	24.623	95.156	.000
19	180	.07	.03		0	6.0	13	.000	.01	.08	1.2	12	69	8.560	2.587	59.202	24.635	94.983	.000
19	240	.07	.03		0	6.0	11	.000	.00	.06	1.2	12	69	8.465	2.832	58.714	24.646	94.657	.000

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMUPUTED LOWER CHURCHILL DRAINAGE

				AREA		BASE-TEMP		ZONES												FLAGS BY ZONE		
SEP-1981		21500.		.0		6												1***5***10***15***20				
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL	OBS			
20	60	.91	.02		0	6.0	7	.000	.11	.00	2.0	12	69	8.352	3.088	58.297	24.658	94.395	.000			
20	120	.91	.00		0	6.0	10	.000	.14	.01	2.8	15	65	8.694	3.354	58.025	24.670	94.743	.000			
20	180	.91	.00		0	6.0	11	.000	.17	.01	3.5	19	60	10.362	3.644	57.920	24.683	96.608	.000			
20	240	.91	.00		0	6.0	9	.000	.23	.01	4.2	25	55	14.519	3.995	58.008	24.696	101.218	.000			
21	60	.27	.00	685	0	6.0	5	.000	.08	.02	4.3	31	48	22.269	4.476	58.227	24.710	109.682	.000	A		
21	120	.27	.01		0	6.0	8	.353	.09	.04	4.5	33	48	33.981	5.180	58.497	24.724	122.382	.000	R		
21	180	.27	.01		0	6.0	9	.000	.09	.04	4.7	34	48	49.008	6.217	58.821	24.739	138.784	.000			
21	240	.27	.01		0	6.0	7	.000	.09	.03	4.8	35	48	66.184	7.690	59.197	24.753	157.825	.000			
22	60	.02	.01	335	0	6.0	4	.000	.00	.03	4.8	37	48	84.209	9.683	59.590	24.768	178.250	.000	AAAA		
22	120	.02	.01		0	6.0	7	.243	.01	.07	4.8	37	51	101.599	12.253	59.962	24.782	198.596	.000	DDDD		
22	180	.02	.02		0	6.0	9	.000	.00	.09	4.8	37	54	116.807	15.416	60.313	24.797	217.333	.000			
22	240	.02	.02		0	6.0	6	.000	.00	.05	4.8	36	56	128.608	19.145	60.641	24.811	233.205	.000			
23	60	.01	.01		0	6.0	3	.000	.00	.03	4.8	36	58	136.335	23.372	60.946	24.825	245.478	.000			
23	120	.01	.01		0	6.0	8	.000	.00	.07	4.8	36	60	139.860	27.996	61.228	24.839	253.923	.000			
23	180	.01	.01		0	6.0	9	.000	.00	.09	4.7	36	62	139.472	32.896	61.489	24.852	258.709	.000			
23	240	.01	.01		0	6.0	6	.000	.00	.05	4.7	36	63	135.731	37.937	61.728	24.866	260.262	.000			
24	60	.00	.00		0	6.0	2	.000	.00	.02	4.7	36	64	129.327	42.985	61.946	24.879	259.138	.000			

24	120	.00	.00		0	6.0	8	.0000	.00	.08	4.7	36	65	120.982	47.910	62.144	24.893	255.928	.000				
24	180	.00	.00		0	6.0	11	.0000	.00	.11	4.7	36	66	111.368	52.596	62.323	24.906	251.193	.000				
24	240	.00	.00		0	6.0	5	.0000	.00	.05	4.7	35	66	101.077	56.942	62.482	24.919	245.420	.000				
25	60	.02	.02		0	6.0	-1	.0000	.00	.02	4.7	35	67	90.595	60.866	62.623	24.931	239.015	.000				
25	120	.01	.01		0	6.0	7	.0000	.00	.06	4.6	35	67	80.298	64.305	62.746	24.944	232.293	.000				
25	180	.01	.01		0	6.0	10	.0000	.00	.10	4.6	35	68	70.465	67.215	62.851	24.956	225.487	.000				
25	240	.02	.02		0	6.0	4	.0000	.00	.04	4.6	35	68	61.282	69.570	62.939	24.969	218.760	.000				
26	60	.01	.01		0	6.0	5	.0000	.00	.04	4.6	35	68	52.865	71.360	63.011	24.981	212.217	.000				
26	120	.01	.01		0	6.0	8	.0000	.00	.08	4.6	35	69	45.269	72.591	63.067	24.993	205.920	.000				
26	180	.01	.01		0	6.0	9	.0000	.00	.09	4.6	35	69	38.506	73.278	63.107	25.005	199.895	.000				
26	240	.01	.01		0	6.0	7	.0000	.00	.06	4.5	34	69	32.552	73.449	63.131	25.017	194.149	.000				
27	60	.05	.05		0	6.0	1	.0000	.00	.02	4.5	34	69	27.364	73.137	63.141	25.028	188.671	.000				
27	120	.04	.04		0	6.0	9	.0000	.00	.08	4.5	34	69	22.884	72.383	63.137	25.040	183.444	.000				
27	180	.04	.04		0	6.0	12	.0000	.00	.12	4.5	34	69	19.045	71.230	63.119	25.051	178.446	.000				
27	240	.04	.04	685	0	6.0	5	.0000	.00	.04	4.5	34	70	15.781	69.725	63.088	25.062	173.656	.000	A			
28	60	.41	.04	415	0	6.0	4	.0000	.02	.01	4.5	34	70	13.040	67.914	63.054	25.073	169.081	.000	AAA			
28	120	.37	.00	415	0	6.0	6	.358	.20	.01	4.9	34	69	10.981	65.846	63.142	25.085	165.055	.000	RRR			
28	180	.37	.00	685	0	6.0	7	.358	.16	.02	5.2	37	61	10.300	63.579	63.426	25.097	162.402	.000	RRR			
28	240	.37	.00	535	0	6.0	5	.242	.09	.01	5.3	40	56	12.029	61.187	63.822	25.110	162.148	.000	AA			
29	60	.33	.00	535	0	6.0	6	.356	.17	.02	5.5	41	55	16.944	58.770	64.321	25.123	165.157	.000	RR			
29	120	.33	.00		0	6.0	10	.356	.16	.04	5.7	44	50	25.448	56.443	64.945	25.137	171.973	.000	RR			
29	180	.33	.01		0	6.0	11	.0000	.15	.04	5.9	46	47	37.745	54.342	65.667	25.151	182.905	.000				
29	240	.33	.01		0	6.0	9	.0000	.15	.03	6.1	48	45	53.782	52.609	66.474	25.166	198.030	.000				
30	60	.19	.01		0	6.0	7	.0000	.09	.04	6.1	50	43	73.112	51.392	67.336	25.180	217.020	.000				
30	120	.19	.01		0	6.0	11	.0000	.09	.07	6.2	51	43	94.797	50.827	68.228	25.195	239.048	.000				
30	180	.19	.02		0	6.0	12	.0000	.09	.08	6.3	51	44	117.521	51.031	69.148	25.211	262.910	.000				
30	240	.19	.02		0	6.0	9	.0000	.09	.05	6.3	52	44	139.950	52.084	70.096	25.226	287.357	.000				
V O L U M E															- C E N T I M E T E R S					MELT	MI	PET G-MLT	
12.67								2.64						.30		.91		1.71		.4	9.6	3.9	.03
	3.10								2.19					.21		.29			.00				
V O L U M E															- C E N T I M E T E R S					MELT	MI	PET G-MLT	
66.50								61.69						21.00		14.10		56.92		45.4	85.8	25.8	2.76
	16.96								23.76					20.92		.90			.00				

*

RIVER LOCHURCH

MODEL LOCHURCH RUNNING RIVER MODEL FOR 732 PERIODS.

FINAL FILE OF TIME RECORDS IS ON UNIT 21

ZR L 4

ZS GULLMUSK,,,1,2,3,4,5,6,7

STATISTICAL SUMMARY ACRES PMF STUDY, LOWER CHURCHILL

COMPUTED
GULLMUSK COMUTED LOWER CHURCHILL DRAINAGE

	1981									1982			1982	
	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	TOT
1. COMPUTED MAXIMUM FLOW	205	4308	4246	858	403	255								4308

2. DAY COMPUTED MAX OCCURRED	1	1	2	2	2	24	JUN 1
3. COMPUTED MINIMUM FL OW	27	255	669	304	138	92	27
4. DAY COMPUTED MIN OCCURRED	1	2	24	15	1	17	APR 1
5. COMPUTED MEAN F LOW	101	1684	1993	481	240	142	774
6. COMPUTED VOLUME, CM.	1.26	20.98	24.02	5.99	2.99	1.65	56.90
7. ACCUM. COMPUTED VOL., CM	1.26	22.24	46.26	52.26	55.25	56.90	56.90

PR GULLMUSK1

END OF INPUT

Repeat of total flow as one column of values deleted from output file.

Appendix C Calibration Record

P12858.00

Churchill Falls Probable
Maximum Flood Study
SSARR Calibration Table

Parameter or Table	Calib	RUN 1	RUN 2	RUN 3	RUN 4	RUN 5	RUN 6	RUN 7	RUN 8
Surface routing # phases	◆	5		1/2 snow in IC file			NEW SNO IC	see tables	10
Surface routing time of storage	◆	6							12
Subsurface routing # phases	◆	4							5
Subsurface routing time of storage	◆	18							36
Baseflow routing # phases	◆	2							2
Baseflow routing time of storage	◆	200							400
Lower zone routing # phases	◆	2							2
Lower zone routing time of storage	◆	1200							3000
BIITS		36							
BIIMX		2.5							
BFLIM		0.2							
PBLZ		20							
DWGLIM		0.1							
TIMPR		0.55				0.9			
TIPM		0.84							
RMR		0.34			0.29				
PLWHC		0.02							
SNETF		0.9							
ELINT		5000							
Basin Lapse Rate		6							
TINTMX		0.51							
BASE		0							
PXTEMP		1.7							
PMIN		0.043							
PMAX		0.085							
GMLT		0.04							
WEMIN		5							
WEPCT		60							
WEMAX		1							
Gauge weights									
Goose Precip		60							
Goose Temp		60							
Churchill Precip		140							
Churchill Temp		140							
Results/Goodness of fit	Actual								
1980 Runoff vol	11227	24553	19234		19234	19231	14896		15062
1980 Peak	3590	9237	6620		6623	7915	4571		3576
1980 Time of peak	22-May	5-Aug	9-Jun		9-Jun	9-Jun	1-Jun		
1981 Runoff vol	11731	18099	18129	12888	18244		15808		16821
1981 Peak	4001	6040	6821	5678	6706		6197		4868
1981 Time of peak	30-May	27-Jun	19-Jun	31-May	19-Jun		31-May		
1982 Runoff vol	9825	18156	18172		18172		14006		14291
1982 Peak	3760	6489	7543		7543		5671		5426
1982 Time of peak	5-Jun	1-Jul	8-Jun		15-Jun		10-Jun		
1983 Runoff vol	10064	17108	17111		17112	17114	17868		18686
1983 Peak	4030	5537	4666		4684	4681.15	5035		4448
1983 Time of peak	1-May	23-Jun	8-Jun		8-Jun	28-May	8-Jun		
1984 Runoff vol	11087		20259		20261		14449		14726
1984 Peak	3210		7362		7107		4340		3591
1984 Time of peak	27-May		20-Jun		20-Jun		1-Jun		

Runoff Volume Calculation

Up to Run 8: between April 1 and September 30, in millions of m³

Run 9 and After: between April 1 and July 31, in millions of m³

P12858.00

**Churchill Falls Probable
Maximum Flood Study
SSARR Calibration Table**

Parameter or Table	see comment								
	RUN 9	RUN 10	RUN 11	RUN 12	RUN 13	RUN 14	RUN 15	RUN 16	RUN 17
	** see	** see	** see			** see		increased snow	
Surface routing # phases	below	below	below	5	10	comment	8		8
Surface routing time of storage				6	12		12		12
Subsurface routing # phases							5		6
Subsurface routing time of storage							36		45
Baseflow routing # phases									
Baseflow routing time of storage									
Lower zone routing # phases									
Lower zone routing time of storage									
BIITS									
BIIMX									
BFLIM									
PBLZ									
DWGLIM									
TIMPR									
TIPM									
RMR					0.34				
PLWHC									
SNETF									
ELINT									
Basin Lapse Rate									
TINTMX									
BASE									
PXTEMP									
PMIN									
PMAX									
GMLT									
WEMIN									
WEPECT									
WEMAX									
Gauge weights									
Goose Precip									
Goose Temp									
Churchill Precip									
Churchill Temp									
Results/Goodness of fit									
1980 Runoff vol	14096	14976			11435	10586	8777	10061	
1980 Peak	3340	3424			3544	3369		3580	
1980 Time of peak									
1981 Runoff vol	15737	16680			13932	11155	9405	11873	
1981 Peak	4857	5051			4893	4142		4850	
1981 Time of peak									
1982 Runoff vol	13480	14421			10143	9250	7535	8825	
1982 Peak	4923	5096			3892	3565		2980	
1982 Time of peak									
1983 Runoff vol	17066	18006			15559	10594	8839	11022	
1983 Peak	3634	3697			3832	2867		3530	
1983 Time of peak									
1984 Runoff vol	13529	14443			11523	10706	8971	10219	
1984 Peak	3538	3643			3355	3177		3270	
1984 Time of peak									

Runoff Volume Calculation

Up to Run 8: between April 1 and S

Run 9 and After: between April 1 an

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**Churchill Falls Probable
Maximum Flood Study
SSARR Calibration Table**

Parameter or Table	RUN 18	RUN 19	RUN 20	RUN 21	RUN 22	RUN 23	RUN 24	RUN 25	
		new s/ss			new s/ss	new s/ss	new ss		
Surface routing # phases	8		8	8		8	8	8	
Surface routing time of storage	15		12	12		10	10	12	
Subsurface routing # phases	6			6		6	6	5	
Subsurface routing time of storage	45			36		36	30	36	
Baseflow routing # phases									
Baseflow routing time of storage									
Lower zone routing # phases									
Lower zone routing time of storage									
BIITS									
BIIMX									
BFLIM									
PBLZ									
DWGLIM									
TIMPR									
TIPM									
RMR									
PLWHC									
SNETF									
ELINT									
Basin Lapse Rate									
TINTMX									
BASE									
PXTEMP									
PMIN									
PMAX									
GMLT									
WEMIN									
WEPC									
WEMAX									
Gauge weights									
Goose Precip									
Goose Temp									
Churchill Precip									
Churchill Temp									
Results/Goodness of fit									Revised Actuals
1980 Runoff vol					10060.88			10222	10441
1980 Peak					2770			3120	3339
1980 Time of peak					4-Jun				
1981 Runoff vol					11834.39			11838	10910
1981 Peak					3740			4060	3721
1981 Time of peak					35958				
1982 Runoff vol					8485.908			8615.402	9138
1982 Peak					3630			4070	3497
1982 Time of peak					13-Jun				
1983 Runoff vol					11021				9359
1983 Peak					2970				3748
1983 Time of peak					31-May				
1984 Runoff vol					10205.59			10216.49	10311
1984 Peak					3040			3120	2985
1984 Time of peak					4-Jun				

Runoff Volume Calculation

Up to Run 8: between April 1 and S

Run 9 and After: between April 1 and

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**Churchill Falls Probable
Maximum Flood Study
SSARR Calibration Table**

Parameter or Table	RUN 26	RUN 28	RUN 29	RUN 31	RUN 33	CONCL
	new	new			new	
Surface routing # phases	melt rate	cold rate	4	4	snow	4
Surface routing time of storage			6	20		20
Subsurface routing # phases			3	5		5
Subsurface routing time of storage			18	36		36
Baseflow routing # phases						2
Baseflow routing time of storage						400
Lower zone routing # phases				new melt		2
Lower zone routing time of storage				rates and		3000
BIITS				phases		36
BIIMX						2.5
BFLIM						0.2
PBLZ						20
DWGLIM						0.1
TIMPR				0.9		0.9
TIPM						0.84
RMR				0.34		0.34
PLWHC						0.02
SNETF						0.9
ELINT						5000
Basin Lapse Rate						6
TINTMX						0.51
BASE						0
PXTEMP						1.7
PMIN						0.043
PMAX						0.085
GMLT						0.04
WEMIN						5
WEPCT						60
WEMAX						1
Gauge weights						
Goose Precip						60
Goose Temp						60
Churchill Precip						140
Churchill Temp						140
					compare 33	
Results/Goodness of fit						
1980 Runoff vol		10266		10263	9889	-5%
1980 Peak		3650		3550	3239	-3%
1980 Time of peak						
1981 Runoff vol		10952		10961	11153	2%
1981 Peak		4760		4410	4497	21%
1981 Time of peak						
1982 Runoff vol		8474		8474	8471	-7%
1982 Peak		3650		3540	3520	1%
1982 Time of peak						
1983 Runoff vol		11109		11104	11509	23%
1983 Peak		3340		3230	3305	-12%
1983 Time of peak						
1984 Runoff vol		10257		10253	10788	5%
1984 Peak		3150		3070	3108	4%
1984 Time of peak						

Runoff Volume Calculation

Up to Run 8: between April 1 and S
Run 9 and After: between April 1 an

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Churchill Falls Probable
Maximum Flood Study
SSARR Calibration Table

	RUN 1		RUN 2		RUN 7		RUN 13		RUN 19		RUN 22		RUN 23		RUN 24	
EVSWP	a	wp														
	0	98														
	300	99														
	400	100														
	600	100														
	700	99														
	800	98														
TVSMRCR	9999	98														
	Fallen curve so melt / cold rate too high less variable with temperature															
	slimr	mr	gr	mr	gr											
	0	0.115	0.115	0.23	0.23	0.23	0.23	0.23	0.05	0.23	0.05					
	20	0.12	0.115	0.24	0.23	0.24	0.23	0.24	0.05	0.24	0.05					
	56	0.14	0.115	0.28	0.23	0.28	0.23	0.28	0.05	0.28	0.05					
	83	0.18	0.115	0.36	0.23	0.28	0.23	0.36	0.05	0.28	0.05					
SMIVSROP	111	0.23	0.115	0.46	0.23	0.28	0.23	0.46	0.05	0.28	0.05					
	139	0.23	0.115	0.46	0.23	0.28	0.23	0.46	0.05	0.28	0.05					
	999	0.23	0.115	0.46	0.23	0.28	0.23	0.46	0.05	0.28	0.05					
	SMI	ROP														
	0	8														
	2.5	17														
	5.1	39														
BIIVSOPF	7.6	67														
	10.2	91														
	12	100														
	999	100														
	bil	bip														
	0	70														
	0.5	38														
SVSS	1	25														
	1.5	20														
	2	15														
	2.5	19														
	3	19														
	3.5	10														
	999	10														
RVSEKE	total	s							0	0	0	0	0	0	0	0
	0	0							0.04	0.02	0.25	0.125	0.15	0.06	0.15	0.075
	0.04	0.02							999	999.98	10	9.9	0.25	0.12	0.25	0.125
	0.12	0.1											0.35	0.225	0.35	0.23
	0.2	0.18											10	9.875	10	9.88
	1	0.08														
	intensity	%														
TVSET	0	100														
	0.5	70														
	1	50														
	2	10														
	3	10														
	1	pct														
	-50	0.01														
SMIVSKE	-20	0.01														
	-2	0.02														
	3	0.05														
	8	0.12														
	18	0.3														
	28	0.5														
	38	0.74														
MVSDKE	999	0.74														
	SMI	dke														
	0	0														
	1	50														
	2	90														
	3	100														
	999	100														
EVSKE	MON	DKE														
	1	70														
	2	76														
	3	102														
	4	116														
	5	137														
	6	140														
MVSPCT	7	141														
	8	128														
	9	108														
	10	91														
	11	74														
	12	67														
	13	70														
EVSKE	E	DKE														
	0	100														
	9999	100														
	MON	PCT														
	1	100														
	2	100														
	3	100														
EVSKE	4	100														
	5	100														
	6	100														
	7	100														
	8	100														
	9	100														
	10	100														
EVSKE	11	100														
	12	100														
	13	100														

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Churchill Falls Probable
Maximum Flood Study
SSARR Calibration Table

	RUN 1		RUN 26		RUN 27		RUN 28		RUN 30		RUN 31		Conclusion		
EVSWP	e	wp											e	wp	
	0	98											0	98	
	300	99											300	99	
	400	100											400	100	
	600	100											600	100	
	700	99											700	99	
	800	98											800	98	
9999	98											9999	98		
TVSMRCR	allmr	mr	or								mr	or	mr	or	
	0	0.115	0.115	0.28	0.04	0.24	0.05	0.24	0.04	0.3	0.05	0.24	0.04	0.24	0.04
	28	0.12	0.115	0.36	0.04	0.3	0.05	0.3	0.04	0.31	0.05	0.3	0.04	0.3	0.04
	56	0.14	0.115	0.36	0.04	0.32	0.05	0.32	0.04	0.32	0.05	0.32	0.04	0.32	0.04
	83	0.16	0.115	0.46	0.04	0.37	0.05	0.37	0.04	0.37	0.05	0.35	0.04	0.35	0.04
	111	0.23	0.115	0.46	0.04	0.37	0.05	0.37	0.04	0.37	0.05	0.37	0.04	0.37	0.04
	139	0.23	0.115	0.46	0.04	0.37	0.05	0.37	0.04	0.37	0.05	0.37	0.04	0.37	0.04
999	0.23	0.115	0.46	0.04	0.37	0.05	0.37	0.04	0.37	0.05	0.37	0.04	0.37	0.04	
SMIVSROP	SMI	ROP											SMI	ROP	
	0	8											0	8	
	2.5	17											2.5	17	
	5.1	39											5.1	39	
	7.6	67											7.6	67	
	10.2	91											10.2	91	
	12	100											12	100	
999	100											999	100		
BEVSBFP	bl	bfp											bl	bfp	
	0	70											0	70	
	0.5	36											0.5	36	
	1	26											1	26	
	1.5	20											1.5	20	
	2	15											2	15	
	2.5	10											2.5	10	
3	10											3	10		
3.5	10											3.5	10		
999	10											999	10		
SVSS	total	s									0	0	0	0	
	0	0									3.15	0.075	0.15	0.075	
	0.04	0.02									0.24	0.12	0.24	0.12	
	0.12	0.1									0.35	0.23	0.35	0.23	
	0.2	0.18									10	9.88	10	9.88	
1	0.08														
RIVSEKE	intensity	%											intensity	%	
	0	100											0	100	
	0.5	70											0.5	70	
	1	50											1	50	
	2	10											2	10	
3	10											3	10		
TVSET	1	pct											1	pct	
	-50	0.01											-50	0.01	
	-20	0.01											-20	0.01	
	-2	0.02											-2	0.02	
	3	0.05											3	0.05	
	8	0.12											8	0.12	
	18	0.3											18	0.3	
28	0.5											28	0.5		
38	0.74											38	0.74		
999	0.74											999	0.74		
SMIVSDKE	smi	dke											smi	dke	
	0	0											0	0	
	1	50											1	50	
	2	90											2	90	
	3	100											3	100	
	999	100											999	100	
MVSDKE	MON	DKE											MON	DKE	
	1	70											1	70	
	2	76											2	76	
	3	102											3	102	
	4	116											4	116	
	5	137											5	137	
	6	140											6	140	
	7	141											7	141	
	8	128											8	128	
	9	108											9	108	
	10	91											10	91	
	11	74											11	74	
	12	67											12	67	
13	70											13	70		
EVS0KE	E	DKE											E	DKE	
	0	100											0	100	
	9999	100											9999	100	
MVSPCT	MON	PCT											MON	PCT	
	1	100											1	100	
	2	100											2	100	
	3	100											3	100	
	4	100											4	100	
	5	100											5	100	
	6	100											6	100	
	7	100											7	100	
	8	100											8	100	
	9	100											9	100	
	10	100											10	100	
	11	100											11	100	
	12	100											12	100	
13	100											13	100		

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**Churchill Falls Probable
Maximum Flood Study
SSARR Calibration Table**

Comments

Run 1 - values are mostly defaults from SSARR Manual or typical values from other studies or examples provided by SAR

Run 3 - peak for 81 looks good but still too peaky - need to know real snow #s

Run 5 - change didn't reduce the sudden peaks and valleys but did eliminate one peak in 80

Run 6 - improved snow initial conditions from snowcourse data: volumes look better but still getting several peaky peaks instead of one longer duration

Run 7 - made little or no difference - ATIMR may never get that high

Run 8 - Values are upper limit of suggested range

Run 9 - SWE modifications to reduce volumes

Run 10 - changed initial SMI from 6 to 10 (effects not satisfactory so run SMI changed back to 6)

Run 11 - Compute Period changed from 24 to 6 hours

Run 12 - Timing of peaks slightly improved, but peakiness not representative of actual flows

Run 13 - It seems the cold rate was too high. Decreasing CR had most affect.

Run 14 - reduced WE's for 1981 and 1983 to 83% and 67% of previously reduced values based on Run 13 volumes

After "Final" Calibration and Verification, an error was found in the SSARR model which required some modifications to the Calibration

Run 15 - has "corrected" # phases for surface so the SSARR model works

Run 16 - increased snow to correct water balance. Calibration poor. Try slowing down subsurface

Run 17 - didn't make much difference. Try increasing routing time for surface

Run 18 - peaks now too late and still getting more peaks than we should

Run 19 - increased flow to SS, looks a bit better. Need to bring peak a bit earlier and a bit higher.

Run 20 - reduce time in surface phases back to 12

Run 21 - decrease time in subsurface phase back to 36

Run 22 - reduce some of flow into ss

Run 23 - reduce time of surface phase a bit more and fix s/ss curve. Getting close, adjust snow a little bit more

Run 24 - try 8 and 10, 6 and 30, a little less subsurface. Not bad. Still not as good as Run 14, especially in fall.

Run 25 - put routing phases back to what they were in run 15, nothing seems to have improved much.

On September 30, factored down "Actual" flows in Calibration work to reflect fact that we're modelling to 21500 km2, not right to Muskrat

Run 26 - Take out some of the snow in 81 and 82 as now overestimating peak quite a bit. Increase melt rates to try and match earlier peaks

Run 27 - choose melt rates between runs 25 and 26

Run 28 - Cold rate down to 0.04 - slim to no difference

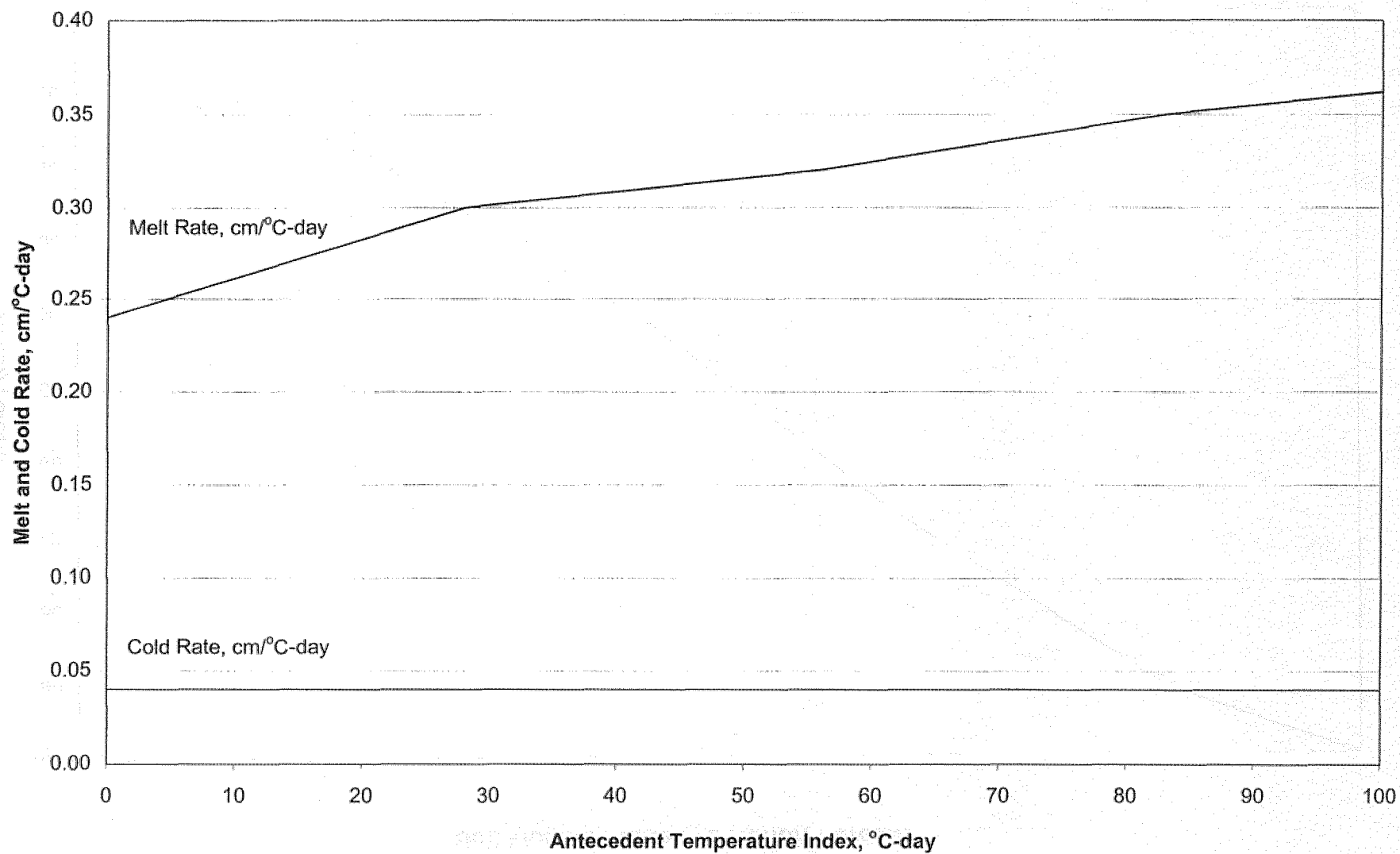
Run 29 - halve s and ss phases and times - way too peaky

Run 30 - less snow in 81, slightly higher melt rate a low ATI ; fills in dip in 81 but also increases peak

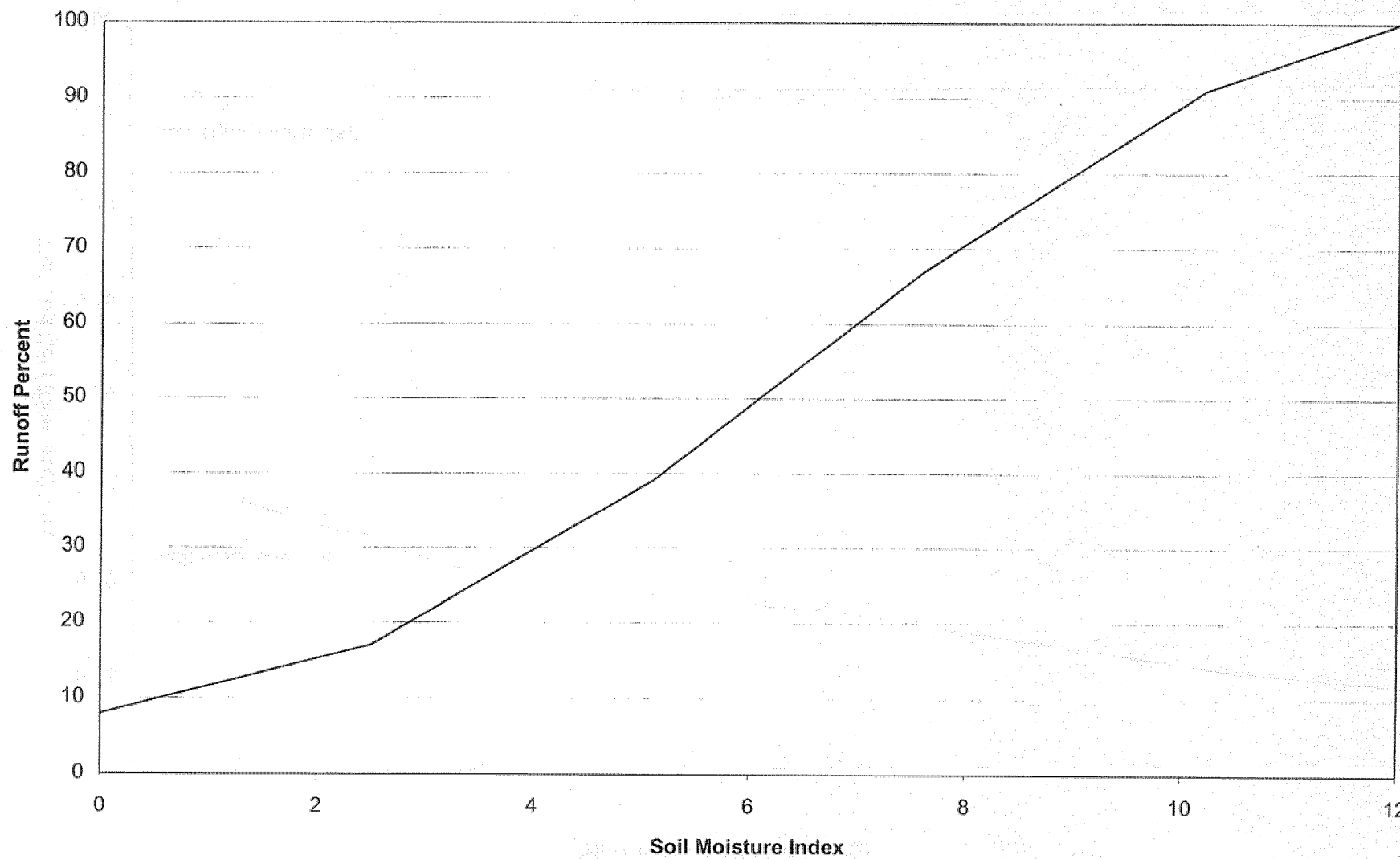
Run 31 - new melt rates again, play with surface routing to round peaks

Run 33 - new snowpacks, October 23, 1998

Melt Rate and Cold Rate



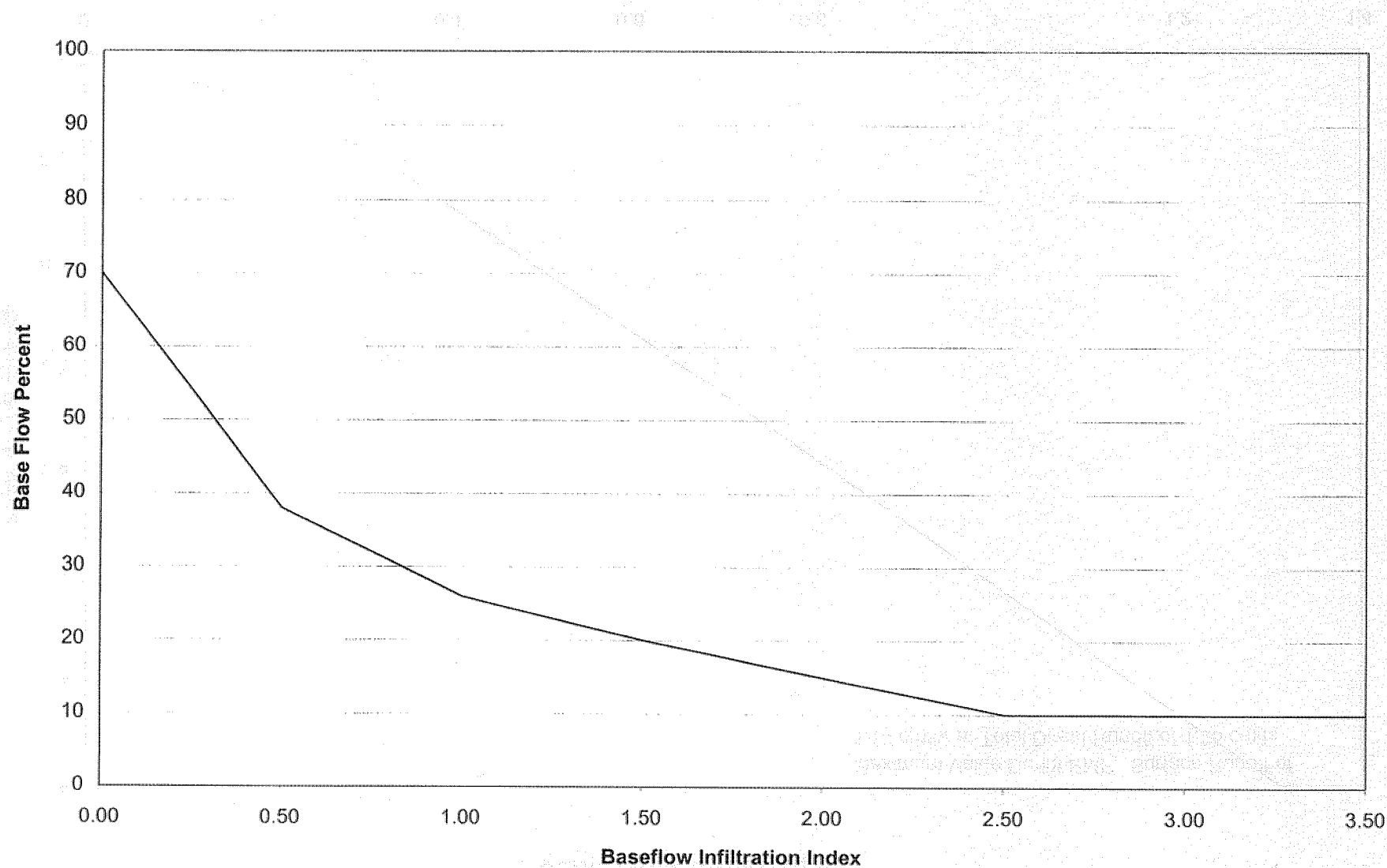
Soil Moisture Index vs Runoff Percent

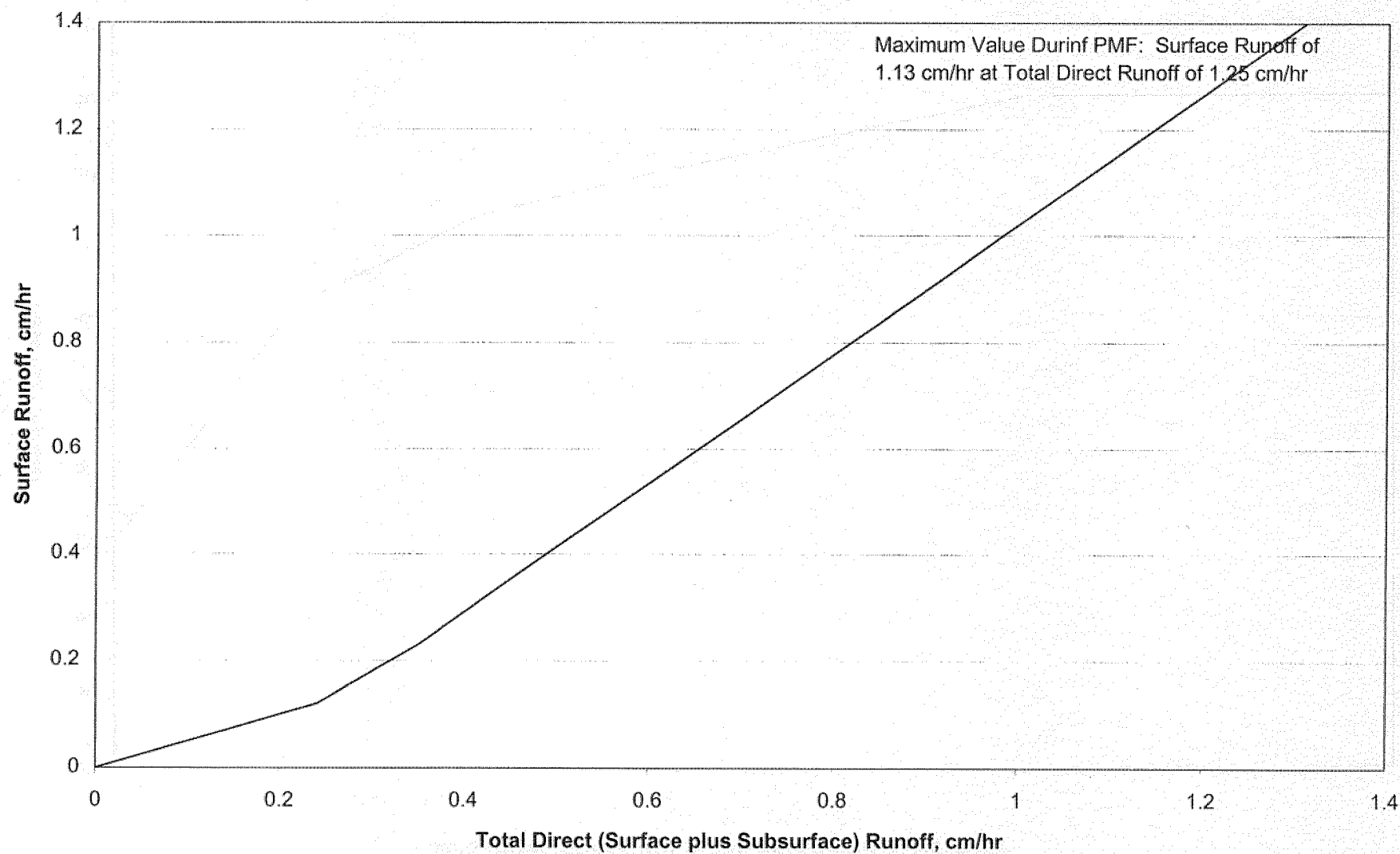


calibration parameters: SMIvsROP

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Acres - 12/3/98

Baseflow Infiltration Index vs Baseflow Percent

Surface/Subsurface Split

Appendix D
SSARR Input and Output Files:
PMF Base Case

PMFbatch.bat

Batch file that reads information from various data files and runs the executable SSARR program. Input and output file names are different for each simulation.

```
COPY PMFJTGM.DAT+CHARGM.DAT+PMFICGM.DAT+MODGM.DAT FIRST.DAT
```

```
COPY PMFCFAL.TMP+PMFGBAY.TMP+PMFCFAL.PRE+PMFGBAY.PRE ALLMET.DAT
```

```
COPY FIRST.DAT+ALLMET.DAT+RUNGM.DAT allcards.DAT
```

```
SSARR PMFWAT.OUT PMFPLOT.OUT <allcards.DAT> PMFOUT.OUT
```

PMFjtgmdat

Job and Time file to define units, title of simulation, start time, run duration and timestep. Only the start time differs between different simulations.

```
J MPLUSR METRIC BATCH JOB=ACRES PMF STUDY, LOWER CHURCHILL
```

```
T 0 010585
```

```
153 6
```

```
RETURN
```

chargm.dat

The PMF characteristics file is the same as that shown for calibration year 1981.

PMFicgm.dat

Initial Conditions file contains initial values for the watershed parameters such as soil moisture index, cold content of the snowpack, snowpack water equivalent, etc. Conditions can be different for each simulation.

SNOW INITIAL CONDITIONS -

```
station,date,rop,bfp,cc,sliqw,atmir,aticc,we,smi,bii,tint
prelim runs done with 39 53 63 69 79 95
Z201 GULLMUSK, , , 59 0 0.6 0 -1 54 8.2 , , 0
Z202 GULLMUSK, , , 63 0 0.9 0 -1 49 7.8 , , 0
Z203 GULLMUSK, , , 65 0 1.0 0 -2 45 7.6 , , 0
Z204 GULLMUSK, , , 66 0 1.2 0 -3 60 7.4 , , 0
Z205 GULLMUSK, , , 68 0 1.4 0 -3 60 7.3 , , 0
Z206 GULLMUSK, , , 68 0 1.6 0 -4 60 7.3 , , 0

Z2B GULLMUSK, , 13 13
Z2LZ GULLMUSK, , 0 0
```


Z2S GULLMUSK,,6 6 6 6 6 6 6 6 6
Z2SS GULLMUSK,,8 8 8 8 8

modgm.dat

Model file is the same for all simulations in this project.

First.dat

File that the batch file creates which is just a summation of the job and time file, the characteristics file, the initial conditions file and the model file.

PMFCFAL.TMP

A "4D" file containing meteorologic data. 4D files are fixed format, temperatures are in tenths of degrees C. This file is temperatures for the PMF run. Note that the basic file is historic 1985 temperatures. The critical temperature sequence has replaced the historic values from May 16 to June 6. The critical temperature sequence is identical in the Churchill Falls and Goose Bay sequences.

```
4D 60 CFAL8 600201854-370-280-240-310-290-240-220-260
4D 60 CFAL8 600401854-340-270-250-300-310-250-230-280
4D 60 CFAL8 600601854-260-230-220-240-220-170-150-190
4D 60 CFAL8 600801854-200-150-140-170-140 -80 -60-110
4D 60 CFAL8 601001854-190-130-110-160-240-180-160-210
4D 60 CFAL8 601201854-290-190-150-230-240-210-190-220
4D 60 CFAL8 601401854-270-220-200-240-260-230-220-240
4D 60 CFAL8 601601854-260-210-190-230-290-250-240-270
4D 60 CFAL8 601801854-280-200-170-230-170 -60 -20-100
4D 60 CFAL8 602001854-180-130-110-150-170-120-100-140
4D 60 CFAL8 602201854-230-160-130-190-240-180-160-200
4D 60 CFAL8 602401854-180-130-110-150-250-160-130-200
4D 60 CFAL8 602601854-270-200-170-230-290-200-170-240
4D 60 CFAL8 602801854-170-140-130-150-210-160-150-180
4D 60 CFAL8 603001854-270-210-190-240-310-240-210-270
4D 60 CFAL8 600102854-350-220-180-280-260-160-120-200
4D 60 CFAL8 600302854-380-300-260-330-410-310-270-350
4D 60 CFAL8 600502854-340-300-280-320-330-240-200-270
4D 60 CFAL8 600702854-200 -80 -40-130 -50 -10 0 -30
4D 60 CFAL8 600902854 -90 -50 -40 -70-190-120 -90-150
4D 60 CFAL8 601102854-230-150-120-190-270-160-120-210
4D 60 CFAL8 601302854-160 -90 -60-120 -80 -60 -50 -70
4D 60 CFAL8 601502854 -90 -30 -10 -50-160 -80 -60-110
4D 60 CFAL8 601702854-230-150-130-180-250-180-150-210
4D 60 CFAL8 601902854-310-220-180-260-320-230-190-260
```

4D	60	CFAL8	602102854	-290	-190	-160	-230	-210	-130	-100	-160
4D	60	CFAL8	602302854	-210	-130	-100	-160	-320	-210	-170	-250
4D	60	CFAL8	602502854	-370	-270	-230	-310	-370	-170	-100	-250
4D	60	CFAL8	602702854	-360	-180	-110	-260	-380	-260	-210	-310
4D	60	CFAL8	600103854	-230	-130	-100	-170	-210	-120	-90	-160
4D	60	CFAL8	600303854	-280	-190	-160	-230	-310	-270	-260	-290
4D	60	CFAL8	600503854	-330	-260	-240	-290	-350	-240	-200	-280
4D	60	CFAL8	600703854	-310	-170	-120	-230	-120	-60	-40	-90
4D	60	CFAL8	600903854	-180	-130	-110	-150	-190	-90	-60	-130
4D	60	CFAL8	601103854	-190	-60	-10	-110	-70	-20	0	-40
4D	60	CFAL8	601303854	-50	0	30	-20	-10	10	20	0
4D	60	CFAL8	601503854	-140	-30	10	-80	-210	-140	-120	-170
4D	60	CFAL8	601703854	-260	-220	-210	-240	-300	-230	-200	-260
4D	60	CFAL8	601903854	-300	-130	-60	-200	-180	-70	-30	-120
4D	60	CFAL8	602103854	-210	-130	-100	-160	-250	-160	-130	-200
4D	60	CFAL8	602303854	-210	-130	-100	-160	-190	-130	-100	-150
4D	60	CFAL8	602503854	-200	-160	-140	-180	-180	-80	-50	-120
4D	60	CFAL8	602703854	-130	-50	-20	-80	-60	0	20	-30
4D	60	CFAL8	602903854	-30	10	30	-10	-150	-60	-30	-100
4D	60	CFAL8	603103854	-200	-140	-120	-170	-240	-130	-80	-170
4D	60	CFAL8	600204854	-170	-70	-30	-110	-120	-40	-10	-80
4D	60	CFAL8	600404854	-100	-30	0	-60	-120	-30	0	-70
4D	60	CFAL8	600604854	-120	-30	10	-70	-100	0	30	-40
4D	60	CFAL8	600804854	-140	-90	-70	-110	-170	-100	-70	-130
4D	60	CFAL8	601004854	-230	-120	-80	-160	-180	-60	-10	-110
4D	60	CFAL8	601204854	-180	-110	-80	-140	-250	-170	-140	-200
4D	60	CFAL8	601404854	-250	-90	-30	-150	-70	10	40	-30
4D	60	CFAL8	601604854	0	50	70	30	-180	-50	-10	-100
4D	60	CFAL8	601804854	-190	-140	-120	-160	-150	-90	-60	-110
4D	60	CFAL8	602004854	-140	-80	-60	-110	-140	-70	-40	-100
4D	60	CFAL8	602204854	-120	-40	0	-70	-80	-10	10	-40
4D	60	CFAL8	602404854	-120	0	50	-50	-50	0	20	-20
4D	60	CFAL8	602604854	-20	0	10	-10	-80	-10	10	-40
4D	60	CFAL8	602804854	-110	-20	10	-60	-80	0	40	-30
4D	60	CFAL8	603004854	-90	-10	10	-40	-60	10	30	-20
4D	60	CFAL8	600205854	-120	-70	-50	-90	-140	-50	-10	-90
4D	60	CFAL8	600405854	-140	-50	-10	-80	-100	-50	-30	-70
4D	60	CFAL8	600605854	-120	-40	-10	-70	-100	-20	20	-50
4D	60	CFAL8	600805854	-120	-70	-50	-90	-160	-50	-10	-100
4D	60	CFAL8	601005854	-40	30	50	0	-70	-40	-20	-50
4D	60	CFAL8	601205854	-100	-10	30	-50	-100	-20	10	-50
4D	60	CFAL8	601405854	-100	-10	20	-50	-60	0	30	-20
4D	60	CFAL8	601605854	-40	13	34	-8	-36	18	39	-4
4D	60	CFAL8	601805854	-32	23	44	0	-28	27	49	4
4D	60	CFAL8	602005854	-25	32	54	9	-20	35	57	12
4D	60	CFAL8	602205854	-16	38	59	16	-12	43	64	20
4D	60	CFAL8	602405854	-8	47	69	25	-4	50	71	28
4D	60	CFAL8	602605854	0	53	74	32	10	60	80	40
4D	60	CFAL8	602805854	20	67	85	48	50	70	160	190

4D	60	CFAL8	603005854	190	220	210	190	200	220	200	150
4D	60	CFAL8	600106854	120	100	80	60	60	90	120	100
4D	60	CFAL8	600306854	100	120	140	160	160	160	150	150
4D	60	CFAL8	600506854	150	100	80	60	40	60	80	60
4D	60	CFAL8	600706854	10	130	170	80	60	100	110	80
4D	60	CFAL8	600906854	50	120	150	90	10	60	70	40
4D	60	CFAL8	601106854	0	50	70	30	0	80	120	50
4D	60	CFAL8	601306854	-10	90	130	50	20	80	100	50
4D	60	CFAL8	601506854	30	100	130	70	30	120	150	90
4D	60	CFAL8	601706854	20	140	180	90	60	160	190	120
4D	60	CFAL8	601906854	50	110	140	90	40	110	130	80
4D	60	CFAL8	602106854	30	130	170	90	40	170	220	120
4D	60	CFAL8	602306854	120	220	250	180	120	220	260	180
4D	60	CFAL8	602506854	120	200	230	170	90	210	250	160
4D	60	CFAL8	602706854	110	230	280	180	100	230	290	180
4D	60	CFAL8	602906854	80	150	180	120	70	150	190	120
4D	60	CFAL8	600107854	80	160	190	130	80	200	240	150
4D	60	CFAL8	600307854	140	220	250	190	100	180	210	150
4D	60	CFAL8	600507854	80	210	260	160	100	150	160	130
4D	60	CFAL8	600707854	80	160	180	120	60	130	150	100
4D	60	CFAL8	600907854	60	120	140	90	80	200	240	150
4D	60	CFAL8	601107854	100	160	180	130	90	150	180	130
4D	60	CFAL8	601307854	70	130	150	100	90	160	180	130
4D	60	CFAL8	601507854	90	160	180	130	110	130	130	120
4D	60	CFAL8	601707854	80	160	180	120	70	180	220	140
4D	60	CFAL8	601907854	110	170	190	150	80	160	190	130
4D	60	CFAL8	602107854	50	140	170	100	40	110	140	80
4D	60	CFAL8	602307854	90	130	140	110	80	140	170	120
4D	60	CFAL8	602507854	130	150	160	140	110	140	160	130
4D	60	CFAL8	602707854	90	140	150	120	90	120	140	110
4D	60	CFAL8	602907854	90	110	120	110	80	130	160	110
4D	60	CFAL8	603107854	50	130	160	100	40	140	180	100
4D	60	CFAL8	600208854	70	150	190	120	110	210	250	170
4D	60	CFAL8	600408854	60	130	160	100	50	160	200	110
4D	60	CFAL8	600608854	110	190	220	160	140	230	260	190
4D	60	CFAL8	600808854	160	240	270	210	100	170	190	140
4D	60	CFAL8	601008854	90	220	260	170	100	210	250	160
4D	60	CFAL8	601208854	80	130	150	110	70	120	140	100
4D	60	CFAL8	601408854	40	120	140	90	50	120	150	90
4D	60	CFAL8	601608854	60	120	140	90	90	120	130	110
4D	60	CFAL8	601808854	70	130	150	100	50	160	200	110
4D	60	CFAL8	602008854	100	130	140	120	90	150	170	120
4D	60	CFAL8	602208854	70	110	120	100	90	140	160	120
4D	60	CFAL8	602408854	80	150	180	120	80	170	200	130
4D	60	CFAL8	602608854	80	170	210	130	80	170	210	140
4D	60	CFAL8	602808854	60	110	120	90	10	70	100	50
4D	60	CFAL8	603008854	0	110	150	60	30	100	130	70
4D	60	CFAL8	600109854	10	140	190	90	60	100	120	80
4D	60	CFAL8	600309854	40	100	130	80	20	110	140	70

4D	60	CFAL8	600509854	30	120	160	90	40	130	160	90
4D	60	CFAL8	600709854	50	100	110	80	60	90	110	80
4D	60	CFAL8	600909854	30	70	80	50	30	60	80	50
4D	60	CFAL8	601109854	30	70	90	50	10	60	80	40
4D	60	CFAL8	601309854	30	80	100	60	0	70	90	40
4D	60	CFAL8	601509854	-20	40	60	20	-20	90	130	40
4D	60	CFAL8	601709854	10	140	180	90	110	160	180	140
4D	60	CFAL8	601909854	60	130	160	100	60	110	140	90
4D	60	CFAL8	602109854	0	110	160	70	0	50	60	30
4D	60	CFAL8	602309854	-30	80	120	30	60	90	100	80
4D	60	CFAL8	602509854	20	100	130	70	30	100	120	70
4D	60	CFAL8	602709854	60	80	80	70	50	80	90	70
4D	60	CFAL8	602909854	40	80	90	60	0	40	60	30
4D	60	CFAL8	600110854	-30	20	40	0	-30	10	30	0
4D	60	CFAL8	600310854	10	50	70	30	-10	50	70	30
4D	60	CFAL8	600510854	-10	90	130	50	20	80	110	60
4D	60	CFAL8	600710854	10	40	50	30	0	30	40	20
4D	60	CFAL8	600910854	-20	0	10	-10	-40	-20	-10	-30
4D	60	CFAL8	601110854	-50	-30	-30	-40	-50	-20	-20	-30
4D	60	CFAL8	601310854	-60	-10	10	-30	-40	10	20	-10
4D	60	CFAL8	601510854	0	80	100	50	0	30	50	20
4D	60	CFAL8	601710854	0	20	20	10	-30	-10	0	-20
4D	60	CFAL8	601910854	-40	-10	0	-20	-80	-40	-20	-50
4D	60	CFAL8	602110854	-70	-60	-60	-70	-70	-20	0	-40
4D	60	CFAL8	602310854	-50	20	40	-10	-40	50	80	10
4D	60	CFAL8	602510854	20	50	50	40	-30	10	30	0
4D	60	CFAL8	602710854	-30	-20	-10	-20	-80	-30	-20	-50
4D	60	CFAL8	602910854	-90	-80	-70	-80	-120	-60	-40	-90
4D	60	CFAL8	603110854	-40	-20	-10	-30	-10	20	30	10
4D	60	CFAL8	600211854	-50	10	30	-10	-70	0	30	-30
4D	60	CFAL8	600411854	-90	10	50	-30	-50	20	40	-10
4D	60	CFAL8	600611854	-80	-30	-20	-50	-80	-30	-10	-50
4D	60	CFAL8	600811854	-20	10	20	0	-90	-20	10	-50
4D	60	CFAL8	601011854	-150	-90	-70	-110	-180	-130	-110	-150
4D	60	CFAL8	601211854	-150	-110	-90	-130	-140	-100	-90	-120
4D	60	CFAL8	601411854	-170	-130	-110	-150	-190	-130	-110	-160
4D	60	CFAL8	601611854	-120	-90	-70	-100	-100	-30	-10	-60
4D	60	CFAL8	601811854	-110	-50	-20	-70	-150	-80	-60	-110
4D	60	CFAL8	602011854	-120	-30	10	-70	-90	-30	0	-50
4D	60	CFAL8	602211854	-110	-60	-40	-80	-140	-100	-90	-120
4D	60	CFAL8	602411854	-150	-130	-120	-140	-160	-130	-110	-140
4D	60	CFAL8	602611854	-130	-120	-110	-120	-190	-140	-110	-160
4D	60	CFAL8	602811854	-180	-120	-90	-140	-170	-130	-120	-150
4D	60	CFAL8	603011854	-210	-140	-110	-170	-220	-170	-150	-190
4D	60	CFAL8	600212854	-170	-130	-110	-140	-140	-110	-100	-120
4D	60	CFAL8	600412854	-170	-140	-130	-150	-230	-180	-160	-200
4D	60	CFAL8	600612854	-220	-170	-150	-190	-160	-110	-90	-130
4D	60	CFAL8	600812854	-90	-60	-50	-70	-130	-70	-50	-100
4D	60	CFAL8	601012854	-130	-110	-100	-120	-180	-140	-120	-160

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4D 60 CFAL8 601212854-230-160-140-190-280-210-180-240
4D 60 CFAL8 601412854-290-210-170-240-290-210-180-240
4D 60 CFAL8 601612854-320-270-250-290-300-260-250-280
4D 60 CFAL8 601812854-300-270-250-280-270-230-210-250
4D 60 CFAL8 602012854-280-210-180-230-330-260-230-290
4D 60 CFAL8 602212854-350-270-240-300-330-200-150-250
4D 60 CFAL8 602412854-140-100 -80-110 -80 -30 -10 -50
4D 60 CFAL8 602612854-260 -80 -10-150-260-190-160-220
4D 60 CFAL8 602812854-230-140-110-180-300-210-180-250
4D 60 CFAL8 603012854-250-200-180-220-310-200-160-250

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PMFGBAY.TMP

A "4D" file containing meteorologic data. 4D files are fixed format, temperatures are in tenths of degrees C. This file is temperatures for the PMF run. Note that the basic file is historic 1985 temperatures. The critical temperature sequence has replaced the historic values from May 16 to June 6. The critical temperature sequence is identical in the Churchill Falls and Goose Bay sequences.

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4D 60 GBAY8 600201854-340-280-260-310-290-220-190-250
4D 60 GBAY8 600401854-260-220-200-230-270-220-200-240
4D 60 GBAY8 600601854-230-170-140-190-150-110-100-130
4D 60 GBAY8 600801854-120 -80 -60-100-130 -70 -50-100
4D 60 GBAY8 601001854-130 -70 -50 -90-210-150-120-170
4D 60 GBAY8 601201854-280-200-160-230-280-160-110-210
4D 60 GBAY8 601401854-160-120-100-140-220-170-150-190
4D 60 GBAY8 601601854-190 -90 -50-130-190-120 -90-150
4D 60 GBAY8 601801854-200-160-140-170-140 -90 -80-110
4D 60 GBAY8 602001854-220-140-100-170-190-100 -70-140
4D 60 GBAY8 602201854-120-100 -90-110-250-140-100-190
4D 60 GBAY8 602401854-270-150-110-200-170-130-110-150
4D 60 GBAY8 602601854-250-170-140-200-240-120 -80-170
4D 60 GBAY8 602801854 -70 -30 -20 -50-110 -70 -60 -90
4D 60 GBAY8 603001854-150-100 -90-120-160-140-130-150
4D 60 GBAY8 600102854-170-140-120-150-220-140-110-170
4D 60 GBAY8 600302854-310-200-160-250-370-270-230-310
4D 60 GBAY8 600502854-320-250-230-280-270-180-150-220
4D 60 GBAY8 600702854-140 -80 -60-110 -50 0 30 -20
4D 60 GBAY8 600902854 -40 -10 0 -20 -70 -40 -30 -50
4D 60 GBAY8 601102854-120 -80 -60-100-190-100 -60-140
4D 60 GBAY8 601302854-180 -80 -40-120-150 -80 -50-110
4D 60 GBAY8 601502854 -50 0 20 -20-140 -70 -50-100
4D 60 GBAY8 601702854-190-100 -70-140-220-130 -90-160
4D 60 GBAY8 601902854-220-160-140-190-240-160-120-190
4D 60 GBAY8 602102854-260-180-140-210-220-120 -80-160
4D 60 GBAY8 602302854-140 -80 -60-110-270-160-120-210

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4D	60	GBAY8	602502854	-310	-200	-160	-240	-270	-130	-80	-190
4D	60	GBAY8	602702854	-240	-130	-90	-170	-320	-220	-180	-260
4D	60	GBAY8	600103854	-300	-130	-70	-200	-200	-140	-120	-160
4D	60	GBAY8	600303854	-150	-100	-80	-120	-260	-180	-160	-210
4D	60	GBAY8	600503854	-290	-220	-190	-250	-310	-190	-140	-240
4D	60	GBAY8	600703854	-230	-130	-100	-170	-120	-50	-30	-80
4D	60	GBAY8	600903854	-220	-110	-60	-150	-220	-80	-20	-140
4D	60	GBAY8	601103854	-170	-40	20	-90	-40	20	40	0
4D	60	GBAY8	601303854	-60	10	30	-20	-20	10	20	0
4D	60	GBAY8	601503854	-10	20	20	10	-130	-40	-10	-80
4D	60	GBAY8	601703854	-210	-150	-130	-180	-240	-180	-160	-210
4D	60	GBAY8	601903854	-240	-130	-80	-170	-180	-60	-10	-110
4D	60	GBAY8	602103854	-130	-60	-40	-90	-150	-110	-90	-120
4D	60	GBAY8	602303854	-130	-80	-60	-100	-100	-70	-50	-80
4D	60	GBAY8	602503854	-100	-80	-70	-90	-100	-40	-20	-70
4D	60	GBAY8	602703854	-30	10	20	-10	-10	30	50	20
4D	60	GBAY8	602903854	0	20	20	10	-30	0	10	-10
4D	60	GBAY8	603103854	-140	-60	-30	-100	-140	-80	-60	-110
4D	60	GBAY8	600204854	-180	-90	-50	-120	-80	-30	-10	-50
4D	60	GBAY8	600404854	-50	10	30	-20	-80	20	50	-20
4D	60	GBAY8	600604854	-70	-10	10	-30	-20	60	90	30
4D	60	GBAY8	600804854	-100	-20	10	-50	-110	-40	-20	-70
4D	60	GBAY8	601004854	-140	-60	-30	-90	-180	-40	10	-100
4D	60	GBAY8	601204854	-60	-20	0	-40	-190	-100	-60	-130
4D	60	GBAY8	601404854	-220	-80	-30	-140	-30	30	50	0
4D	60	GBAY8	601604854	10	70	90	50	-60	0	30	-20
4D	60	GBAY8	601804854	-100	-70	-50	-80	-110	-40	-10	-70
4D	60	GBAY8	602004854	-60	-30	-20	-50	-60	-30	-20	-40
4D	60	GBAY8	602204854	-40	0	20	-20	-30	10	30	0
4D	60	GBAY8	602404854	-40	-20	-10	-30	-30	30	50	0
4D	60	GBAY8	602604854	-20	20	30	0	-10	50	70	20
4D	60	GBAY8	602804854	-50	20	50	0	-60	-10	10	-30
4D	60	GBAY8	603004854	-70	-10	10	-40	-80	-10	10	-40
4D	60	GBAY8	600205854	-80	-20	10	-40	-70	0	30	-30
4D	60	GBAY8	600405854	-70	-20	0	-40	-60	-30	-20	-40
4D	60	GBAY8	600605854	-80	-10	20	-40	-90	0	30	-40
4D	60	GBAY8	600805854	-50	0	20	-20	-60	10	30	-20
4D	60	GBAY8	601005854	-10	50	80	30	-20	20	40	0
4D	60	GBAY8	601205854	-30	30	60	10	-60	10	40	-20
4D	60	GBAY8	601405854	-70	20	50	-20	-30	30	50	10
4D	60	GBAY8	601605854	-40	13	34	-8	-36	18	39	-4
4D	60	GBAY8	601805854	-32	23	44	0	-28	27	49	4
4D	60	GBAY8	602005854	-25	32	54	9	-20	35	57	12
4D	60	GBAY8	602205854	-16	38	59	16	-12	43	64	20
4D	60	GBAY8	602405854	-8	47	69	25	-4	50	71	28
4D	60	GBAY8	602605854	0	53	74	32	10	60	80	40
4D	60	GBAY8	602805854	20	67	85	48	50	70	160	190
4D	60	GBAY8	603005854	190	220	210	190	200	220	200	150
4D	60	GBAY8	600106854	120	100	80	60	60	90	120	100

4D	60	GBAY8	600306854	100	120	140	160	160	160	150	150
4D	60	GBAY8	600506854	150	100	80	60	40	60	80	60
4D	60	GBAY8	600706854	10	70	90	50	30	50	60	40
4D	60	GBAY8	600906854	30	80	100	60	20	40	50	30
4D	60	GBAY8	601106854	0	30	40	20	30	90	110	60
4D	60	GBAY8	601306854	40	120	150	90	40	70	70	60
4D	60	GBAY8	601506854	40	120	150	90	70	140	160	110
4D	60	GBAY8	601706854	60	170	210	120	40	120	150	90
4D	60	GBAY8	601906854	40	100	130	80	30	50	60	50
4D	60	GBAY8	602106854	30	80	110	60	10	150	200	90
4D	60	GBAY8	602306854	110	220	260	180	130	230	260	180
4D	60	GBAY8	602506854	130	220	260	180	130	240	280	200
4D	60	GBAY8	602706854	110	190	220	160	100	270	340	200
4D	60	GBAY8	602906854	110	180	200	150	90	150	180	130
4D	60	GBAY8	600107854	80	150	180	120	70	210	260	150
4D	60	GBAY8	600307854	140	250	290	210	100	160	180	130
4D	60	GBAY8	600507854	100	210	250	160	120	200	230	170
4D	60	GBAY8	600707854	110	170	200	140	70	100	120	90
4D	60	GBAY8	600907854	60	130	160	100	80	210	260	160
4D	60	GBAY8	601107854	140	180	200	160	120	200	230	170
4D	60	GBAY8	601307854	100	190	220	150	110	190	230	160
4D	60	GBAY8	601507854	90	140	160	120	90	120	130	110
4D	60	GBAY8	601707854	90	140	170	120	80	210	260	160
4D	60	GBAY8	601907854	150	230	260	200	110	190	230	160
4D	60	GBAY8	602107854	90	170	200	140	80	160	190	130
4D	60	GBAY8	602307854	130	190	220	170	110	180	210	150
4D	60	GBAY8	602507854	160	190	200	180	130	180	190	160
4D	60	GBAY8	602707854	90	120	130	110	80	120	130	100
4D	60	GBAY8	602907854	70	140	170	110	90	150	180	130
4D	60	GBAY8	603107854	80	170	200	140	80	190	220	140
4D	60	GBAY8	600208854	120	200	240	170	170	260	300	220
4D	60	GBAY8	600408854	60	170	210	130	50	170	210	120
4D	60	GBAY8	600608854	130	200	230	170	110	190	210	160
4D	60	GBAY8	600808854	130	260	310	210	140	190	210	170
4D	60	GBAY8	601008854	140	230	270	200	160	230	260	200
4D	60	GBAY8	601208854	100	160	190	140	80	100	100	90
4D	60	GBAY8	601408854	50	110	130	80	40	100	120	80
4D	60	GBAY8	601608854	80	110	130	100	100	120	130	110
4D	60	GBAY8	601808854	100	130	140	120	110	180	210	150
4D	60	GBAY8	602008854	110	170	190	140	100	130	150	120
4D	60	GBAY8	602208854	80	120	140	110	100	150	170	130
4D	60	GBAY8	602408854	90	150	180	130	120	190	220	160
4D	60	GBAY8	602608854	90	190	230	150	60	130	150	100
4D	60	GBAY8	602808854	80	160	200	130	70	120	140	100
4D	60	GBAY8	603008854	70	110	130	90	60	110	130	90
4D	60	GBAY8	600109854	50	120	150	90	100	150	170	130
4D	60	GBAY8	600309854	90	130	140	110	80	110	120	100
4D	60	GBAY8	600509854	50	120	150	90	70	110	130	90
4D	60	GBAY8	600709854	80	130	140	110	70	100	120	90

4D	60	GBAY8	600909854	60	90	100	80	40	110	140	80
4D	60	GBAY8	601109854	30	90	110	70	40	80	100	70
4D	60	GBAY8	601309854	30	120	160	80	40	100	130	80
4D	60	GBAY8	601509854	20	70	90	50	20	120	160	80
4D	60	GBAY8	601709854	40	160	210	110	120	190	210	160
4D	60	GBAY8	601909854	80	180	210	140	80	150	180	120
4D	60	GBAY8	602109854	40	130	160	90	30	80	100	60
4D	60	GBAY8	602309854	10	100	140	60	60	110	130	90
4D	60	GBAY8	602509854	60	120	140	90	60	150	180	110
4D	60	GBAY8	602709854	70	90	110	80	60	90	100	70
4D	60	GBAY8	602909854	40	80	100	70	20	60	80	40
4D	60	GBAY8	600110854	-10	50	80	30	-30	50	70	20
4D	60	GBAY8	600310854	40	90	110	70	-10	80	110	40
4D	60	GBAY8	600510854	-10	90	130	50	70	100	110	80
4D	60	GBAY8	600710854	40	80	100	70	10	70	100	50
4D	60	GBAY8	600910854	0	20	30	10	-20	10	10	0
4D	60	GBAY8	601110854	-20	-10	-10	-20	-20	-10	0	-10
4D	60	GBAY8	601310854	-50	0	20	-20	-60	10	40	-20
4D	60	GBAY8	601510854	20	80	100	60	30	90	110	60
4D	60	GBAY8	601710854	40	60	70	50	0	40	50	20
4D	60	GBAY8	601910854	-30	0	10	-10	-30	-10	0	-20
4D	60	GBAY8	602110854	-70	-30	-10	-50	-80	-30	-10	-50
4D	60	GBAY8	602310854	-110	-30	10	-60	-30	40	60	10
4D	60	GBAY8	602510854	10	70	90	40	20	60	80	40
4D	60	GBAY8	602710854	0	30	50	20	-10	10	20	0
4D	60	GBAY8	602910854	-50	-20	-10	-30	-80	-30	-20	-50
4D	60	GBAY8	603110854	-80	-20	0	-40	10	30	40	20
4D	60	GBAY8	600211854	20	40	40	30	-10	20	30	10
4D	60	GBAY8	600411854	-20	50	80	20	-10	50	80	30
4D	60	GBAY8	600611854	-40	10	30	-10	-60	0	30	-20
4D	60	GBAY8	600811854	10	40	50	20	-50	10	40	-10
4D	60	GBAY8	601011854	-80	-30	-20	-50	-110	-80	-70	-90
4D	60	GBAY8	601211854	-120	-70	-60	-90	-110	-70	-50	-90
4D	60	GBAY8	601411854	-140	-100	-80	-120	-130	-80	-70	-100
4D	60	GBAY8	601611854	-120	-80	-60	-100	-70	0	20	-30
4D	60	GBAY8	601811854	-70	-10	20	-40	-110	-30	0	-70
4D	60	GBAY8	602011854	-110	-30	0	-60	-60	0	30	-20
4D	60	GBAY8	602211854	-120	-40	-10	-70	-150	-90	-70	-120
4D	60	GBAY8	602411854	-130	-80	-70	-100	-130	-110	-100	-120
4D	60	GBAY8	602611854	-190	-130	-110	-160	-190	-100	-60	-140
4D	60	GBAY8	602811854	-110	-70	-60	-90	-100	-80	-70	-90
4D	60	GBAY8	603011854	-130	-80	-70	-100	-160	-130	-120	-140
4D	60	GBAY8	600212854	-150	-60	-20	-90	-70	0	30	-30
4D	60	GBAY8	600412854	-120	-80	-70	-100	-180	-130	-120	-150
4D	60	GBAY8	600612854	-180	-140	-120	-160	-140	-110	-100	-130
4D	60	GBAY8	600812854	-140	-50	-10	-80	-70	-30	-20	-50
4D	60	GBAY8	601012854	-110	-60	-50	-80	-130	-100	-90	-110
4D	60	GBAY8	601212854	-140	-120	-110	-130	-200	-140	-120	-160
4D	60	GBAY8	601412854	-230	-170	-150	-200	-220	-140	-110	-170

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4D 60 GBAY8 601612854-230-200-190-210-250-210-190-220
4D 60 GBAY8 601812854-250-220-200-230-250-190-170-220
4D 60 GBAY8 602012854-190-140-130-160-250-200-180-220
4D 60 GBAY8 602212854-270-220-200-240-260-200-180-230
4D 60 GBAY8 602412854-180-130-110-150-110 -10 30 -50
4D 60 GBAY8 602612854-190 -20 50 -90-200-140-110-160
4D 60 GBAY8 602812854-140 -80 -50-110-240-170-140-200
4D 60 GBAY8 603012854-250-200-180-220-220-170-150-190

```

PMFCFAL.PRE

A "4D" file containing meteorologic data. 4D files are fixed format, rainfall is in hundreths of a centimeter. This file is precipitation for the PMF run. Note that the basic file is historic 1985 precipitation. The critical precipitation sequence has replaced the historic values from May 16 to June 6. The critical precipitation sequence is identical in the Churchill Falls and Goose Bay sequences.

```

4D 60 CFAL8 600201853 4 4 4 4 2 2 2 2
4D 60 CFAL8 600401853 1 1 1 1 1 1 1 1
4D 60 CFAL8 600601853 34 34 34 34 36 36 36 36
4D 60 CFAL8 600801853 19 19 19 19 13 13 13 13
4D 60 CFAL8 601001853 6 6 6 6 0 0 0 0
4D 60 CFAL8 601201853 0 0 0 0 0 0 0 0
4D 60 CFAL8 601401853 0 0 0 0 0 0 0 0
4D 60 CFAL8 601601853 32 32 32 32 12 12 12 12
4D 60 CFAL8 601801853 19 19 19 19 18 18 18 18
4D 60 CFAL8 602001853 3 3 3 3 21 21 21 21
4D 60 CFAL8 602201853 7 7 7 7 2 2 2 2
4D 60 CFAL8 602401853 4 4 4 4 2 2 2 2
4D 60 CFAL8 602601853 3 3 3 3 1 1 1 1
4D 60 CFAL8 602801853 26 26 26 26 1 1 1 1
4D 60 CFAL8 603001853 3 3 3 3 0 0 0 0
4D 60 CFAL8 600102853 3 3 3 3 1 1 1 1
4D 60 CFAL8 600302853 0 0 0 0 0 0 0 0
4D 60 CFAL8 600502853 2 2 2 2 6 6 6 6
4D 60 CFAL8 600702853 4 4 4 4 1 1 1 1
4D 60 CFAL8 600902853 3 3 3 3 0 0 0 0
4D 60 CFAL8 601102853 0 0 0 0 0 0 0 0
4D 60 CFAL8 601302853 0 0 0 0 11 11 11 11
4D 60 CFAL8 601502853 5 5 5 5 1 1 1 1
4D 60 CFAL8 601702853 0 0 0 0 1 1 1 1
4D 60 CFAL8 601902853 0 0 0 0 0 0 0 0
4D 60 CFAL8 602102853 1 1 1 1 6 6 6 6
4D 60 CFAL8 602302853 0 0 0 0 0 0 0 0
4D 60 CFAL8 602502853 0 0 0 0 2 2 2 2
4D 60 CFAL8 602702853 10 10 10 10 1 1 1 1
4D 60 CFAL8 600103853 4 4 4 4 5 5 5 5

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4D	60	CFAL8	600303853	17	17	17	17	2	2	2	2
4D	60	CFAL8	600503853	0	0	0	0	0	0	0	0
4D	60	CFAL8	600703853	1	1	1	1	3	3	3	3
4D	60	CFAL8	600903853	0	0	0	0	2	2	2	2
4D	60	CFAL8	601103853	2	2	2	2	10	10	10	10
4D	60	CFAL8	601303853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601503853	8	8	8	8	11	11	11	11
4D	60	CFAL8	601703853	2	2	2	2	0	0	0	0
4D	60	CFAL8	601903853	0	0	0	0	3	3	3	3
4D	60	CFAL8	602103853	6	6	6	6	0	0	0	0
4D	60	CFAL8	602303853	16	16	16	16	15	15	15	15
4D	60	CFAL8	602503853	7	7	7	7	8	8	8	8
4D	60	CFAL8	602703853	1	1	1	1	0	0	0	0
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4D	60	CFAL8	603103853	0	0	0	0	0	0	0	0
4D	60	CFAL8	600204853	0	0	0	0	1	1	1	1
4D	60	CFAL8	600404853	0	0	0	0	0	0	0	0
4D	60	CFAL8	600604853	31	31	31	31	12	12	12	12
4D	60	CFAL8	600804853	1	1	1	1	1	1	1	1
4D	60	CFAL8	601004853	0	0	0	0	4	4	4	4
4D	60	CFAL8	601204853	14	14	14	14	2	2	2	2
4D	60	CFAL8	601404853	0	0	0	0	2	2	2	2
4D	60	CFAL8	601604853	26	26	26	26	64	64	64	64
4D	60	CFAL8	601804853	32	32	32	32	10	10	10	10
4D	60	CFAL8	602004853	4	4	4	4	0	0	0	0
4D	60	CFAL8	602204853	1	1	1	1	0	0	0	0
4D	60	CFAL8	602404853	0	0	0	0	6	6	6	6
4D	60	CFAL8	602604853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602804853	0	0	0	0	0	0	0	0
4D	60	CFAL8	603004853	0	0	0	0	0	0	0	0
4D	60	CFAL8	600205853	1	1	1	1	0	0	0	0
4D	60	CFAL8	600405853	0	0	0	0	1	1	1	1
4D	60	CFAL8	600605853	0	0	0	0	1	1	1	1
4D	60	CFAL8	600805853	21	21	21	21	3	3	3	3
4D	60	CFAL8	601005853	14	14	14	14	4	4	4	4
4D	60	CFAL8	601205853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601405853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601605853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601805853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602005853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602205853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602405853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602605853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602805853	0	0	0	0	0	0	0	0
4D	60	CFAL8	603005853	0	0	0	0	0	0	0	0
4D	60	CFAL8	600106853	0	0	0	0	0	0	0	0
4D	60	CFAL8	600306853	53	133	676	318	199	133	106	93
4D	60	CFAL8	600506853	80	53	42	11	0	0	0	0
4D	60	CFAL8	600706853	0	0	0	0	3	3	3	3

4D	60	CFAL8	600906853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601106853	3	3	3	3	0	0	0	0
4D	60	CFAL8	601306853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601506853	1	1	1	1	0	0	0	0
4D	60	CFAL8	601706853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601906853	11	11	11	11	3	3	3	3
4D	60	CFAL8	602106853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602306853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602506853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602706853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602906853	0	0	0	0	0	0	0	0
4D	60	CFAL8	600107853	0	0	0	0	1	1	1	1
4D	60	CFAL8	600307853	22	22	22	22	2	2	2	2
4D	60	CFAL8	600507853	4	4	4	4	5	5	5	5
4D	60	CFAL8	600707853	0	0	0	0	3	3	3	3
4D	60	CFAL8	600907853	0	0	0	0	1	1	1	1
4D	60	CFAL8	601107853	60	60	60	60	9	9	9	9
4D	60	CFAL8	601307853	13	13	13	13	35	35	35	35
4D	60	CFAL8	601507853	2	2	2	2	73	73	73	73
4D	60	CFAL8	601707853	0	0	0	0	1	1	1	1
4D	60	CFAL8	601907853	1	1	1	1	13	13	13	13
4D	60	CFAL8	602107853	0	0	0	0	25	25	25	25
4D	60	CFAL8	602307853	35	35	35	35	3	3	3	3
4D	60	CFAL8	602507853	17	17	17	17	0	0	0	0
4D	60	CFAL8	602707853	37	37	37	37	11	11	11	11
4D	60	CFAL8	602907853	33	33	33	33	7	7	7	7
4D	60	CFAL8	603107853	4	4	4	4	0	0	0	0
4D	60	CFAL8	600208853	7	7	7	7	0	0	0	0
4D	60	CFAL8	600408853	2	2	2	2	1	1	1	1
4D	60	CFAL8	600608853	16	16	16	16	0	0	0	0
4D	60	CFAL8	600808853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601008853	0	0	0	0	31	31	31	31
4D	60	CFAL8	601208853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601408853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601608853	9	9	9	9	0	0	0	0
4D	60	CFAL8	601808853	1	1	1	1	0	0	0	0
4D	60	CFAL8	602008853	0	0	0	0	7	7	7	7
4D	60	CFAL8	602208853	2	2	2	2	3	3	3	3
4D	60	CFAL8	602408853	3	3	3	3	0	0	0	0
4D	60	CFAL8	602608853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602808853	46	46	46	46	0	0	0	0
4D	60	CFAL8	603008853	9	9	9	9	0	0	0	0
4D	60	CFAL8	600109853	0	0	0	0	8	8	8	8
4D	60	CFAL8	600309853	1	1	1	1	0	0	0	0
4D	60	CFAL8	600509853	0	0	0	0	0	0	0	0
4D	60	CFAL8	600709853	37	37	37	37	25	25	25	25
4D	60	CFAL8	600909853	7	7	7	7	2	2	2	2
4D	60	CFAL8	601109853	4	4	4	4	1	1	1	1
4D	60	CFAL8	601309853	0	0	0	0	5	5	5	5

4D	60	CFAL8	601509853	1	1	1	1	0	0	0	0
4D	60	CFAL8	601709853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601909853	1	1	1	1	7	7	7	7
4D	60	CFAL8	602109853	22	22	22	22	0	0	0	0
4D	60	CFAL8	602309853	1	1	1	1	2	2	2	2
4D	60	CFAL8	602509853	20	20	20	20	0	0	0	0
4D	60	CFAL8	602709853	17	17	17	17	75	75	75	75
4D	60	CFAL8	602909853	8	8	8	8	2	2	2	2
4D	60	CFAL8	600110853	0	0	0	0	10	10	10	10
4D	60	CFAL8	600310853	3	3	3	3	0	0	0	0
4D	60	CFAL8	600510853	6	6	6	6	25	25	25	25
4D	60	CFAL8	600710853	1	1	1	1	2	2	2	2
4D	60	CFAL8	600910853	24	24	24	24	3	3	3	3
4D	60	CFAL8	601110853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601310853	0	0	0	0	4	4	4	4
4D	60	CFAL8	601510853	5	5	5	5	17	17	17	17
4D	60	CFAL8	601710853	6	6	6	6	10	10	10	10
4D	60	CFAL8	601910853	16	16	16	16	1	1	1	1
4D	60	CFAL8	602110853	2	2	2	2	7	7	7	7
4D	60	CFAL8	602310853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602510853	33	33	33	33	16	16	16	16
4D	60	CFAL8	602710853	13	13	13	13	20	20	20	20
4D	60	CFAL8	602910853	4	4	4	4	4	4	4	4
4D	60	CFAL8	603110853	0	0	0	0	0	0	0	0
4D	60	CFAL8	600211853	0	0	0	0	0	0	0	0
4D	60	CFAL8	600411853	0	0	0	0	3	3	3	3
4D	60	CFAL8	600611853	0	0	0	0	3	3	3	3
4D	60	CFAL8	600811853	5	5	5	5	2	2	2	2
4D	60	CFAL8	601011853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601211853	2	2	2	2	0	0	0	0
4D	60	CFAL8	601411853	2	2	2	2	0	0	0	0
4D	60	CFAL8	601611853	2	2	2	2	0	0	0	0
4D	60	CFAL8	601811853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602011853	16	16	16	16	4	4	4	4
4D	60	CFAL8	602211853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602411853	1	1	1	1	9	9	9	9
4D	60	CFAL8	602611853	4	4	4	4	0	0	0	0
4D	60	CFAL8	602811853	4	4	4	4	1	1	1	1
4D	60	CFAL8	603011853	0	0	0	0	1	1	1	1
4D	60	CFAL8	600212853	65	65	65	65	22	22	22	22
4D	60	CFAL8	600412853	1	1	1	1	0	0	0	0
4D	60	CFAL8	600612853	8	8	8	8	11	11	11	11
4D	60	CFAL8	600812853	8	8	8	8	3	3	3	3
4D	60	CFAL8	601012853	2	2	2	2	0	0	0	0
4D	60	CFAL8	601212853	2	2	2	2	0	0	0	0
4D	60	CFAL8	601412853	3	3	3	3	3	3	3	3
4D	60	CFAL8	601612853	3	3	3	3	1	1	1	1
4D	60	CFAL8	601812853	1	1	1	1	2	2	2	2
4D	60	CFAL8	602012853	0	0	0	0	0	0	0	0

4D	60	CFAL8	602212853	0	0	0	0	7	7	7	7
4D	60	CFAL8	602412853	4	4	4	4	10	10	10	10
4D	60	CFAL8	602612853	8	8	8	8	1	1	1	1
4D	60	CFAL8	602812853	1	1	1	1	0	0	0	0
4D	60	CFAL8	603012853	3	3	3	3	5	5	5	5

PMFGBAY.PRE

A "4D" file containing meteorologic data. 4D files are fixed format, rainfall is in hundreths of a centimeter. This file is precipitation for the PMF run. Note that the basic file is historic 1985 precipitation. The critical precipitation sequence has replaced the historic values from May 16 to June 6. The critical precipitation sequence is identical in the Churchill Falls and Goose Bay sequences.

4D	60	GBAY8	600201853	4	4	4	4	4	4	4	4
4D	60	GBAY8	600401853	0	0	0	0	1	1	1	1
4D	60	GBAY8	600601853	29	29	29	29	12	12	12	12
4D	60	GBAY8	600801853	16	16	16	16	5	5	5	5
4D	60	GBAY8	601001853	1	1	1	1	1	1	1	1
4D	60	GBAY8	601201853	0	0	0	0	15	15	15	15
4D	60	GBAY8	601401853	0	0	0	0	2	2	2	2
4D	60	GBAY8	601601853	102	102	102	102	4	4	4	4
4D	60	GBAY8	601801853	21	21	21	21	16	16	16	16
4D	60	GBAY8	602001853	3	3	3	3	33	33	33	33
4D	60	GBAY8	602201853	2	2	2	2	5	5	5	5
4D	60	GBAY8	602401853	2	2	2	2	0	0	0	0
4D	60	GBAY8	602601853	0	0	0	0	22	22	22	22
4D	60	GBAY8	602801853	20	20	20	20	18	18	18	18
4D	60	GBAY8	603001853	1	1	1	1	1	1	1	1
4D	60	GBAY8	600102853	0	0	0	0	2	2	2	2
4D	60	GBAY8	600302853	0	0	0	0	0	0	0	0
4D	60	GBAY8	600502853	0	0	0	0	15	15	15	15
4D	60	GBAY8	600702853	2	2	2	2	16	16	16	16
4D	60	GBAY8	600902853	4	4	4	4	2	2	2	2
4D	60	GBAY8	601102853	0	0	0	0	0	0	0	0
4D	60	GBAY8	601302853	0	0	0	0	2	2	2	2
4D	60	GBAY8	601502853	1	1	1	1	3	3	3	3
4D	60	GBAY8	601702853	1	1	1	1	0	0	0	0
4D	60	GBAY8	601902853	0	0	0	0	0	0	0	0
4D	60	GBAY8	602102853	0	0	0	0	4	4	4	4
4D	60	GBAY8	602302853	0	0	0	0	0	0	0	0
4D	60	GBAY8	602502853	0	0	0	0	1	1	1	1
4D	60	GBAY8	602702853	16	16	16	16	0	0	0	0
4D	60	GBAY8	600103853	2	2	2	2	8	8	8	8
4D	60	GBAY8	600303853	35	35	35	35	0	0	0	0
4D	60	GBAY8	600503853	0	0	0	0	0	0	0	0

4D	60	GBAY8	600703853	0	0	0	0	0	0	0
4D	60	GBAY8	600903853	0	0	0	0	0	0	0
4D	60	GBAY8	601103853	0	0	0	0	0	0	0
4D	60	GBAY8	601303853	0	0	0	0	0	0	0
4D	60	GBAY8	601503853	6	6	6	6	1	1	1
4D	60	GBAY8	601703853	0	0	0	0	0	0	0
4D	60	GBAY8	601903853	0	0	0	0	0	0	0
4D	60	GBAY8	602103853	5	5	5	5	1	1	1
4D	60	GBAY8	602303853	31	31	31	31	9	9	9
4D	60	GBAY8	602503853	8	8	8	8	11	11	11
4D	60	GBAY8	602703853	8	8	8	8	1	1	1
4D	60	GBAY8	602903853	0	0	0	0	13	13	13
4D	60	GBAY8	603103853	4	4	4	4	0	0	0
4D	60	GBAY8	600204853	2	2	2	2	8	8	8
4D	60	GBAY8	600404853	0	0	0	0	0	0	0
4D	60	GBAY8	600604853	7	7	7	7	8	8	8
4D	60	GBAY8	600804853	0	0	0	0	0	0	0
4D	60	GBAY8	601004853	0	0	0	0	0	0	0
4D	60	GBAY8	601204853	30	30	30	30	8	8	8
4D	60	GBAY8	601404853	0	0	0	0	0	0	0
4D	60	GBAY8	601604853	13	13	13	13	33	33	33
4D	60	GBAY8	601804853	3	3	3	3	0	0	0
4D	60	GBAY8	602004853	1	1	1	1	1	1	1
4D	60	GBAY8	602204853	2	2	2	2	0	0	0
4D	60	GBAY8	602404853	1	1	1	1	16	16	16
4D	60	GBAY8	602604853	0	0	0	0	0	0	0
4D	60	GBAY8	602804853	0	0	0	0	0	0	0
4D	60	GBAY8	603004853	1	1	1	1	0	0	0
4D	60	GBAY8	600205853	0	0	0	0	0	0	0
4D	60	GBAY8	600405853	9	9	9	9	9	9	9
4D	60	GBAY8	600605853	0	0	0	0	2	2	2
4D	60	GBAY8	600805853	1	1	1	1	2	2	2
4D	60	GBAY8	601005853	2	2	2	2	3	3	3
4D	60	GBAY8	601205853	0	0	0	0	0	0	0
4D	60	GBAY8	601405853	0	0	0	0	0	0	0
4D	60	GBAY8	601605853	0	0	0	0	0	0	0
4D	60	GBAY8	601805853	0	0	0	0	0	0	0
4D	60	GBAY8	602005853	0	0	0	0	0	0	0
4D	60	GBAY8	602205853	0	0	0	0	0	0	0
4D	60	GBAY8	602405853	0	0	0	0	0	0	0
4D	60	GBAY8	602605853	0	0	0	0	0	0	0
4D	60	GBAY8	602805853	0	0	0	0	0	0	0
4D	60	GBAY8	603005853	0	0	0	0	0	0	0
4D	60	GBAY8	600106853	0	0	0	0	0	0	0
4D	60	GBAY8	600306853	53	133	676	318	199	133	106
4D	60	GBAY8	600506853	80	53	42	11	0	0	0
4D	60	GBAY8	600706853	2	2	2	2	31	31	31
4D	60	GBAY8	600906853	1	1	1	1	45	45	45
4D	60	GBAY8	601106853	32	32	32	32	0	0	0

4D	60	GBAY8	601306853	0	0	0	0	17	17	17	17
4D	60	GBAY8	601506853	7	7	7	7	1	1	1	1
4D	60	GBAY8	601706853	0	0	0	0	0	0	0	0
4D	60	GBAY8	601906853	16	16	16	16	15	15	15	15
4D	60	GBAY8	602106853	3	3	3	3	0	0	0	0
4D	60	GBAY8	602306853	0	0	0	0	0	0	0	0
4D	60	GBAY8	602506853	0	0	0	0	0	0	0	0
4D	60	GBAY8	602706853	0	0	0	0	0	0	0	0
4D	60	GBAY8	602906853	0	0	0	0	3	3	3	3
4D	60	GBAY8	600107853	8	8	8	8	0	0	0	0
4D	60	GBAY8	600307853	5	5	5	5	15	15	15	15
4D	60	GBAY8	600507853	0	0	0	0	2	2	2	2
4D	60	GBAY8	600707853	0	0	0	0	79	79	79	79
4D	60	GBAY8	600907853	3	3	3	3	0	0	0	0
4D	60	GBAY8	601107853	19	19	19	19	1	1	1	1
4D	60	GBAY8	601307853	1	1	1	1	94	94	94	94
4D	60	GBAY8	601507853	24	24	24	24	44	44	44	44
4D	60	GBAY8	601707853	0	0	0	0	0	0	0	0
4D	60	GBAY8	601907853	17	17	17	17	0	0	0	0
4D	60	GBAY8	602107853	18	18	18	18	35	35	35	35
4D	60	GBAY8	602307853	9	9	9	9	0	0	0	0
4D	60	GBAY8	602507853	12	12	12	12	62	62	62	62
4D	60	GBAY8	602707853	50	50	50	50	40	40	40	40
4D	60	GBAY8	602907853	23	23	23	23	33	33	33	33
4D	60	GBAY8	603107853	1	1	1	1	0	0	0	0
4D	60	GBAY8	600208853	0	0	0	0	0	0	0	0
4D	60	GBAY8	600408853	17	17	17	17	2	2	2	2
4D	60	GBAY8	600608853	4	4	4	4	33	33	33	33
4D	60	GBAY8	600808853	0	0	0	0	10	10	10	10
4D	60	GBAY8	601008853	1	1	1	1	0	0	0	0
4D	60	GBAY8	601208853	80	80	80	80	44	44	44	44
4D	60	GBAY8	601408853	0	0	0	0	1	1	1	1
4D	60	GBAY8	601608853	10	10	10	10	6	6	6	6
4D	60	GBAY8	601808853	0	0	0	0	0	0	0	0
4D	60	GBAY8	602008853	26	26	26	26	81	81	81	81
4D	60	GBAY8	602208853	3	3	3	3	0	0	0	0
4D	60	GBAY8	602408853	0	0	0	0	11	11	11	11
4D	60	GBAY8	602608853	3	3	3	3	0	0	0	0
4D	60	GBAY8	602808853	13	13	13	13	36	36	36	36
4D	60	GBAY8	603008853	3	3	3	3	4	4	4	4
4D	60	GBAY8	600109853	0	0	0	0	0	0	0	0
4D	60	GBAY8	600309853	1	1	1	1	0	0	0	0
4D	60	GBAY8	600509853	0	0	0	0	1	1	1	1
4D	60	GBAY8	600709853	7	7	7	7	5	5	5	5
4D	60	GBAY8	600909853	12	12	12	12	7	7	7	7
4D	60	GBAY8	601109853	20	20	20	20	1	1	1	1
4D	60	GBAY8	601309853	0	0	0	0	10	10	10	10
4D	60	GBAY8	601509853	0	0	0	0	0	0	0	0
4D	60	GBAY8	601709853	0	0	0	0	0	0	0	0

4D	60	GBAY8	601909853	1	1	1	1	10	10	10	10
4D	60	GBAY8	602109853	17	17	17	17	0	0	0	0
4D	60	GBAY8	602309853	0	0	0	0	0	0	0	0
4D	60	GBAY8	602509853	1	1	1	1	0	0	0	0
4D	60	GBAY8	602709853	11	11	11	11	97	97	97	97
4D	60	GBAY8	602909853	3	3	3	3	4	4	4	4
4D	60	GBAY8	600110853	0	0	0	0	10	10	10	10
4D	60	GBAY8	600310853	1	1	1	1	0	0	0	0
4D	60	GBAY8	600510853	0	0	0	0	18	18	18	18
4D	60	GBAY8	600710853	0	0	0	0	1	1	1	1
4D	60	GBAY8	600910853	31	31	31	31	0	0	0	0
4D	60	GBAY8	601110853	0	0	0	0	0	0	0	0
4D	60	GBAY8	601310853	0	0	0	0	0	0	0	0
4D	60	GBAY8	601510853	0	0	0	0	24	24	24	24
4D	60	GBAY8	601710853	1	1	1	1	3	3	3	3
4D	60	GBAY8	601910853	10	10	10	10	0	0	0	0
4D	60	GBAY8	602110853	0	0	0	0	2	2	2	2
4D	60	GBAY8	602310853	0	0	0	0	0	0	0	0
4D	60	GBAY8	602510853	3	3	3	3	10	10	10	10
4D	60	GBAY8	602710853	1	1	1	1	29	29	29	29
4D	60	GBAY8	602910853	1	1	1	1	0	0	0	0
4D	60	GBAY8	603110853	13	13	13	13	3	3	3	3
4D	60	GBAY8	600211853	1	1	1	1	0	0	0	0
4D	60	GBAY8	600411853	0	0	0	0	0	0	0	0
4D	60	GBAY8	600611853	0	0	0	0	1	1	1	1
4D	60	GBAY8	600811853	10	10	10	10	9	9	9	9
4D	60	GBAY8	601011853	0	0	0	0	0	0	0	0
4D	60	GBAY8	601211853	0	0	0	0	3	3	3	3
4D	60	GBAY8	601411853	0	0	0	0	0	0	0	0
4D	60	GBAY8	601611853	0	0	0	0	0	0	0	0
4D	60	GBAY8	601811853	0	0	0	0	0	0	0	0
4D	60	GBAY8	602011853	16	16	16	16	0	0	0	0
4D	60	GBAY8	602211853	0	0	0	0	0	0	0	0
4D	60	GBAY8	602411853	0	0	0	0	3	3	3	3
4D	60	GBAY8	602611853	3	3	3	3	2	2	2	2
4D	60	GBAY8	602811853	7	7	7	7	2	2	2	2
4D	60	GBAY8	603011853	4	4	4	4	0	0	0	0
4D	60	GBAY8	600212853	24	24	24	24	9	9	9	9
4D	60	GBAY8	600412853	1	1	1	1	0	0	0	0
4D	60	GBAY8	600612853	1	1	1	1	3	3	3	3
4D	60	GBAY8	600812853	1	1	1	1	1	1	1	1
4D	60	GBAY8	601012853	1	1	1	1	0	0	0	0
4D	60	GBAY8	601212853	1	1	1	1	0	0	0	0
4D	60	GBAY8	601412853	4	4	4	4	8	8	8	8
4D	60	GBAY8	601612853	8	8	8	8	0	0	0	0
4D	60	GBAY8	601812853	0	0	0	0	1	1	1	1
4D	60	GBAY8	602012853	0	0	0	0	0	0	0	0
4D	60	GBAY8	602212853	0	0	0	0	0	0	0	0
4D	60	GBAY8	602412853	2	2	2	2	17	17	17	17

```

4D  60  GBAY8  602612853  2  2  2  2  0  0  0  0
4D  60  GBAY8  602812853  1  1  1  1  0  0  0  0
4D  60  GBAY8  603012853  0  0  0  0  3  3  3  3

```

ALLMET.DAT

File that the batch file creates which is just a summation of all of the meteorologic files.

RUNGM.DAT

Run card is the same for all simulations.

allcards.DAT

File that the batch file creates which is just a summation of all of the data files.

PMFWAT.OUT

Output File containing a monthly water balance for the simulation.

SSARR WATERSHED MODEL - MONTHLY WATER BALANCES - ZONE MODULE

Ver 2.1

```

BASIN      ZONE MM-YY  AREA  PP%      RUN:  1028 HOURS 19 NOV 98
GULLMUSK   4      4 8510320.0 100.0    COMUPUTED LOWER CHURCHILL DRAINAGE

```

UNITS: BASIN CENTIMETERS

HYDROLOGIC INPUTS:

DATA TYPE	STATION ID	WEIGHT
4.	CFAL	140.0%
4.	GBAY	60.0%
3.	CFAL	140.0%
3.	GBAY	60.0%

WATERSHED PARAMETERS:

```

BFLIM:    .200      TINTMX:  .510      PBLZ:    20.%      BIITS:   36.00      DGWLIM:  .100      BIIMX:   2.50

```

ELINT: 5000. BASE: .0 PXTEMP: 1.7 TIPMR: .90 TIPM: .84

WATERSHED FUNCTIONS:

SMI/ROP: SMIVSROP BII/BFP: BIIVSBFP ETMO: MVSDKE EKE: RIVSEDE EL/ETI: EVSDKE
ETP: TVSET S/SS: SVSS DKE: SMIVSDKE ATIMR: TVSMRCR MRPCT: MVSPCT

-----MONTHLY WATER BALANCE AMOUNTS-----

MO-YR	PCP	INTER	SWE		MI	ET	SMI		GRO	COMPONENTS OF GRO			
			EOM	INCR			EOM	INCR		SFRO	SSRO	BFRO	LZRO
MAY-85	1.80	.73	34.55	-25.45	26.52	2.32	10.17	2.77	21.43	8.07	8.07	4.23	1.06
JUN-85	21.65	2.42	.00	-34.55	53.79	6.50	6.00	-4.17	51.45	30.22	15.58	4.52	1.13
JUL-85	18.82	5.92	.00	.00	12.89	6.67	6.72	.72	5.50	1.35	1.35	2.25	.56
AUG-85	8.50	4.95	.00	.00	3.55	6.63	2.84	-3.89	.81	.14	.14	.43	.11
SEP-85	9.42	2.89	.00	.00	6.53	3.08	4.88	2.04	1.41	.28	.28	.68	.17
TOT	60.19	16.91		-60.00	103.27	25.20		-2.52	80.60	40.05	25.41	12.11	3.03

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SSARR WATERSHED MODEL - MONTHLY WATER BALANCES - SUMMARY MODULE

Ver 2.3

BASIN ZONES MM-YY AREA RUN: 1028 HOURS 19 NOV 98
GULLMUSK 6 4 85 21500. SQ KM COMUPUTED LOWER CHURCHILL DRAINAGE

UNITS: BASIN CENTIMETERS

HYDROLOGIC INPUTS:

DATA TYPE	STATION ID	WEIGHT
4.	CFAL	140.0%
4.	GBAY	60.0%
3.	CFAL	140.0%
3.	GBAY	60.0%

WATERSHED PARAMETERS:

BFLIM: .200 TINTMX: .000 PBLZ: 20.% BIITS: 36.00 DGWLIM: .100 BIIMX: 2.50
ELINT: 5000. BASE: .0 PXTEMP: 1.7 TIPMR: .90 TIPM: .84

WATERSHED FUNCTIONS:

SMI/ROP: SMIVSROP BII/BFP: BIIVSBFP ETMO: MVSDKE EKE: RIVSEDE EL/ETI: EVSDKE
ETP: TVSET S/SS: SVSS DKE: SMIVSDKE ATIMR: TVSMRCR MRPCT: MVSPCT

-----MONTHLY WATER BALANCE AMOUNTS-----

MO-YR	PCP	INTER	SWE		MI	ET	SMI		GRO	OUTPUTS FROM FLOW COMPONENTS				TOTAL	OBSERVED FLOW
			EOM	INCR			EOM	INCR		SFRO	SSRO	BFRO	LZRO		

MAY-85	1.80	.73	32.04	-25.95	26.06	2.29	10.18	2.76	21.05	2.58	1.11	.56	.00	4.25	.00
JUN-85	21.62	2.41	.00	-32.04	52.19	6.43	6.04	-4.14	49.84	34.50	21.77	4.33	.06	60.65	.00
JUL-85	18.78	5.89	.00	.00	12.90	6.59	6.74	.70	5.61	1.11	.80	3.33	.14	5.38	.00
AUG-85	8.49	4.94	.00	.00	3.55	6.52	2.94	-3.80	.84	.39	.71	2.17	.20	3.47	.00
SEP-85	9.40	2.86	.00	.00	6.54	3.00	4.99	2.05	1.50	.18	.13	1.00	.23	1.54	.00

TOT	60.09	16.83		-57.99	101.25	24.83		-2.43	78.84	38.75	24.51	11.39	.64	75.29	.00
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PMFPLOT.OUT

Null file

PMFOut.OUT

Output file containing an echo of the input data, detailed output by zone if requested in the Run file, and summary output for all zones combined.S
Some of the output has been deleted to limit the length of this appendix.

INTERACTIVE SSARR MONITOR. (METRIC UNITS) ENTER ? FOR INSTRUCTIONS

*

J MPLUSR METRIC BATCH JOB=ACRES PMF STUDY, LOWER CHURCHILL

MORE KEYWORDS?

T 0 010585

DAYS, HOURS/PERIOD OR HOUR, DDMYY, HOURS/PERIOD

153 6

RUN START TIME IS HOUR 24.0, 30 APR 85, TUESDAY, 6.0 HOURS/COMPUTE PERIOD

END TIME IS 24.0 30 SEP 85 MONDAY

*

RETURN

BASIN CHARACTERISTIC

Basin Characteristics deleted from output file.

SNOW INITIAL CONDITIONS -

Snow Initial Conditions deleted from output file.

N LOCHURCH
P GULLMUSK

Echo of temperature and precipitation data deleted from output file.

First output is listing by snow band (here only band 4 included) showing calculation of runoff and distribution of runoff between four routing zones.

IA

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BASIN LOCHURCH

MODEL LOCHURCH RUNNING BASINS ONLY FOR 732 PERIODS.

BASIN ZONE MM-YY AREA ELEV PP% TINTMX																										
GULLMUSK 4 4 8510320.0 415.100.0 .51										COMUPUTED LOWER CHURCHILL DRAINAGE																
MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F
4	30	240			60.00	-3	.00			0						7.40			.06							
5	1	60	.00	.00	59.99	-5	.0	.0	-7.2	0	.000	.000	.010	.02	.02	7.40	65.	.006	.06	66	.001	.001	.003	.001	4	S
5	1	120	.00	.00	59.98	-2	.0	.0	-.2	0	.000	.000	.010	.04	.04	7.39	65.	.006	.05	66	.001	.001	.003	.001	4	S
5	1	180	.00	.00	59.86	0	.0	.0	1.8	0	.241	.111	.122	.05	.05	7.42	65.	.079	.09	66	.013	.013	.042	.010	4	D
5	1	240	.00	.00	59.85	-1	.0	.0	-3.2	0	.000	.000	.010	.02	.02	7.42	65.	.007	.08	64	.001	.001	.003	.001	4	S
5	2	60	.01	.01	59.84	-6	-.1	.0	-11.4	0	.000	.000	.010	.02	.02	7.42	65.	.006	.07	64	.001	.001	.003	.001	4	S
5	2	120	.01	.01	59.83	-6	-.1	.0	-6.1	0	.000	.000	.010	.02	.02	7.42	65.	.006	.07	65	.001	.001	.003	.001	4	S
5	2	180	.01	.01	59.82	-5	-.1	.0	-3.8	0	.000	.000	.010	.02	.02	7.41	65.	.006	.06	65	.001	.001	.003	.001	4	S
5	2	240	.01	.01	59.81	-6	-.1	.0	-8.1	0	.000	.000	.010	.02	.02	7.41	65.	.006	.05	66	.001	.001	.003	.001	4	S
5	3	60	.00	.00	59.80	-9	-.2	.0	-12.5	0	.000	.000	.010	.02	.02	7.41	65.	.006	.05	66	.001	.001	.003	.001	4	S
5	3	120	.00	.00	59.79	-6	-.1	.0	-4.1	0	.000	.000	.010	.02	.02	7.41	65.	.006	.05	66	.001	.001	.003	.001	4	S
5	3	180	.00	.00	59.78	-3	-.1	.0	-.4	0	.000	.000	.010	.04	.04	7.40	65.	.006	.04	67	.001	.001	.003	.001	4	S
5	3	240	.00	.00	59.77	-5	-.1	.0	-7.8	0	.000	.000	.010	.02	.02	7.40	65.	.006	.04	67	.001	.001	.003	.001	4	S
5	4	60	.03	.03	59.76	-9	-.2	.0	-12.5	0	.000	.000	.010	.02	.02	7.40	65.	.006	.04	67	.001	.001	.003	.001	4	S
5	4	120	.03	.03	59.75	-6	-.1	.0	-4.7	0	.000	.000	.010	.02	.02	7.40	65.	.006	.04	67	.001	.001	.003	.001	4	S
5	4	180	.03	.03	59.74	-4	-.1	.0	-1.3	0	.000	.000	.010	.03	.03	7.40	65.	.006	.03	67	.001	.001	.004	.001	4	S
5	4	240	.03	.03	59.73	-5	-.1	.0	-7.4	0	.000	.000	.010	.02	.02	7.39	65.	.006	.03	67	.001	.001	.004	.001	4	S
5	5	60	.04	.04	59.72	-7	-.2	.0	-9.4	0	.000	.000	.010	.02	.02	7.39	65.	.006	.03	67	.001	.001	.004	.001	4	S
5	5	120	.04	.04	59.71	-6	-.1	.0	-5.0	0	.000	.000	.010	.02	.02	7.39	65.	.006	.03	67	.001	.001	.004	.001	4	S
5	5	180	.04	.04	59.70	-4	-.1	.0	-3.3	0	.000	.000	.010	.02	.02	7.39	65.	.006	.03	67	.001	.001	.004	.001	4	S
5	5	240	.04	.04	59.69	-5	-.1	.0	-6.7	0	.000	.000	.010	.02	.02	7.39	65.	.006	.03	68	.001	.001	.004	.001	4	S
5	6	60	.00	.00	59.68	-8	-.2	.0	-11.4	0	.000	.000	.010	.02	.02	7.39	65.	.006	.03	68	.001	.001	.004	.001	4	S
5	6	120	.00	.00	59.67	-6	-.1	.0	-3.7	0	.000	.000	.010	.02	.02	7.39	65.	.006	.03	68	.001	.001	.004	.001	4	S
5	6	180	.00	.00	59.66	-3	-.1	.0	-.7	0	.000	.000	.010	.03	.03	7.38	65.	.006	.03	68	.001	.001	.004	.001	4	S
5	6	240	.00	.00	59.65	-5	-.1	.0	-6.7	0	.000	.000	.010	.02	.02	7.38	65.	.006	.03	68	.001	.001	.004	.001	4	S
5	7	60	.01	.01	59.64	-7	-.2	.0	-10.3	0	.000	.000	.010	.02	.02	7.38	65.	.006	.03	68	.001	.001	.004	.001	4	S

5	7	120	.01	.01	59.63	-4	-.1	.0	-2.0	0	.000	.000	.010	.02	.02	7.38	65.	.006	.03	68	.001	.001	.004	.001	4	S
5	7	180	.01	.01	59.60	0	.0	.0	1.7	0	.241	.016	.026	.05	.05	7.37	64.	.017	.03	68	.003	.003	.009	.002	4	D
5	7	240	.01	.01	59.59	-2	-.1	.0	-5.3	0	.000	.000	.010	.02	.02	7.37	64.	.006	.03	67	.001	.001	.003	.001	4	S
5	8	60	.17	.17	59.58	-6	-.1	.0	-10.5	0	.000	.000	.010	.01	.01	7.37	64.	.006	.03	67	.001	.001	.004	.001	4	S
5	8	120	.17	.10	59.65	-5	-.1	.0	-5.5	0	.000	.000	.010	.01	.01	7.37	64.	.006	.03	68	.001	.001	.004	.001	4	A
5	8	180	.17	.00	59.81	-4	-.1	.0	-3.5	0	.000	.000	.010	.01	.01	7.37	64.	.006	.03	68	.001	.001	.004	.001	4	A
5	8	240	.17	.00	59.97	-6	-.1	.0	-7.5	0	.000	.000	.010	.01	.01	7.37	64.	.006	.03	68	.001	.001	.004	.001	4	A
5	9	60	.03	.00	59.99	-9	-.2	.0	-13.6	0	.000	.000	.010	.02	.02	7.37	64.	.006	.03	68	.001	.001	.004	.001	4	A
5	9	120	.03	.00	60.00	-6	-.1	.0	-3.8	0	.000	.000	.010	.02	.02	7.37	64.	.006	.03	68	.001	.001	.004	.001	4	A
5	9	180	.03	.01	60.02	-3	-.1	.0	-.4	0	.000	.000	.010	.03	.03	7.36	64.	.006	.03	68	.001	.001	.004	.001	4	A
5	9	240	.03	.01	60.03	-5	-.1	.0	-8.2	0	.000	.000	.010	.02	.02	7.36	64.	.006	.03	68	.001	.001	.004	.001	4	A
5	10	60	.12	.00	60.13	-4	-.1	.0	-3.7	0	.000	.000	.010	.02	.02	7.36	64.	.006	.03	68	.001	.001	.004	.001	4	A
5	10	120	.10	.00	60.05	0	.0	.0	3.0	0	.242	.076	.186	.05	.05	7.42	64.	.120	.10	68	.019	.019	.065	.016	4	D
5	10	180	.10	.01	59.71	0	.0	.0	5.3	2	.244	.327	.431	.08	.08	7.55	65.	.280	.25	63	.051	.051	.143	.036	4	D
5	10	240	.12	.02	59.77	0	.0	.0	.3	2	.245	.000	.038	.03	.03	7.55	66.	.025	.23	53	.006	.006	.011	.003	4	A
5	11	60	.04	.01	59.80	-3	-.1	.0	-6.1	0	.000	.000	.010	.02	.02	7.55	66.	.007	.20	55	.001	.001	.003	.001	4	A
5	11	120	.04	.00	59.82	-2	-.1	.0	-2.8	0	.000	.000	.010	.02	.02	7.55	66.	.007	.17	57	.001	.001	.003	.001	4	A
5	11	180	.04	.01	59.85	-1	.0	.0	-.8	0	.000	.000	.010	.03	.03	7.54	66.	.007	.15	58	.001	.001	.003	.001	4	A
5	11	240	.04	.01	59.88	-2	-.1	.0	-4.1	0	.000	.000	.010	.02	.02	7.54	66.	.007	.13	60	.001	.001	.003	.001	4	A
5	12	60	.00	.00	59.87	-5	-.1	.0	-8.5	0	.000	.000	.010	.02	.02	7.54	66.	.007	.11	61	.001	.001	.003	.001	4	S
5	12	120	.00	.00	59.86	-3	-.1	.0	-.4	0	.000	.000	.010	.04	.04	7.53	66.	.007	.10	62	.001	.001	.003	.001	4	S
5	12	180	.00	.00	59.70	0	.0	.0	3.3	0	.242	.140	.150	.07	.07	7.57	66.	.100	.15	63	.018	.018	.051	.013	4	D
5	12	240	.00	.00	59.69	-1	.0	.0	-3.8	0	.000	.000	.010	.02	.02	7.57	67.	.007	.13	60	.001	.001	.003	.001	4	S
5	13	60	.00	.00	59.68	-5	-.1	.0	-9.4	0	.000	.000	.010	.02	.02	7.56	67.	.007	.11	61	.001	.001	.003	.001	4	S
5	13	120	.00	.00	59.67	-3	-.1	.0	-1.7	0	.000	.000	.010	.03	.03	7.56	67.	.007	.10	62	.001	.001	.003	.001	4	S
5	13	180	.00	.00	59.65	0	.0	.0	1.3	0	.241	.012	.022	.05	.05	7.56	67.	.014	.09	63	.003	.003	.007	.002	4	S
5	13	240	.00	.00	59.64	-2	.0	.0	-4.7	0	.000	.000	.010	.02	.02	7.55	67.	.007	.08	64	.001	.001	.003	.001	4	S
5	14	60	.00	.00	59.63	-5	-.1	.0	-9.7	0	.000	.000	.010	.02	.02	7.55	66.	.007	.07	64	.001	.001	.003	.001	4	S

BASIN ZONE MM-YY AREA ELEV PP% TINTMX																										
GULLMUSK		4	5	8510320.0	415.	100.0	.51	COMPUTED LOWER CHURCHILL DRAINAGE																		
MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F
5	14	120	.00	.00	59.62	-3	-.1	.0	-.7	0	.000	.000	.010	.04	.04	7.55	66.	.007	.07	65	.001	.001	.003	.001	4	S
5	14	180	.00	.00	59.54	0	.0	.0	2.3	0	.241	.076	.086	.06	.06	7.56	66.	.057	.09	65	.010	.010	.030	.007	4	D
5	14	240	.00	.00	59.53	-2	.0	.0	-4.7	0	.000	.000	.010	.02	.02	7.56	67.	.007	.08	64	.001	.001	.003	.001	4	S
5	15	60	.00	.00	59.52	-3	-.1	.0	-5.7	0	.000	.000	.010	.02	.02	7.56	67.	.007	.07	64	.001	.001	.003	.001	4	S
5	15	120	.00	.00	59.51	-1	-.1	.0	.3	0	.240	.021	.010	.04	.04	7.55	67.	.007	.07	65	.001	.001	.003	.001	4	C
5	15	180	.00	.00	59.37	0	.0	.0	3.0	0	.242	.127	.137	.06	.06	7.58	66.	.091	.11	65	.016	.016	.048	.012	4	D
5	15	240	.00	.00	59.36	0	.0	.0	-1.7	0	.000	.000	.010	.03	.03	7.58	67.	.007	.10	62	.001	.001	.003	.001	4	S
5	16	60	.00	.00	59.35	-2	-.1	.0	-4.6	0	.000	.000	.010	.02	.02	7.57	67.	.007	.09	63	.001	.001	.003	.001	4	S
5	16	120	.00	.00	59.34	0	.0	.0	.7	0	.240	.045	.010	.05	.05	7.56	67.	.007	.08	64	.001	.001	.003	.001	4	C
5	16	180	.00	.00	59.16	0	.0	.0	2.8	0	.242	.166	.176	.06	.06	7.61	67.	.118	.14	64	.021	.021	.061	.015	4	D
5	16	240	.00	.00	59.15	0	.0	.0	-1.4	0	.000	.000	.010	.03	.03	7.60	67.	.007	.12	61	.001	.001	.003	.001	4	S
5	17	60	.00	.00	59.14	-2	.0	.0	-4.2	0	.000	.000	.010	.02	.02	7.60	67.	.007	.11	62	.001	.001	.003	.001	4	S
5	17	120	.00	.00	59.10	0	.0	.0	1.2	0	.241	.031	.041	.05	.05	7.60	67.	.027	.11	63	.005	.005	.014	.003	4	S
5	17	180	.00	.00	58.89	0	.0	.0	3.3	1	.242	.203	.214	.07	.07	7.66	67.	.143	.18	63	.026	.026	.072	.018	4	D
5	17	240	.00	.00	58.88	0	.0	.0	-1.0	0	.000	.000	.010	.03	.03	7.65	68.	.007	.16	58	.001	.001	.003	.001	4	S
5	18	60	.00	.00	58.87	-2	.0	.0	-3.8	0	.000	.000	.010	.02	.02	7.65	67.	.007	.14	60	.001	.001	.003	.001	4	S

5 18 120	.00	.00	58.79	0	.0	.0	1.7	0	.241	.068	.078	.05	.05	7.66	67.	.052	.15	61	.010	.010	.026	.006	4	D
5 18 180	.00	.00	58.55	0	.0	.0	3.8	1	.243	.234	.245	.08	.08	7.72	68.	.166	.23	60	.033	.033	.080	.020	4	D
5 18 240	.00	.00	58.54	0	.0	.0	.6	1	.000	.000	.010	.04	.04	7.71	68.	.007	.20	55	.002	.002	.003	.001	4	S
5 19 60	.00	.00	58.53	-1	.0	.0	-3.4	0	.000	.000	.010	.02	.02	7.71	68.	.007	.17	57	.001	.001	.003	.001	4	S
5 19 120	.00	.00	58.42	0	.0	.0	2.1	0	.242	.099	.109	.06	.06	7.73	68.	.074	.19	59	.015	.015	.035	.009	4	D
5 19 180	.00	.00	58.14	0	.0	.0	4.3	1	.244	.265	.277	.09	.09	7.80	68.	.189	.28	57	.040	.040	.088	.022	4	D
5 19 240	.00	.00	58.13	0	.0	.0	.2	1	.000	.000	.010	.04	.04	7.79	69.	.007	.24	52	.002	.002	.003	.001	4	S
5 20 60	.00	.00	58.12	-1	.0	.0	-3.1	1	.000	.000	.010	.02	.02	7.79	69.	.007	.21	54	.002	.002	.003	.001	4	S
5 20 120	.00	.00	57.97	0	.0	.0	2.6	1	.244	.136	.146	.06	.06	7.82	69.	.100	.24	56	.022	.022	.046	.011	4	D
5 20 180	.00	.00	57.66	0	.0	.0	4.8	2	.246	.298	.311	.10	.10	7.89	69.	.215	.33	54	.048	.048	.094	.024	4	D
5 20 240	.00	.00	57.63	0	.0	.0	.3	2	.246	.021	.038	.04	.04	7.89	70.	.026	.30	48	.007	.007	.010	.003	4	S
5 21 60	.00	.00	57.62	-1	.0	.0	-2.6	2	.000	.000	.010	.02	.02	7.89	70.	.007	.26	51	.002	.002	.003	.001	4	S
5 21 120	.00	.00	57.45	0	.0	.0	2.9	2	.246	.157	.167	.06	.06	7.92	70.	.116	.29	53	.027	.027	.050	.012	4	D
5 21 180	.00	.00	57.12	0	.0	.0	5.1	4	.249	.320	.333	.10	.10	8.00	70.	.233	.39	51	.056	.056	.096	.024	4	D
5 21 240	.00	.00	57.06	0	.0	.0	.6	4	.249	.040	.057	.05	.05	8.00	71.	.040	.35	45	.011	.011	.015	.004	4	S
5 22 60	.00	.00	57.05	-1	.0	.0	-2.2	3	.000	.000	.010	.03	.03	8.00	71.	.007	.30	47	.002	.002	.003	.001	4	S
5 22 120	.00	.00	56.86	0	.0	.0	3.2	4	.249	.182	.192	.07	.07	8.04	71.	.136	.34	50	.033	.033	.055	.014	4	D
5 22 180	.00	.00	56.51	0	.0	.0	5.3	5	.252	.336	.350	.10	.10	8.12	71.	.249	.44	48	.064	.064	.096	.024	4	D
5 22 240	.00	.00	56.42	0	.0	.0	1.0	5	.252	.066	.083	.05	.05	8.13	72.	.059	.41	41	.017	.017	.020	.005	4	S
5 23 60	.00	.00	56.41	0	.0	.0	-1.8	4	.000	.000	.010	.03	.03	8.12	72.	.007	.35	43	.002	.002	.003	.001	4	S
5 23 120	.00	.00	56.18	0	.0	.0	3.7	5	.252	.221	.231	.08	.08	8.17	72.	.166	.40	47	.043	.043	.063	.016	4	D
5 23 180	.00	.00	55.80	0	.0	.0	5.8	7	.255	.373	.387	.11	.11	8.25	72.	.280	.51	44	.078	.078	.100	.025	4	D
5 23 240	.00	.00	55.69	0	.0	.0	1.4	7	.255	.092	.110	.05	.05	8.27	73.	.080	.48	37	.025	.025	.024	.006	4	S
5 24 60	.00	.00	55.68	0	.0	.0	-1.4	6	.000	.000	.010	.03	.03	8.26	73.	.007	.41	39	.002	.002	.002	.001	4	S
5 24 120	.00	.00	55.41	0	.0	.0	4.1	7	.256	.254	.264	.08	.08	8.31	73.	.193	.47	43	.054	.054	.068	.017	4	D
5 24 180	.00	.00	54.99	0	.0	.0	6.3	8	.259	.411	.427	.12	.12	8.39	74.	.314	.59	40	.094	.094	.101	.025	4	D
5 24 240	.00	.00	54.84	0	.0	.0	1.9	9	.260	.126	.145	.06	.06	8.42	74.	.108	.56	35	.035	.035	.031	.008	4	D
5 25 60	.00	.00	54.83	0	.0	.0	-1.0	8	.000	.000	.010	.03	.03	8.41	75.	.007	.48	36	.002	.002	.002	.001	4	S
5 25 120	.00	.00	54.54	0	.0	.0	4.4	9	.261	.283	.293	.09	.09	8.46	74.	.218	.54	39	.066	.066	.068	.017	4	D
5 25 180	.00	.00	54.09	0	.0	.0	6.5	11	.264	.431	.447	.13	.13	8.54	75.	.335	.66	36	.106	.106	.099	.025	4	D
5 25 240	.00	.00	53.92	0	.0	.0	2.2	11	.264	.148	.167	.06	.06	8.57	76.	.127	.64	34	.042	.042	.034	.009	4	D
5 26 60	.00	.00	53.91	0	.0	.0	.6	10	.000	.000	.010	.04	.04	8.56	76.	.008	.55	34	.002	.002	.002	.001	4	S
5 26 120	.00	.00	53.59	0	.0	.0	4.7	11	.265	.313	.323	.09	.09	8.62	76.	.245	.61	36	.077	.077	.072	.018	4	D
5 26 180	.00	.00	53.11	0	.0	.0	6.8	13	.268	.459	.475	.13	.13	8.70	76.	.363	.74	35	.118	.118	.103	.026	4	D
5 26 240	.00	.00	52.92	0	.0	.0	2.6	13	.269	.178	.197	.06	.06	8.73	77.	.152	.72	32	.052	.052	.039	.010	4	D
5 27 60	.00	.00	52.87	0	.0	.0	.4	13	.268	.030	.044	.04	.04	8.73	77.	.034	.63	32	.011	.011	.009	.002	4	S
5 27 120	.00	.00	52.49	0	.0	.0	5.4	14	.271	.368	.379	.11	.11	8.79	77.	.294	.72	34	.096	.096	.082	.020	4	D
5 27 180	.00	.00	51.97	0	.0	.0	7.4	15	.274	.510	.527	.14	.14	8.87	78.	.411	.86	32	.138	.138	.108	.027	4	D

BASIN ZONE MM-YY AREA ELEV PP% TINTMX

GULLMUSK 4 5 8510320.0 415. 100.0 .51

COMPUTED LOWER CHURCHILL DRAINAGE

MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F
5	27	240	.00	.00	51.71	0	.0	.0	3.4	16	.275	.237	.257	.07	.07	8.90	79.	.202	.85	29	.071	.071	.048	.012	4	D
5	28	60	.00	.00	51.60	0	.0	.0	1.4	16	.275	.099	.114	.05	.05	8.91	79.	.090	.78	29	.032	.032	.021	.005	4	S
5	28	120	.00	.00	51.16	0	.0	.0	6.1	17	.277	.426	.438	.12	.12	8.98	79.	.347	.87	31	.119	.119	.087	.022	4	D
5	28	180	.00	.00	50.58	0	.0	.0	7.9	18	.280	.557	.576	.15	.15	9.06	80.	.459	1.02	29	.163	.163	.107	.027	4	D

5	28	240	.00	.00	50.26	0	.0	.0	4.2	19	.282	.299	.320	.09	.09	9.10	80.	.258	1.02	25	.096	.096	.053	.013	4	D
5	29	60	.00	.00	49.93	0	.0	.0	4.4	19	.283	.314	.331	.09	.09	9.14	81.	.267	1.03	25	.099	.099	.055	.014	4	D
5	29	120	.00	.00	49.45	0	.0	.0	6.4	21	.285	.460	.476	.12	.12	9.20	81.	.387	1.11	25	.144	.144	.079	.020	4	D
5	29	180	.00	.00	48.31	0	.0	.0	15.4	24	.292	1.129	1.148	.32	.32	9.33	82.	.938	1.51	24	.353	.353	.186	.046	4	D
5	29	240	.00	.00	46.89	0	.0	.0	18.4	28	.300	1.385	1.418	.39	.39	9.47	83.	1.176	2.00	19	.471	.471	.187	.047	4	D
5	30	60	.00	.00	45.45	0	.0	.0	18.4	32	.303	1.397	1.436	.39	.39	9.60	84.	1.210	2.44	14	.514	.514	.145	.036	4	D
5	30	120	.00	.00	43.77	0	.0	.0	21.4	36	.306	1.642	1.681	.47	.47	9.73	85.	1.436	2.50	10	.642	.642	.122	.030	4	D
5	30	180	.00	.00	42.15	0	.0	.0	20.4	40	.309	1.581	1.624	.44	.44	9.83	87.	1.407	2.50	10	.633	.633	.113	.028	4	D
5	30	240	.00	.00	40.67	0	.0	.0	18.4	44	.312	1.438	1.480	.39	.39	9.92	88.	1.297	2.50	10	.584	.584	.104	.026	4	D
5	31	60	.00	.00	39.10	0	.0	.0	19.4	48	.314	1.528	1.568	.42	.42	10.00	88.	1.386	2.50	10	.624	.624	.111	.028	4	D
5	31	120	.00	.00	37.36	0	.0	.0	21.4	52	.317	1.701	1.743	.47	.47	10.07	89.	1.553	2.50	10	.699	.699	.124	.031	4	D
5	31	180	.00	.00	35.76	0	.0	.0	19.4	55	.320	1.555	1.600	.42	.42	10.13	90.	1.436	2.50	10	.646	.646	.115	.029	4	D
5	31	240	.00	.00	34.55	0	.0	.0	14.4	57	.322	1.163	1.205	.30	.30	10.17	90.	1.089	2.50	10	.490	.490	.087	.022	4	D

1.80

24.680

2.32

21.427

8.071

4.228

.73

26.515

2.32

8.071

1.057

6	1	60	.00	.00	33.59	0	.0	.0	11.4	59	.324	.926	.960	.23	.23	10.20	91.	.871	2.50	10	.392	.392	.070	.017	4	D
6	1	120	.00	.00	32.80	0	.0	.0	9.4	60	.325	.766	.796	.19	.19	10.23	91.	.724	2.50	10	.326	.326	.058	.014	4	D
6	1	180	.00	.00	32.17	0	.0	.0	7.4	60	.325	.605	.631	.14	.14	10.25	91.	.575	2.47	10	.259	.259	.046	.011	4	D
6	1	240	.00	.00	31.70	0	.0	.0	5.4	60	.325	.442	.465	.11	.11	10.26	91.	.424	2.35	10	.190	.190	.035	.009	4	D
6	2	60	.00	.00	31.24	0	.0	.0	5.4	60	.324	.442	.461	.11	.11	10.27	91.	.421	2.25	11	.186	.186	.039	.010	4	D
6	2	120	.00	.00	30.53	0	.0	.0	8.4	60	.325	.686	.706	.16	.16	10.29	91.	.645	2.30	12	.282	.282	.065	.016	4	D
6	2	180	.00	.00	29.58	0	.0	.0	11.4	61	.326	.934	.958	.23	.23	10.32	91.	.877	2.48	12	.386	.386	.084	.021	4	D
6	2	240	.00	.00	28.77	0	.0	.0	9.4	62	.327	.773	.802	.19	.19	10.34	92.	.735	2.50	10	.330	.330	.060	.015	4	D
6	3	60	.53	.51	27.97	0	.0	.0	9.4	63	.328	.775	.821	.02	.02	10.40	92.	.752	2.50	10	.339	.339	.060	.015	4	D
6	3	120	1.33	.00	26.81	0	.0	.0	11.4	64	.406	1.152	2.488	.02	.02	10.60	92.	2.289	2.50	10	1.340	.720	.183	.046	4	R
6	3	180	6.76	.01	24.61	0	.0	.0	13.4	66	.678	2.193	8.957	.09	.09	11.20	93.	8.328	2.50	10	6.775	.720	.666	.167	4	R
6	3	240	3.18	.02	22.56	0	.0	.0	15.4	68	.498	1.923	5.206	.06	.06	11.40	96.	4.999	2.50	10	3.779	.720	.400	.100	4	R
6	4	60	1.99	.01	20.79	0	.0	.0	15.4	70	.439	1.694	3.745	.04	.04	11.50	97.	3.632	2.50	10	2.548	.720	.291	.073	4	R
6	4	120	1.33	.01	19.16	0	.0	.0	15.4	72	.406	1.568	2.946	.03	.03	11.56	97.	2.872	2.50	10	1.865	.720	.230	.057	4	R
6	4	180	1.06	.01	17.70	0	.0	.0	14.4	74	.393	1.418	2.517	.03	.03	11.61	98.	2.463	2.50	10	1.496	.720	.197	.049	4	R
6	4	240	.93	.01	16.26	0	.0	.0	14.4	75	.386	1.395	2.359	.03	.03	11.65	98.	2.313	2.50	10	1.362	.720	.185	.046	4	R
6	5	60	.80	.01	14.85	0	.0	.0	14.4	77	.380	1.371	2.205	.03	.03	11.68	98.	2.166	2.50	10	1.230	.720	.173	.043	4	R
6	5	120	.53	.01	13.94	0	.0	.0	9.4	77	.366	.865	1.431	.02	.02	11.70	98.	1.408	2.50	10	.634	.634	.113	.028	4	R
6	5	180	.42	.00	13.24	0	.0	.0	7.4	77	.361	.672	1.117	.03	.03	11.71	98.	1.100	2.50	10	.495	.495	.088	.022	4	R
6	5	240	.11	.01	12.74	0	.0	.0	5.4	77	.343	.468	.600	.08	.08	11.70	99.	.591	2.48	10	.266	.266	.047	.012	4	D
6	6	60	.00	.00	12.42	0	.0	.0	3.4	75	.342	.295	.317	.07	.07	11.68	98.	.312	2.29	10	.140	.140	.025	.006	4	D
6	6	120	.00	.00	11.94	0	.0	.0	5.4	75	.341	.465	.481	.11	.11	11.66	98.	.474	2.23	12	.208	.208	.046	.011	4	D
6	6	180	.00	.00	11.29	0	.0	.0	7.4	75	.341	.635	.655	.14	.14	11.64	98.	.644	2.28	12	.281	.281	.065	.016	4	D
6	6	240	.00	.00	10.80	0	.0	.0	5.4	74	.341	.464	.487	.11	.11	11.62	98.	.478	2.23	12	.210	.210	.047	.012	4	D
6	7	60	.01	.01	10.74	0	.0	.0	.4	72	.339	.038	.058	.04	.04	11.61	98.	.056	1.92	12	.025	.025	.006	.001	4	S
6	7	120	.01	.01	9.83	0	.0	.0	10.6	73	.340	.904	.915	.21	.21	11.58	98.	.897	2.17	15	.378	.378	.114	.028	4	D
6	7	180	.01	.01	8.60	0	.0	.0	14.0	75	.341	1.198	1.227	.29	.29	11.53	98.	1.201	2.50	13	.521	.521	.127	.032	4	D
6	7	240	.01	.01	8.01	0	.0	.0	6.5	74	.341	.558	.592	.12	.12	11.51	98.	.579	2.47	10	.260	.260	.046	.012	4	D
6	8	60	.11	.11	7.60	0	.0	.0	4.5	74	.340	.386	.408	.07	.07	11.51	98.	.398	2.34	10	.179	.179	.033	.008	4	D
6	8	120	.11	.11	6.91	0	.0	.0	7.9	74	.340	.676	.694	.11	.11	11.50	98.	.677	2.39	11	.299	.299	.063	.016	4	D
6	8	180	.11	.08	6.12	0	.0	.0	8.9	74	.340	.761	.814	.13	.13	11.49	97.	.794	2.50	11	.353	.353	.070	.018	4	D
6	8	240	.11	.03	5.57	0	.0	.0	6.2	74	.340	.531	.638	.09	.09	11.48	97.	.622	2.50	10	.280	.280	.050	.012	4	D

6 9 60 .00 .00 5.22 0 .0 .0 3.8 73 .339 .326 .349 .08 .08 11.47 97. .340 2.32 10 .153 .153 .027 .007 4 D

BASIN ZONE MM-YY AREA ELEV PP% TINTMX

GULLMUSK 4 6 8510320.0 415. 100.0 .51				COMPUTED LOWER CHURCHILL DRAINAGE																							
MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F	
6	9	120	.00	.00	4.33	0	.0	.0	10.2	73	.340	.870	.887	.20	.20	11.44	97.	.864	2.50	11	.381	.381	.081	.020	4	D	
6	9	180	.00	.00	3.65	0	.0	.0	12.9	75	.341	.650	.677	.26	.26	11.40	97.	.659	2.50	10	.296	.296	.053	.013	4	L	
6	9	240	.00	.00	3.08	0	.0	.0	7.5	74	.341	.548	.572	.14	.14	11.38	97.	.554	2.46	10	.249	.249	.044	.011	4	L	
6	10	60	.14	.14	3.00	0	.0	.0	.7	73	.339	.063	.085	.03	.03	11.37	97.	.082	2.13	10	.037	.037	.007	.002	4	S	
6	10	120	.14	.05	2.58	0	.0	.0	4.8	72	.338	.410	.500	.07	.07	11.37	97.	.485	2.10	13	.209	.209	.053	.013	4	D	
6	10	180	.14	.02	2.16	0	.0	.0	5.8	72	.338	.404	.541	.08	.08	11.37	97.	.524	2.10	14	.225	.225	.059	.015	4	L	
6	10	240	.14	.02	1.87	0	.0	.0	3.1	71	.337	.265	.399	.05	.05	11.37	97.	.386	2.01	14	.166	.166	.043	.011	4	D	
6	11	60	.13	.01	1.99	0	.0	.0	-.6	69	.000	.000	.010	.02	.02	11.36	97.	.010	1.71	14	.004	.004	.001	.000	4	A	
6	11	120	.12	.01	1.66	0	.0	.0	3.8	68	.334	.312	.433	.06	.06	11.36	97.	.419	1.71	17	.172	.172	.060	.015	4	L	
6	11	180	.12	.01	1.38	0	.0	.0	5.5	67	.333	.265	.384	.08	.08	11.36	97.	.372	1.67	17	.153	.153	.053	.013	4	L	
6	11	240	.12	.02	1.19	0	.0	.0	2.1	66	.332	.178	.291	.04	.04	11.36	97.	.282	1.59	18	.115	.115	.041	.010	4	D	
6	12	60	.00	.00	1.14	0	.0	.0	.3	64	.330	.029	.044	.04	.04	11.35	97.	.043	1.37	19	.017	.017	.007	.002	4	S	
6	12	120	.00	.00	.96	0	.0	.0	7.7	65	.330	.172	.182	.15	.15	11.32	97.	.176	1.27	21	.069	.069	.030	.008	4	L	
6	12	180	.00	.00	.02	0	.0	.0	11.1	66	.331	.924	.937	.22	.22	11.29	97.	.905	1.63	22	.349	.349	.165	.041	4	D	
6	12	240	.00	.00	.00	0	.0	.0	4.7	65	.331	.024	.024	.10	.10	11.27	96.	.023	1.39	18	.009	.009	.003	.001	4	D	
6	13	60	.00	.00	.00	0	.0	.0	-.1	0	.000	.000	.000	.04	.04	11.26	96.	.000	1.18	21	.000	.000	.000	.000	4		
6	13	120	.00	.00	.00	0	.0	.0	9.3	0	.000	.000	.000	.20	.20	11.20	96.	.000	1.00	23	.000	.000	.000	.000	4		
6	13	180	.00	.00	.00	0	.0	.0	13.0	0	.000	.000	.000	.30	.30	11.13	96.	.000	.84	26	.000	.000	.000	.000	4		
6	13	240	.00	.00	.00	0	.0	.0	5.6	0	.000	.000	.000	.12	.12	11.10	96.	.000	.71	29	.000	.000	.000	.000	4		
6	14	60	.05	.05	.00	0	.0	.0	2.0	0	.000	.000	.000	.05	.05	11.09	95.	.000	.60	32	.000	.000	.000	.000	4		
6	14	120	.05	.05	.00	0	.0	.0	7.1	0	.000	.000	.000	.13	.13	11.05	95.	.000	.51	35	.000	.000	.000	.000	4		
6	14	180	.05	.05	.00	0	.0	.0	8.5	0	.000	.000	.000	.16	.16	11.01	95.	.000	.43	37	.000	.000	.000	.000	4		
6	14	240	.05	.05	.00	0	.0	.0	4.7	0	.000	.000	.000	.09	.09	10.99	95.	.000	.37	42	.000	.000	.000	.000	4		
6	15	60	.03	.03	.00	0	.0	.0	2.7	0	.000	.000	.000	.06	.06	10.97	95.	.000	.31	46	.000	.000	.000	.000	4		
6	15	120	.03	.03	.00	0	.0	.0	10.0	0	.000	.000	.000	.21	.21	10.92	95.	.000	.26	50	.000	.000	.000	.000	4		
6	15	180	.03	.03	.00	0	.0	.0	13.0	0	.000	.000	.000	.28	.28	10.85	95.	.000	.22	53	.000	.000	.000	.000	4		
6	15	240	.03	.03	.00	0	.0	.0	7.0	0	.000	.000	.000	.14	.14	10.82	94.	.000	.19	55	.000	.000	.000	.000	4		
6	16	60	.00	.00	.00	0	.0	.0	3.6	0	.000	.000	.000	.08	.08	10.80	94.	.000	.16	57	.000	.000	.000	.000	4		
6	16	120	.00	.00	.00	0	.0	.0	12.0	0	.000	.000	.000	.27	.27	10.73	94.	.000	.13	59	.000	.000	.000	.000	4		
6	16	180	.00	.00	.00	0	.0	.0	14.7	0	.000	.000	.000	.34	.34	10.64	94.	.000	.11	61	.000	.000	.000	.000	4		
6	16	240	.00	.00	.00	0	.0	.0	9.0	0	.000	.000	.000	.19	.19	10.60	93.	.000	.10	62	.000	.000	.000	.000	4		
6	17	60	.00	.00	.00	0	.0	.0	2.6	0	.000	.000	.000	.07	.07	10.58	93.	.000	.08	63	.000	.000	.000	.000	4		
6	17	120	.00	.00	.00	0	.0	.0	14.3	0	.000	.000	.000	.33	.33	10.50	93.	.000	.07	64	.000	.000	.000	.000	4		
6	17	180	.00	.00	.00	0	.0	.0	18.3	0	.000	.000	.000	.43	.43	10.39	92.	.000	.06	65	.000	.000	.000	.000	4		
6	17	240	.00	.00	.00	0	.0	.0	9.3	0	.000	.000	.000	.20	.20	10.34	92.	.000	.05	66	.000	.000	.000	.000	4		
6	18	60	.00	.00	.00	0	.0	.0	4.8	0	.000	.000	.000	.11	.11	10.31	92.	.000	.04	66	.000	.000	.000	.000	4		
6	18	120	.00	.00	.00	0	.0	.0	14.2	0	.000	.000	.000	.33	.33	10.23	92.	.000	.04	67	.000	.000	.000	.000	4		
6	18	180	.00	.00	.00	0	.0	.0	17.2	0	.000	.000	.000	.40	.40	10.13	91.	.000	.03	67	.000	.000	.000	.000	4		
6	18	240	.00	.00	.00	0	.0	.0	10.5	0	.000	.000	.000	.23	.23	10.07	90.	.000	.03	68	.000	.000	.000	.000	4		
6	19	60	.13	.13	.00	0	.0	.0	4.1	0	.000	.000	.000	.07	.07	10.05	90.	.000	.02	68	.000	.000	.000	.000	4		
6	19	120	.13	.13	.00	0	.0	.0	10.1	0	.000	.000	.000	.16	.16	10.01	90.	.000	.02	68	.000	.000	.000	.000	4		
6	19	180	.13	.13	.00	0	.0	.0	13.1	0	.000	.000	.000	.21	.21	9.96	89.	.000	.02	68	.000	.000	.000	.000	4		

6 19 240	.13	.13	.00	0	.0	.0	8.1	0	.000	.000	.000	.12	.12	9.93	89.	.000	.01	69	.000	.000	.000	.000	4
6 20 60	.07	.07	.00	0	.0	.0	3.1	0	.000	.000	.000	.06	.06	9.92	89.	.000	.01	69	.000	.000	.000	.000	4
6 20 120	.07	.07	.00	0	.0	.0	8.6	0	.000	.000	.000	.16	.16	9.88	88.	.000	.01	69	.000	.000	.000	.000	4
6 20 180	.07	.07	.00	0	.0	.0	10.3	0	.000	.000	.000	.19	.19	9.83	88.	.000	.01	69	.000	.000	.000	.000	4
6 20 240	.07	.05	.00	0	.0	.0	6.5	0	.000	.000	.013	.12	.12	9.80	88.	.012	.01	69	.002	.002	.006	.002	4
6 21 60	.01	.01	.00	0	.0	.0	2.4	0	.000	.000	.000	.06	.06	9.78	87.	.000	.01	69	.000	.000	.000	.000	4
6 21 120	.01	.01	.00	0	.0	.0	10.9	0	.000	.000	.000	.24	.24	9.72	87.	.000	.01	69	.000	.000	.000	.000	4
6 21 180	.01	.01	.00	0	.0	.0	14.6	0	.000	.000	.000	.33	.33	9.64	87.	.000	.01	69	.000	.000	.000	.000	4
6 21 240	.01	.01	.00	0	.0	.0	7.5	0	.000	.000	.000	.16	.16	9.60	86.	.000	.01	69	.000	.000	.000	.000	4
6 22 60	.00	.00	.00	0	.0	.0	2.5	0	.000	.000	.000	.07	.07	9.59	85.	.000	.01	69	.000	.000	.000	.000	4
6 22 120	.00	.00	.00	0	.0	.0	15.8	0	.000	.000	.000	.37	.37	9.49	85.	.000	.01	69	.000	.000	.000	.000	4
6 22 180	.00	.00	.00	0	.0	.0	20.8	0	.000	.000	.000	.50	.50	9.37	84.	.000	.00	69	.000	.000	.000	.000	4

BASIN		ZONE	MM-YY	AREA	ELEV	PP%	TINTMX	COMPUTED LOWER CHURCHILL DRAINAGE																		
GULLMUSK		4	6	8510320.0	415.	100.0	.51																			
MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F
6	22	240	.00	.00	.00	0	.0	.0	10.5	0	.000	.000	.000	.23	.23	9.31	83.	.000	.00	69	.000	.000	.000	.000	.000	4
6	23	60	.00	.00	.00	0	.0	.0	11.1	0	.000	.000	.000	.25	.25	9.25	83.	.000	.00	69	.000	.000	.000	.000	.000	4
6	23	120	.00	.00	.00	0	.0	.0	21.4	0	.000	.000	.000	.52	.52	9.12	82.	.000	.00	69	.000	.000	.000	.000	.000	4
6	23	180	.00	.00	.00	0	.0	.0	24.7	0	.000	.000	.000	.61	.61	8.96	81.	.000	.00	69	.000	.000	.000	.000	.000	4
6	23	240	.00	.00	.00	0	.0	.0	17.4	0	.000	.000	.000	.41	.41	8.86	80.	.000	.00	69	.000	.000	.000	.000	.000	4
6	24	60	.00	.00	.00	0	.0	.0	11.7	0	.000	.000	.000	.26	.26	8.80	79.	.000	.00	69	.000	.000	.000	.000	.000	4
6	24	120	.00	.00	.00	0	.0	.0	21.7	0	.000	.000	.000	.53	.53	8.66	78.	.000	.00	69	.000	.000	.000	.000	.000	4
6	24	180	.00	.00	.00	0	.0	.0	25.4	0	.000	.000	.000	.63	.63	8.51	77.	.000	.00	69	.000	.000	.000	.000	.000	4
6	24	240	.00	.00	.00	0	.0	.0	17.4	0	.000	.000	.000	.41	.41	8.40	75.	.000	.00	69	.000	.000	.000	.000	.000	4
6	25	60	.00	.00	.00	0	.0	.0	11.7	0	.000	.000	.000	.26	.26	8.34	74.	.000	.00	69	.000	.000	.000	.000	.000	4
6	25	120	.00	.00	.00	0	.0	.0	20.0	0	.000	.000	.000	.48	.48	8.22	74.	.000	.00	69	.000	.000	.000	.000	.000	4
6	25	180	.00	.00	.00	0	.0	.0	23.3	0	.000	.000	.000	.57	.57	8.07	73.	.000	.00	69	.000	.000	.000	.000	.000	4
6	25	240	.00	.00	.00	0	.0	.0	16.7	0	.000	.000	.000	.39	.39	7.98	71.	.000	.00	69	.000	.000	.000	.000	.000	4
6	26	60	.00	.00	.00	0	.0	.0	9.6	0	.000	.000	.000	.21	.21	7.92	70.	.000	.00	69	.000	.000	.000	.000	.000	4
6	26	120	.00	.00	.00	0	.0	.0	21.3	0	.000	.000	.000	.52	.52	7.79	70.	.000	.00	69	.000	.000	.000	.000	.000	4
6	26	180	.00	.00	.00	0	.0	.0	25.3	0	.000	.000	.000	.63	.63	7.64	69.	.000	.00	69	.000	.000	.000	.000	.000	4
6	26	240	.00	.00	.00	0	.0	.0	16.6	0	.000	.000	.000	.39	.39	7.54	67.	.000	.00	69	.000	.000	.000	.000	.000	4
6	27	60	.00	.00	.00	0	.0	.0	10.4	0	.000	.000	.000	.23	.23	7.48	66.	.000	.00	69	.000	.000	.000	.000	.000	4
6	27	120	.00	.00	.00	0	.0	.0	21.2	0	.000	.000	.000	.51	.51	7.35	66.	.000	.00	69	.000	.000	.000	.000	.000	4
6	27	180	.00	.00	.00	0	.0	.0	25.6	0	.000	.000	.000	.64	.64	7.19	64.	.000	.00	69	.000	.000	.000	.000	.000	4
6	27	240	.00	.00	.00	0	.0	.0	16.8	0	.000	.000	.000	.39	.39	7.09	62.	.000	.00	69	.000	.000	.000	.000	.000	4
6	28	60	.00	.00	.00	0	.0	.0	9.4	0	.000	.000	.000	.21	.21	7.04	61.	.000	.00	69	.000	.000	.000	.000	.000	4
6	28	120	.00	.00	.00	0	.0	.0	23.6	0	.000	.000	.000	.58	.58	6.90	61.	.000	.00	69	.000	.000	.000	.000	.000	4
6	28	180	.00	.00	.00	0	.0	.0	29.9	0	.000	.000	.000	.77	.77	6.70	59.	.000	.00	70	.000	.000	.000	.000	.000	4
6	28	240	.00	.00	.00	0	.0	.0	18.0	0	.000	.000	.000	.42	.42	6.60	57.	.000	.00	70	.000	.000	.000	.000	.000	4
6	29	60	.00	.00	.00	0	.0	.0	8.3	0	.000	.000	.000	.18	.18	6.55	56.	.000	.00	70	.000	.000	.000	.000	.000	4
6	29	120	.00	.00	.00	0	.0	.0	15.3	0	.000	.000	.000	.36	.36	6.47	55.	.000	.00	70	.000	.000	.000	.000	.000	4
6	29	180	.00	.00	.00	0	.0	.0	18.0	0	.000	.000	.000	.42	.42	6.36	54.	.000	.00	70	.000	.000	.000	.000	.000	4
6	29	240	.00	.00	.00	0	.0	.0	12.3	0	.000	.000	.000	.28	.28	6.29	53.	.000	.00	70	.000	.000	.000	.000	.000	4
6	30	60	.01	.01	.00	0	.0	.0	7.0	0	.000	.000	.000	.15	.15	6.25	52.	.000	.00	70	.000	.000	.000	.000	.000	4
6	30	120	.01	.01	.00	0	.0	.0	14.4	0	.000	.000	.000	.33	.33	6.17	52.	.000	.00	70	.000	.000	.000	.000	.000	4
6	30	180	.01	.01	.00	0	.0	.0	18.1	0	.000	.000	.000	.42	.42	6.07	51.	.000	.00	70	.000	.000	.000	.000	.000	4

6	30	240	.01	.01	.00	0	.0	.0	11.7	0	.000	.000	.000	.26	.26	6.00	50.	.000	.00	70	.000	.000	.000	.000	4
21.65									33.418			6.50			51.450			30.220			4.516				
2.42									53.785			6.50						15.585			1.129				
7	1	60	.02	.02	.00	0	.0	.0	7.4	0	.000	.000	.000	.15	.15	5.97	49.	.000	.00	70	.000	.000	.000	.000	4
7	1	120	.02	.02	.00	0	.0	.0	15.1	0	.000	.000	.000	.33	.33	5.88	49.	.000	.00	70	.000	.000	.000	.000	4
7	1	180	.02	.02	.00	0	.0	.0	18.1	0	.000	.000	.000	.40	.40	5.78	48.	.000	.00	70	.000	.000	.000	.000	4
7	1	240	.02	.02	.00	0	.0	.0	12.1	0	.000	.000	.000	.26	.26	5.72	47.	.000	.00	70	.000	.000	.000	.000	4
7	2	60	.01	.01	.00	0	.0	.0	7.1	0	.000	.000	.000	.15	.15	5.68	46.	.000	.00	70	.000	.000	.000	.000	4
7	2	120	.01	.01	.00	0	.0	.0	19.7	0	.000	.000	.000	.46	.46	5.57	46.	.000	.00	70	.000	.000	.000	.000	4
7	2	180	.01	.01	.00	0	.0	.0	24.0	0	.000	.000	.000	.58	.58	5.42	44.	.000	.00	70	.000	.000	.000	.000	4
7	2	240	.01	.01	.00	0	.0	.0	14.4	0	.000	.000	.000	.33	.33	5.34	43.	.000	.00	70	.000	.000	.000	.000	4
7	3	60	.17	.17	.00	0	.0	.0	13.4	0	.000	.000	.000	.19	.19	5.29	42.	.000	.00	70	.000	.000	.000	.000	4
7	3	120	.17	.17	.00	0	.0	.0	22.3	0	.000	.000	.000	.34	.34	5.21	41.	.000	.00	70	.000	.000	.000	.000	4
7	3	180	.17	.17	.00	0	.0	.0	25.6	0	.000	.000	.000	.40	.40	5.11	40.	.000	.00	70	.000	.000	.000	.000	4
7	3	240	.17	.17	.00	0	.0	.0	19.0	0	.000	.000	.000	.28	.28	5.04	39.	.000	.00	70	.000	.000	.000	.000	4
7	4	60	.06	.06	.00	0	.0	.0	9.4	0	.000	.000	.000	.17	.17	4.99	38.	.000	.00	70	.000	.000	.000	.000	4
7	4	120	.06	.06	.00	0	.0	.0	16.8	0	.000	.000	.000	.33	.33	4.91	38.	.000	.00	70	.000	.000	.000	.000	4
7	4	180	.06	.06	.00	0	.0	.0	19.5	0	.000	.000	.000	.40	.40	4.81	37.	.000	.00	70	.000	.000	.000	.000	4
7	4	240	.06	.06	.00	0	.0	.0	13.8	0	.000	.000	.000	.27	.27	4.74	37.	.000	.00	70	.000	.000	.000	.000	4
7	5	60	.03	.03	.00	0	.0	.0	8.0	0	.000	.000	.000	.16	.16	4.70	36.	.000	.00	70	.000	.000	.000	.000	4

BASIN ZONE MM-YY AREA ELEV PP% TINTMX

GULLMUSK 4 7 8510320.0 415. 100.0 .51

COMPUTED LOWER CHURCHILL DRAINAGE

MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F
7	5	120	.03	.03	.00	0	.0	.0	20.4	0	.000	.000	.000	.45	.45	4.59	36.	.000	.00	70	.000	.000	.000	.000	.000	4
7	5	180	.03	.03	.00	0	.0	.0	25.1	0	.000	.000	.000	.57	.57	4.45	35.	.000	.00	70	.000	.000	.000	.000	.000	4
7	5	240	.03	.03	.00	0	.0	.0	15.4	0	.000	.000	.000	.33	.33	4.36	33.	.000	.00	70	.000	.000	.000	.000	.000	4
7	6	60	.04	.04	.00	0	.0	.0	10.0	0	.000	.000	.000	.20	.20	4.32	33.	.000	.00	70	.000	.000	.000	.000	.000	4
7	6	120	.04	.04	.00	0	.0	.0	15.9	0	.000	.000	.000	.33	.33	4.23	32.	.000	.00	70	.000	.000	.000	.000	.000	4
7	6	180	.04	.04	.00	0	.0	.0	17.5	0	.000	.000	.000	.36	.36	4.14	32.	.000	.00	70	.000	.000	.000	.000	.000	4
7	6	240	.04	.04	.00	0	.0	.0	13.6	0	.000	.000	.000	.28	.28	4.07	31.	.000	.00	70	.000	.000	.000	.000	.000	4
7	7	60	.00	.00	.00	0	.0	.0	8.3	0	.000	.000	.000	.17	.17	4.03	30.	.000	.00	70	.000	.000	.000	.000	.000	4
7	7	120	.00	.00	.00	0	.0	.0	15.7	0	.000	.000	.000	.36	.36	3.94	30.	.000	.00	70	.000	.000	.000	.000	.000	4
7	7	180	.00	.00	.00	0	.0	.0	18.0	0	.000	.000	.000	.42	.42	3.84	29.	.000	.00	70	.000	.000	.000	.000	.000	4
7	7	240	.00	.00	.00	0	.0	.0	12.0	0	.000	.000	.000	.27	.27	3.77	28.	.000	.00	70	.000	.000	.000	.000	.000	4
7	8	60	.26	.26	.00	0	.0	.0	5.7	0	.000	.000	.000	.06	.06	3.75	28.	.000	.00	70	.000	.000	.000	.000	.000	4
7	8	120	.26	.26	.00	0	.0	.0	11.5	0	.000	.000	.000	.12	.12	3.72	28.	.000	.00	70	.000	.000	.000	.000	.000	4
7	8	180	.26	.04	.00	0	.0	.0	13.5	0	.000	.000	.218	.15	.15	3.85	27.	.060	.04	70	.009	.009	.033	.008	4	
7	8	240	.26	.04	.00	0	.0	.0	9.1	0	.000	.000	.221	.09	.09	3.98	28.	.063	.07	67	.010	.010	.034	.008	4	
7	9	60	.01	.01	.00	0	.0	.0	5.4	0	.000	.000	.000	.11	.11	3.95	30.	.000	.06	65	.000	.000	.000	.000	.000	4
7	9	120	.01	.01	.00	0	.0	.0	11.7	0	.000	.000	.000	.25	.25	3.89	29.	.000	.05	66	.000	.000	.000	.000	.000	4
7	9	180	.01	.01	.00	0	.0	.0	14.0	0	.000	.000	.000	.31	.31	3.81	29.	.000	.04	66	.000	.000	.000	.000	.000	4
7	9	240	.01	.01	.00	0	.0	.0	8.7	0	.000	.000	.000	.18	.18	3.77	28.	.000	.04	67	.000	.000	.000	.000	.000	4
7	10	60	.01	.01	.00	0	.0	.0	7.4	0	.000	.000	.000	.15	.15	3.73	28.	.000	.03	67	.000	.000	.000	.000	.000	4

7 10 120	.01	.01	.00	0	.0	.0	19.7	0	.000	.000	.000	.45	.45	3.62	27.	.000	.03	68	.000	.000	.000	.000	4
7 10 180	.01	.01	.00	0	.0	.0	24.0	0	.000	.000	.000	.57	.57	3.48	26.	.000	.02	68	.000	.000	.000	.000	4
7 10 240	.01	.01	.00	0	.0	.0	14.7	0	.000	.000	.000	.32	.32	3.39	25.	.000	.02	68	.000	.000	.000	.000	4
7 11 60	.48	.48	.00	0	.0	.0	10.6	0	.000	.000	.000	.03	.03	3.39	25.	.000	.02	68	.000	.000	.000	.000	4
7 11 120	.48	.04	.00	0	.0	.0	16.0	0	.000	.000	.436	.05	.05	3.70	25.	.107	.08	69	.017	.017	.059	.015	4
7 11 180	.48	.01	.00	0	.0	.0	18.0	0	.000	.000	.465	.06	.06	4.03	27.	.126	.14	64	.022	.022	.066	.016	4
7 11 240	.48	.01	.00	0	.0	.0	13.3	0	.000	.000	.463	.04	.04	4.34	30.	.139	.21	60	.027	.027	.067	.017	4
7 12 60	.07	.01	.00	0	.0	.0	9.3	0	.000	.000	.056	.17	.17	4.34	33.	.018	.19	56	.004	.004	.008	.002	4
7 12 120	.07	.04	.00	0	.0	.0	15.9	0	.000	.000	.025	.30	.30	4.28	33.	.008	.16	58	.002	.002	.004	.001	4
7 12 180	.07	.07	.00	0	.0	.0	18.9	0	.000	.000	.000	.36	.36	4.19	32.	.000	.14	59	.000	.000	.000	.000	4
7 12 240	.07	.07	.00	0	.0	.0	13.6	0	.000	.000	.000	.25	.25	4.13	31.	.000	.12	61	.000	.000	.000	.000	4
7 13 60	.09	.09	.00	0	.0	.0	7.3	0	.000	.000	.000	.12	.12	4.10	31.	.000	.10	62	.000	.000	.000	.000	4
7 13 120	.09	.03	.00	0	.0	.0	14.2	0	.000	.000	.061	.24	.24	4.08	31.	.019	.10	63	.003	.003	.009	.002	4
7 13 180	.09	.06	.00	0	.0	.0	16.5	0	.000	.000	.033	.29	.29	4.03	30.	.010	.09	63	.002	.002	.005	.001	4
7 13 240	.09	.07	.00	0	.0	.0	10.9	0	.000	.000	.022	.18	.18	4.00	30.	.007	.08	64	.001	.001	.003	.001	4
7 14 60	.53	.05	.00	0	.0	.0	9.0	0	.000	.000	.482	.02	.02	4.33	30.	.143	.15	65	.025	.025	.074	.019	4
7 14 120	.53	.00	.00	0	.0	.0	16.3	0	.000	.000	.522	.04	.04	4.68	33.	.170	.23	60	.034	.034	.082	.020	4
7 14 180	.53	.01	.00	0	.0	.0	18.9	0	.000	.000	.518	.04	.04	5.00	35.	.183	.31	55	.041	.041	.081	.020	4
7 14 240	.53	.01	.00	0	.0	.0	13.3	0	.000	.000	.516	.03	.03	5.31	38.	.197	.38	50	.049	.049	.079	.020	4
7 15 60	.09	.01	.00	0	.0	.0	8.4	0	.000	.000	.079	.14	.14	5.32	41.	.033	.35	45	.009	.009	.012	.003	4
7 15 120	.09	.03	.00	0	.0	.0	14.8	0	.000	.000	.052	.26	.26	5.29	42.	.021	.31	47	.006	.006	.008	.002	4
7 15 180	.09	.07	.00	0	.0	.0	16.8	0	.000	.000	.021	.30	.30	5.23	41.	.009	.26	50	.002	.002	.003	.001	4
7 15 240	.09	.07	.00	0	.0	.0	12.1	0	.000	.000	.011	.21	.21	5.18	40.	.005	.23	53	.001	.001	.002	.000	4
7 16 60	.64	.05	.00	0	.0	.0	9.8	0	.000	.000	.591	.02	.02	5.53	40.	.236	.34	55	.052	.052	.105	.026	4
7 16 120	.64	.01	.00	0	.0	.0	12.1	0	.000	.000	.638	.03	.03	5.88	44.	.280	.46	48	.072	.072	.108	.027	4
7 16 180	.64	.01	.00	0	.0	.0	12.4	0	.000	.000	.636	.03	.03	6.21	48.	.304	.57	40	.090	.090	.099	.025	4
7 16 240	.64	.01	.00	0	.0	.0	11.1	0	.000	.000	.636	.02	.02	6.51	51.	.327	.69	36	.104	.104	.095	.024	4
7 17 60	.00	.00	.00	0	.0	.0	7.7	0	.000	.000	.000	.16	.16	6.47	55.	.000	.58	33	.000	.000	.000	.000	4
7 17 120	.00	.00	.00	0	.0	.0	14.8	0	.000	.000	.000	.33	.33	6.39	54.	.000	.49	36	.000	.000	.000	.000	4
7 17 180	.00	.00	.00	0	.0	.0	17.1	0	.000	.000	.000	.38	.38	6.30	53.	.000	.42	38	.000	.000	.000	.000	4
7 17 240	.00	.00	.00	0	.0	.0	11.4	0	.000	.000	.000	.24	.24	6.24	52.	.000	.35	43	.000	.000	.000	.000	4
7 18 60	.01	.01	.00	0	.0	.0	6.7	0	.000	.000	.000	.13	.13	6.20	52.	.000	.30	47	.000	.000	.000	.000	4
7 18 120	.01	.01	.00	0	.0	.0	18.3	0	.000	.000	.000	.40	.40	6.10	51.	.000	.25	50	.000	.000	.000	.000	4
7 18 180	.01	.01	.00	0	.0	.0	22.6	0	.000	.000	.000	.52	.52	5.97	50.	.000	.21	53	.000	.000	.000	.000	4

BASIN ZONE MM-YY AREA ELEV PP% TINTMX

GULLMUSK 4 7 8510320.0 415. 100.0 .51										COMPUTED LOWER CHURCHILL DRAINAGE																
MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F
7	18	240	.01	.01	.00	0	.0	.0	14.0	0	.000	.000	.000	.30	.30	5.90	49.	.000	.18	56	.000	.000	.000	.000	.000	4
7	19	60	.06	.06	.00	0	.0	.0	11.6	0	.000	.000	.000	.21	.21	5.84	48.	.000	.15	58	.000	.000	.000	.000	.000	4
7	19	120	.06	.06	.00	0	.0	.0	18.2	0	.000	.000	.000	.35	.35	5.76	47.	.000	.13	60	.000	.000	.000	.000	.000	4
7	19	180	.06	.06	.00	0	.0	.0	20.5	0	.000	.000	.000	.40	.40	5.66	46.	.000	.11	61	.000	.000	.000	.000	.000	4
7	19	240	.06	.06	.00	0	.0	.0	15.9	0	.000	.000	.000	.30	.30	5.58	45.	.000	.09	63	.000	.000	.000	.000	.000	4
7	20	60	.09	.09	.00	0	.0	.0	8.3	0	.000	.000	.000	.13	.13	5.55	44.	.000	.08	64	.000	.000	.000	.000	.000	4
7	20	120	.09	.09	.00	0	.0	.0	16.3	0	.000	.000	.000	.28	.28	5.48	44.	.000	.07	64	.000	.000	.000	.000	.000	4
7	20	180	.09	.09	.00	0	.0	.0	19.6	0	.000	.000	.000	.35	.35	5.39	43.	.000	.06	65	.000	.000	.000	.000	.000	4
7	20	240	.09	.09	.00	0	.0	.0	13.3	0	.000	.000	.000	.22	.22	5.34	42.	.000	.05	66	.000	.000	.000	.000	.000	4

7 21 60	.05	.05	.00	0	.0	.0	5.6	0	.000	.000	.000	.10	.10	5.31	42.	.000	.04	66	.000	.000	.000	.000	4
7 21 120	.05	.05	.00	0	.0	.0	14.3	0	.000	.000	.000	.27	.27	5.24	41.	.000	.03	67	.000	.000	.000	.000	4
7 21 180	.05	.05	.00	0	.0	.0	17.3	0	.000	.000	.000	.33	.33	5.16	41.	.000	.03	67	.000	.000	.000	.000	4
7 21 240	.05	.05	.00	0	.0	.0	10.6	0	.000	.000	.000	.19	.19	5.11	40.	.000	.02	68	.000	.000	.000	.000	4
7 22 60	.28	.28	.00	0	.0	.0	4.6	0	.000	.000	.000	.04	.04	5.10	39.	.000	.02	68	.000	.000	.000	.000	4
7 22 120	.28	.13	.00	0	.0	.0	11.9	0	.000	.000	.151	.11	.11	5.17	39.	.059	.05	68	.009	.009	.032	.008	4
7 22 180	.28	.03	.00	0	.0	.0	14.9	0	.000	.000	.252	.15	.15	5.28	40.	.100	.11	66	.017	.017	.053	.013	4
7 22 240	.28	.04	.00	0	.0	.0	8.9	0	.000	.000	.244	.08	.08	5.40	41.	.100	.15	63	.018	.018	.050	.013	4
7 23 60	.27	.02	.00	0	.0	.0	9.6	0	.000	.000	.252	.09	.09	5.53	42.	.107	.19	60	.021	.021	.051	.013	4
7 23 120	.27	.02	.00	0	.0	.0	14.2	0	.000	.000	.249	.14	.14	5.63	44.	.109	.23	57	.023	.023	.050	.013	4
7 23 180	.27	.04	.00	0	.0	.0	15.8	0	.000	.000	.237	.16	.16	5.72	45.	.106	.26	55	.024	.024	.047	.012	4
7 23 240	.27	.04	.00	0	.0	.0	12.2	0	.000	.000	.232	.12	.12	5.82	46.	.107	.29	53	.025	.025	.045	.011	4
7 24 60	.02	.02	.00	0	.0	.0	8.3	0	.000	.000	.000	.16	.16	5.78	47.	.000	.24	51	.000	.000	.000	.000	4
7 24 120	.02	.02	.00	0	.0	.0	14.6	0	.000	.000	.000	.30	.30	5.70	47.	.000	.21	54	.000	.000	.000	.000	4
7 24 180	.02	.02	.00	0	.0	.0	17.6	0	.000	.000	.000	.37	.37	5.61	46.	.000	.17	56	.000	.000	.000	.000	4
7 24 240	.02	.02	.00	0	.0	.0	12.3	0	.000	.000	.000	.25	.25	5.55	45.	.000	.15	58	.000	.000	.000	.000	4
7 25 60	.16	.16	.00	0	.0	.0	13.3	0	.000	.000	.000	.18	.18	5.50	44.	.000	.12	60	.000	.000	.000	.000	4
7 25 120	.16	.10	.00	0	.0	.0	15.6	0	.000	.000	.051	.22	.22	5.48	44.	.022	.12	62	.004	.004	.011	.003	4
7 25 180	.16	.05	.00	0	.0	.0	16.6	0	.000	.000	.100	.23	.23	5.48	43.	.043	.13	62	.008	.008	.022	.005	4
7 25 240	.16	.06	.00	0	.0	.0	14.6	0	.000	.000	.096	.20	.20	5.48	43.	.042	.13	61	.008	.008	.021	.005	4
7 26 60	.19	.05	.00	0	.0	.0	11.0	0	.000	.000	.135	.14	.14	5.52	43.	.058	.15	61	.011	.011	.029	.007	4
7 26 120	.19	.03	.00	0	.0	.0	14.6	0	.000	.000	.152	.19	.19	5.56	44.	.066	.17	60	.013	.013	.032	.008	4
7 26 180	.19	.05	.00	0	.0	.0	16.3	0	.000	.000	.139	.21	.21	5.59	44.	.061	.18	59	.012	.012	.029	.007	4
7 26 240	.19	.05	.00	0	.0	.0	13.3	0	.000	.000	.133	.17	.17	5.62	44.	.059	.19	58	.012	.012	.028	.007	4
7 27 60	.41	.04	.00	0	.0	.0	8.4	0	.000	.000	.367	.04	.04	5.81	45.	.164	.26	57	.034	.034	.076	.019	4
7 27 120	.41	.01	.00	0	.0	.0	12.8	0	.000	.000	.399	.07	.07	6.00	47.	.187	.34	53	.044	.044	.080	.020	4
7 27 180	.41	.02	.00	0	.0	.0	13.8	0	.000	.000	.392	.07	.07	6.19	49.	.193	.40	48	.050	.050	.075	.019	4
7 27 240	.41	.02	.00	0	.0	.0	11.1	0	.000	.000	.391	.06	.06	6.36	51.	.200	.46	44	.056	.056	.071	.018	4
7 28 60	.20	.01	.00	0	.0	.0	8.1	0	.000	.000	.183	.09	.09	6.43	53.	.097	.45	40	.029	.029	.031	.008	4
7 28 120	.20	.02	.00	0	.0	.0	11.4	0	.000	.000	.174	.14	.14	6.47	54.	.094	.44	41	.028	.028	.031	.008	4
7 28 180	.20	.03	.00	0	.0	.0	13.1	0	.000	.000	.163	.16	.16	6.51	54.	.088	.43	41	.026	.026	.030	.007	4
7 28 240	.20	.04	.00	0	.0	.0	10.1	0	.000	.000	.157	.12	.12	6.55	55.	.086	.41	42	.025	.025	.029	.007	4
7 29 60	.30	.03	.00	0	.0	.0	7.8	0	.000	.000	.270	.06	.06	6.65	55.	.149	.44	43	.042	.042	.052	.013	4
7 29 120	.30	.02	.00	0	.0	.0	11.3	0	.000	.000	.284	.10	.10	6.75	56.	.160	.47	41	.047	.047	.053	.013	4
7 29 180	.30	.02	.00	0	.0	.0	12.9	0	.000	.000	.276	.11	.11	6.84	57.	.158	.50	39	.048	.048	.050	.013	4
7 29 240	.30	.03	.00	0	.0	.0	10.4	0	.000	.000	.272	.09	.09	6.93	58.	.159	.52	38	.049	.049	.049	.012	4
7 30 60	.15	.02	.00	0	.0	.0	7.7	0	.000	.000	.126	.10	.10	6.96	59.	.075	.48	37	.023	.023	.022	.006	4
7 30 120	.15	.02	.00	0	.0	.0	13.0	0	.000	.000	.123	.18	.18	6.96	60.	.074	.46	38	.022	.022	.023	.006	4
7 30 180	.15	.04	.00	0	.0	.0	16.0	0	.000	.000	.103	.23	.23	6.95	60.	.062	.42	40	.018	.018	.020	.005	4
7 30 240	.15	.06	.00	0	.0	.0	11.0	0	.000	.000	.092	.15	.15	6.95	60.	.055	.39	42	.016	.016	.019	.005	4
7 31 60	.03	.03	.00	0	.0	.0	5.3	0	.000	.000	.000	.10	.10	6.92	60.	.000	.33	44	.000	.000	.000	.000	4
7 31 120	.03	.03	.00	0	.0	.0	13.6	0	.000	.000	.000	.26	.26	6.86	59.	.000	.28	48	.000	.000	.000	.000	4
7 31 180	.03	.03	.00	0	.0	.0	16.6	0	.000	.000	.000	.33	.33	6.77	59.	.000	.24	52	.000	.000	.000	.000	4
7 31 240	.03	.03	.00	0	.0	.0	10.6	0	.000	.000	.000	.20	.20	6.72	58.	.000	.20	54	.000	.000	.000	.000	4
18.82																							
5.92																							
.000																							
12.895																							
6.67																							
5.504																							
1.345																							
2.250																							
1.345																							
.563																							

BASIN ZONE MM-YY AREA ELEV PP% TINTMX										COMPUTED LOWER CHURCHILL DRAINAGE																						
GULLMUSK		4	8	8510320.0	415.	100.0	.51																									
MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F						
8	1	60	.00	.00	.00	0	.0	.0	4.6	0	.000	.000	.000	.09	.09	6.70	57.	.000	.17	57	.000	.000	.000	.000	.000	4						
8	1	120	.00	.00	.00	0	.0	.0	14.9	0	.000	.000	.000	.31	.31	6.62	57.	.000	.14	59	.000	.000	.000	.000	.000	4						
8	1	180	.00	.00	.00	0	.0	.0	18.6	0	.000	.000	.000	.40	.40	6.52	56.	.000	.12	60	.000	.000	.000	.000	.000	4						
8	1	240	.00	.00	.00	0	.0	.0	10.6	0	.000	.000	.000	.21	.21	6.47	55.	.000	.10	62	.000	.000	.000	.000	.000	4						
8	2	60	.05	.05	.00	0	.0	.0	7.9	0	.000	.000	.000	.13	.13	6.44	54.	.000	.09	63	.000	.000	.000	.000	.000	4						
8	2	120	.05	.05	.00	0	.0	.0	15.9	0	.000	.000	.000	.29	.29	6.36	54.	.000	.07	64	.000	.000	.000	.000	.000	4						
8	2	180	.05	.05	.00	0	.0	.0	19.9	0	.000	.000	.000	.38	.38	6.27	53.	.000	.06	65	.000	.000	.000	.000	.000	4						
8	2	240	.05	.05	.00	0	.0	.0	12.9	0	.000	.000	.000	.23	.23	6.21	52.	.000	.05	66	.000	.000	.000	.000	.000	4						
8	3	60	.00	.00	.00	0	.0	.0	12.2	0	.000	.000	.000	.25	.25	6.15	51.	.000	.04	66	.000	.000	.000	.000	.000	4						
8	3	120	.00	.00	.00	0	.0	.0	21.9	0	.000	.000	.000	.48	.48	6.03	51.	.000	.04	67	.000	.000	.000	.000	.000	4						
8	3	180	.00	.00	.00	0	.0	.0	25.9	0	.000	.000	.000	.58	.58	5.88	49.	.000	.03	67	.000	.000	.000	.000	.000	4						
8	3	240	.00	.00	.00	0	.0	.0	17.9	0	.000	.000	.000	.38	.38	5.79	48.	.000	.03	67	.000	.000	.000	.000	.000	4						
8	4	60	.07	.07	.00	0	.0	.0	5.4	0	.000	.000	.000	.09	.09	5.77	47.	.000	.02	68	.000	.000	.000	.000	.000	4						
8	4	120	.07	.07	.00	0	.0	.0	13.6	0	.000	.000	.000	.23	.23	5.71	46.	.000	.02	68	.000	.000	.000	.000	.000	4						
8	4	180	.07	.07	.00	0	.0	.0	16.9	0	.000	.000	.000	.30	.30	5.63	46.	.000	.02	68	.000	.000	.000	.000	.000	4						
8	4	240	.07	.07	.00	0	.0	.0	10.3	0	.000	.000	.000	.17	.17	5.59	45.	.000	.01	68	.000	.000	.000	.000	.000	4						
8	5	60	.01	.01	.00	0	.0	.0	4.4	0	.000	.000	.000	.08	.08	5.57	45.	.000	.01	69	.000	.000	.000	.000	.000	4						
8	5	120	.01	.01	.00	0	.0	.0	15.7	0	.000	.000	.000	.31	.31	5.49	44.	.000	.01	69	.000	.000	.000	.000	.000	4						
8	5	180	.01	.01	.00	0	.0	.0	19.7	0	.000	.000	.000	.40	.40	5.39	43.	.000	.01	69	.000	.000	.000	.000	.000	4						
8	5	240	.01	.01	.00	0	.0	.0	10.7	0	.000	.000	.000	.20	.20	5.34	42.	.000	.01	69	.000	.000	.000	.000	.000	4						
8	6	60	.12	.12	.00	0	.0	.0	11.0	0	.000	.000	.000	.15	.15	5.30	42.	.000	.01	69	.000	.000	.000	.000	.000	4						
8	6	120	.12	.12	.00	0	.0	.0	18.7	0	.000	.000	.000	.27	.27	5.23	41.	.000	.01	69	.000	.000	.000	.000	.000	4						
8	6	180	.12	.12	.00	0	.0	.0	21.7	0	.000	.000	.000	.33	.33	5.15	40.	.000	.00	69	.000	.000	.000	.000	.000	4						
8	6	240	.12	.12	.00	0	.0	.0	15.7	0	.000	.000	.000	.23	.23	5.09	40.	.000	.00	69	.000	.000	.000	.000	.000	4						
8	7	60	.10	.10	.00	0	.0	.0	12.5	0	.000	.000	.000	.19	.19	5.05	39.	.000	.00	69	.000	.000	.000	.000	.000	4						
8	7	120	.10	.10	.00	0	.0	.0	21.2	0	.000	.000	.000	.34	.34	4.96	39.	.000	.00	69	.000	.000	.000	.000	.000	4						
8	7	180	.10	.10	.00	0	.0	.0	23.9	0	.000	.000	.000	.39	.39	4.86	38.	.000	.00	69	.000	.000	.000	.000	.000	4						
8	7	240	.10	.10	.00	0	.0	.0	17.5	0	.000	.000	.000	.27	.27	4.79	37.	.000	.00	69	.000	.000	.000	.000	.000	4						
8	8	60	.00	.00	.00	0	.0	.0	14.5	0	.000	.000	.000	.29	.29	4.72	36.	.000	.00	69	.000	.000	.000	.000	.000	4						
8	8	120	.00	.00	.00	0	.0	.0	24.0	0	.000	.000	.000	.52	.52	4.59	36.	.000	.00	69	.000	.000	.000	.000	.000	4						
8	8	180	.00	.00	.00	0	.0	.0	27.6	0	.000	.000	.000	.61	.61	4.44	35.	.000	.00	69	.000	.000	.000	.000	.000	4						
8	8	240	.00	.00	.00	0	.0	.0	20.4	0	.000	.000	.000	.43	.43	4.33	33.	.000	.00	69	.000	.000	.000	.000	.000	4						
8	9	60	.03	.03	.00	0	.0	.0	10.6	0	.000	.000	.000	.19	.19	4.29	33.	.000	.00	69	.000	.000	.000	.000	.000	4						
8	9	120	.03	.03	.00	0	.0	.0	17.0	0	.000	.000	.000	.32	.32	4.21	32.	.000	.00	69	.000	.000	.000	.000	.000	4						
8	9	180	.03	.03	.00	0	.0	.0	19.0	0	.000	.000	.000	.36	.36	4.11	31.	.000	.00	69	.000	.000	.000	.000	.000	4						
8	9	240	.03	.03	.00	0	.0	.0	14.3	0	.000	.000	.000	.27	.27	4.05	31.	.000	.00	69	.000	.000	.000	.000	.000	4						
8	10	60	.00	.00	.00	0	.0	.0	9.9	0	.000	.000	.000	.19	.19	4.00	30.	.000	.00	69	.000	.000	.000	.000	.000	4						
8	10	120	.00	.00	.00	0	.0	.0	21.7	0	.000	.000	.000	.45	.45	3.89	30.	.000	.00	69	.000	.000	.000	.000	.000	4						
8	10	180	.00	.00	.00	0	.0	.0	25.7	0	.000	.000	.000	.55	.55	3.75	29.	.000	.00	69	.000	.000	.000	.000	.000	4						
8	10	240	.00	.00	.00	0	.0	.0	17.3	0	.000	.000	.000	.35	.35	3.66	28.	.000	.00	69	.000	.000	.000	.000	.000	4						
8	11	60	.22	.22	.00	0	.0	.0	11.2	0	.000	.000	.000	.12	.12	3.63	27.	.000	.00	69	.000	.000	.000	.000	.000	4						
8	11	120	.22	.22	.00	0	.0	.0	21.0	0	.000	.000	.000	.24	.24	3.57	27.	.000	.00	69	.000	.000	.000	.000	.000	4						
8	11	180	.22	.17	.00	0	.0	.0	24.7	0	.000	.000	.051	.29	.29	3.54	26.	.013	.01	69	.002	.002	.007	.002	.002	4						
8	11	240	.22	.07	.00	0	.0	.0	16.6	0	.000	.000	.144	.18	.18	3.60	26.	.037	.03	69	.006	.006	.021	.005	.005	4						

8 12 60	.24	.05	.00	0	.0	.0	8.0	0	.000	.000	.194	.07	.07	3.72	26.	.051	.06	68	.008	.008	.028	.007	4
8 12 120	.24	.02	.00	0	.0	.0	13.3	0	.000	.000	.221	.13	.13	3.85	27.	.061	.09	66	.010	.010	.032	.008	4
8 12 180	.24	.03	.00	0	.0	.0	15.6	0	.000	.000	.206	.16	.16	3.96	28.	.059	.11	64	.010	.010	.030	.008	4
8 12 240	.24	.04	.00	0	.0	.0	11.3	0	.000	.000	.200	.11	.11	4.07	29.	.059	.13	63	.011	.011	.030	.007	4
8 13 60	.13	.03	.00	0	.0	.0	6.7	0	.000	.000	.104	.08	.08	4.12	30.	.032	.13	61	.006	.006	.016	.004	4
8 13 120	.13	.02	.00	0	.0	.0	10.8	0	.000	.000	.111	.14	.14	4.17	31.	.034	.13	61	.007	.007	.017	.004	4
8 13 180	.13	.04	.00	0	.0	.0	12.2	0	.000	.000	.097	.16	.16	4.19	31.	.030	.13	61	.006	.006	.015	.004	4
8 13 240	.13	.04	.00	0	.0	.0	9.1	0	.000	.000	.092	.12	.12	4.23	31.	.029	.13	61	.005	.005	.014	.004	4
8 14 60	.00	.00	.00	0	.0	.0	3.7	0	.000	.000	.000	.07	.07	4.21	32.	.000	.11	61	.000	.000	.000	.000	4
8 14 120	.00	.00	.00	0	.0	.0	11.1	0	.000	.000	.000	.21	.21	4.15	31.	.000	.09	63	.000	.000	.000	.000	4

BASIN		ZONE	MM-YY	AREA	ELEV	PP%	TINTMX	COMPUTED LOWER CHURCHILL DRAINAGE																		
GULLMUSK		4	8 8510320.0	415.	100.0	.51																				
MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F
8	14	180	.00	.00	.00	0	.0	.0	13.1	0	.000	.000	.000	.25	.25	4.09	31.	.000	.08	64	.000	.000	.000	.000	.000	4
8	14	240	.00	.00	.00	0	.0	.0	8.1	0	.000	.000	.000	.15	.15	4.06	30.	.000	.06	65	.000	.000	.000	.000	.000	4
8	15	60	.00	.00	.00	0	.0	.0	4.1	0	.000	.000	.000	.08	.08	4.04	30.	.000	.05	65	.000	.000	.000	.000	.000	4
8	15	120	.00	.00	.00	0	.0	.0	10.8	0	.000	.000	.000	.20	.20	3.99	30.	.000	.05	66	.000	.000	.000	.000	.000	4
8	15	180	.00	.00	.00	0	.0	.0	13.5	0	.000	.000	.000	.26	.26	3.92	30.	.000	.04	67	.000	.000	.000	.000	.000	4
8	15	240	.00	.00	.00	0	.0	.0	8.1	0	.000	.000	.000	.14	.14	3.88	29.	.000	.03	67	.000	.000	.000	.000	.000	4
8	16	60	.09	.09	.00	0	.0	.0	6.0	0	.000	.000	.000	.08	.08	3.86	29.	.000	.03	67	.000	.000	.000	.000	.000	4
8	16	120	.09	.09	.00	0	.0	.0	11.1	0	.000	.000	.000	.16	.16	3.82	29.	.000	.02	68	.000	.000	.000	.000	.000	4
8	16	180	.09	.09	.00	0	.0	.0	13.1	0	.000	.000	.000	.19	.19	3.77	28.	.000	.02	68	.000	.000	.000	.000	.000	4
8	16	240	.09	.09	.00	0	.0	.0	8.7	0	.000	.000	.000	.12	.12	3.74	28.	.000	.02	68	.000	.000	.000	.000	.000	4
8	17	60	.02	.02	.00	0	.0	.0	8.7	0	.000	.000	.000	.15	.15	3.71	28.	.000	.01	68	.000	.000	.000	.000	.000	4
8	17	120	.02	.02	.00	0	.0	.0	11.4	0	.000	.000	.000	.20	.20	3.66	27.	.000	.01	69	.000	.000	.000	.000	.000	4
8	17	180	.02	.02	.00	0	.0	.0	12.4	0	.000	.000	.000	.22	.22	3.60	27.	.000	.01	69	.000	.000	.000	.000	.000	4
8	17	240	.02	.02	.00	0	.0	.0	10.4	0	.000	.000	.000	.18	.18	3.55	26.	.000	.01	69	.000	.000	.000	.000	.000	4
8	18	60	.01	.01	.00	0	.0	.0	7.3	0	.000	.000	.000	.13	.13	3.52	26.	.000	.01	69	.000	.000	.000	.000	.000	4
8	18	120	.01	.01	.00	0	.0	.0	12.4	0	.000	.000	.000	.23	.23	3.47	26.	.000	.01	69	.000	.000	.000	.000	.000	4
8	18	180	.01	.01	.00	0	.0	.0	14.1	0	.000	.000	.000	.26	.26	3.40	25.	.000	.01	69	.000	.000	.000	.000	.000	4
8	18	240	.01	.01	.00	0	.0	.0	10.0	0	.000	.000	.000	.18	.18	3.35	25.	.000	.00	69	.000	.000	.000	.000	.000	4
8	19	60	.00	.00	.00	0	.0	.0	6.2	0	.000	.000	.000	.11	.11	3.33	24.	.000	.00	69	.000	.000	.000	.000	.000	4
8	19	120	.00	.00	.00	0	.0	.0	16.0	0	.000	.000	.000	.31	.31	3.25	24.	.000	.00	69	.000	.000	.000	.000	.000	4
8	19	180	.00	.00	.00	0	.0	.0	19.7	0	.000	.000	.000	.39	.39	3.15	23.	.000	.00	69	.000	.000	.000	.000	.000	4
8	19	240	.00	.00	.00	0	.0	.0	11.6	0	.000	.000	.000	.21	.21	3.10	23.	.000	.00	69	.000	.000	.000	.000	.000	4
8	20	60	.08	.08	.00	0	.0	.0	9.7	0	.000	.000	.000	.14	.14	3.06	22.	.000	.00	69	.000	.000	.000	.000	.000	4
8	20	120	.08	.08	.00	0	.0	.0	13.6	0	.000	.000	.000	.21	.21	3.01	22.	.000	.00	69	.000	.000	.000	.000	.000	4
8	20	180	.08	.08	.00	0	.0	.0	14.9	0	.000	.000	.000	.23	.23	2.95	21.	.000	.00	69	.000	.000	.000	.000	.000	4
8	20	240	.08	.08	.00	0	.0	.0	12.0	0	.000	.000	.000	.18	.18	2.91	21.	.000	.00	69	.000	.000	.000	.000	.000	4
8	21	60	.29	.29	.00	0	.0	.0	8.7	0	.000	.000	.000	.07	.07	2.89	20.	.000	.00	69	.000	.000	.000	.000	.000	4
8	21	120	.29	.11	.00	0	.0	.0	13.8	0	.000	.000	.180	.11	.11	3.01	20.	.037	.02	69	.005	.005	.020	.005	4	
8	21	180	.29	.03	.00	0	.0	.0	15.8	0	.000	.000	.264	.13	.13	3.18	21.	.056	.05	68	.009	.009	.031	.008	4	
8	21	240	.29	.03	.00	0	.0	.0	11.4	0	.000	.000	.260	.09	.09	3.36	23.	.059	.08	66	.010	.010	.031	.008	4	
8	22	60	.02	.02	.00	0	.0	.0	6.7	0	.000	.000	.000	.11	.11	3.34	24.	.000	.07	64	.000	.000	.000	.000	.000	4
8	22	120	.02	.02	.00	0	.0	.0	10.7	0	.000	.000	.000	.18	.18	3.29	24.	.000	.06	65	.000	.000	.000	.000	.000	4
8	22	180	.02	.02	.00	0	.0	.0	12.0	0	.000	.000	.000	.21	.21	3.24	24.	.000	.05	66	.000	.000	.000	.000	.000	4
8	22	240	.02	.02	.00	0	.0	.0	9.7	0	.000	.000	.000	.16	.16	3.20	23.	.000	.04	66	.000	.000	.000	.000	.000	4

8	23	60	.02	.02	.00	0	.0	.0	8.7	0	.000	.000	.000	.14	.14	3.16	23.	.000	.04	67	.000	.000	.000	.000	4
8	23	120	.02	.02	.00	0	.0	.0	13.7	0	.000	.000	.000	.24	.24	3.10	23.	.000	.03	67	.000	.000	.000	.000	4
8	23	180	.02	.02	.00	0	.0	.0	15.7	0	.000	.000	.000	.28	.28	3.03	22.	.000	.03	68	.000	.000	.000	.000	4
8	23	240	.02	.02	.00	0	.0	.0	11.7	0	.000	.000	.000	.20	.20	2.98	21.	.000	.02	68	.000	.000	.000	.000	4
8	24	60	.02	.02	.00	0	.0	.0	7.7	0	.000	.000	.000	.12	.12	2.95	21.	.000	.02	68	.000	.000	.000	.000	4
8	24	120	.02	.02	.00	0	.0	.0	14.4	0	.000	.000	.000	.25	.25	2.89	21.	.000	.02	68	.000	.000	.000	.000	4
8	24	180	.02	.02	.00	0	.0	.0	17.4	0	.000	.000	.000	.31	.31	2.81	20.	.000	.01	69	.000	.000	.000	.000	4
8	24	240	.02	.02	.00	0	.0	.0	11.7	0	.000	.000	.000	.20	.20	2.76	20.	.000	.01	69	.000	.000	.000	.000	4
8	25	60	.03	.03	.00	0	.0	.0	8.6	0	.000	.000	.000	.14	.13	2.73	19.	.000	.01	69	.000	.000	.000	.000	4
8	25	120	.03	.03	.00	0	.0	.0	17.0	0	.000	.000	.000	.29	.28	2.66	19.	.000	.01	69	.000	.000	.000	.000	4
8	25	180	.03	.03	.00	0	.0	.0	20.0	0	.000	.000	.000	.35	.34	2.57	18.	.000	.01	69	.000	.000	.000	.000	4
8	25	240	.03	.03	.00	0	.0	.0	13.3	0	.000	.000	.000	.22	.21	2.52	18.	.000	.01	69	.000	.000	.000	.000	4
8	26	60	.01	.01	.00	0	.0	.0	7.7	0	.000	.000	.000	.13	.12	2.49	17.	.000	.00	69	.000	.000	.000	.000	4
8	26	120	.01	.01	.00	0	.0	.0	17.0	0	.000	.000	.000	.31	.29	2.42	17.	.000	.00	69	.000	.000	.000	.000	4
8	26	180	.01	.01	.00	0	.0	.0	21.0	0	.000	.000	.000	.39	.37	2.32	17.	.000	.00	69	.000	.000	.000	.000	4
8	26	240	.01	.01	.00	0	.0	.0	13.0	0	.000	.000	.000	.23	.21	2.27	16.	.000	.00	69	.000	.000	.000	.000	4
8	27	60	.00	.00	.00	0	.0	.0	6.8	0	.000	.000	.000	.11	.11	2.24	16.	.000	.00	69	.000	.000	.000	.000	4
8	27	120	.00	.00	.00	0	.0	.0	15.2	0	.000	.000	.000	.28	.26	2.18	16.	.000	.00	69	.000	.000	.000	.000	4
8	27	180	.00	.00	.00	0	.0	.0	18.6	0	.000	.000	.000	.35	.32	2.10	16.	.000	.00	69	.000	.000	.000	.000	4
8	27	240	.00	.00	.00	0	.0	.0	12.2	0	.000	.000	.000	.22	.20	2.05	16.	.000	.00	69	.000	.000	.000	.000	4

BASIN ZONE MM-YY AREA ELEV PP% TINTMX

GULLMUSK 4 8 8510320.0 415. 100.0 .51

COMPUTED LOWER CHURCHILL DRAINAGE

MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F		
8	28	60	.36	.36	.00	0	.0	.0	6.0	0	.000	.000	.000	.03	.03	2.04	15.	.000	.00	69	.000	.000	.000	.000	.000	4		
8	28	120	.36	.16	.00	0	.0	.0	11.9	0	.000	.000	.204	.07	.06	2.20	15.	.031	.02	69	.005	.005	.005	.018	.004	.004	4	
8	28	180	.36	.02	.00	0	.0	.0	13.8	0	.000	.000	.344	.08	.07	2.47	16.	.055	.05	68	.009	.009	.009	.030	.008	.008	4	
8	28	240	.36	.02	.00	0	.0	.0	9.6	0	.000	.000	.341	.05	.05	2.74	17.	.058	.08	66	.010	.010	.010	.031	.008	.008	4	
8	29	60	.11	.01	.00	0	.0	.0	2.2	0	.000	.000	.095	.04	.04	2.81	19.	.018	.08	64	.003	.003	.003	.009	.002	.002	4	
8	29	120	.11	.01	.00	0	.0	.0	7.9	0	.000	.000	.099	.10	.09	2.87	20.	.019	.08	65	.003	.003	.003	.010	.003	.003	4	
8	29	180	.11	.02	.00	0	.0	.0	10.6	0	.000	.000	.084	.14	.13	2.90	20.	.017	.08	65	.003	.003	.003	.009	.002	.002	4	
8	29	240	.11	.03	.00	0	.0	.0	5.9	0	.000	.000	.074	.07	.07	2.94	20.	.015	.07	65	.003	.003	.003	.008	.002	.002	4	
8	30	60	.08	.02	.05	1	.0	.0	1.5	0	.000	.000	.010	.03	.03	2.94	21.	.002	.06	65	.000	.000	.000	.001	.000	.000	4	A
8	30	120	.07	.01	.00	0	.0	.0	10.4	2	.246	.053	.117	.15	.15	3.00	21.	.024	.07	65	.004	.004	.004	.013	.003	.003	4	D
8	30	180	.07	.04	.00	0	.0	.0	13.8	0	.000	.000	.035	.20	.20	2.97	21.	.007	.06	65	.001	.001	.001	.004	.001	.001	4	
8	30	240	.07	.05	.00	0	.0	.0	6.3	0	.000	.000	.021	.09	.09	2.97	21.	.004	.06	65	.001	.001	.001	.002	.001	.001	4	
8	31	60	.01	.01	.00	0	.0	.0	3.3	0	.000	.000	.000	.06	.06	2.95	21.	.000	.05	66	.000	.000	.000	.000	.000	.000	4	
8	31	120	.01	.01	.00	0	.0	.0	9.7	0	.000	.000	.000	.16	.16	2.91	21.	.000	.04	66	.000	.000	.000	.000	.000	.000	4	
8	31	180	.01	.01	.00	0	.0	.0	12.4	0	.000	.000	.000	.21	.21	2.86	21.	.000	.03	67	.000	.000	.000	.000	.000	.000	4	
8	31	240	.01	.01	.00	0	.0	.0	7.0	0	.000	.000	.000	.11	.11	2.84	20.	.000	.03	67	.000	.000	.000	.000	.000	.000	4	
8.50											.053		6.68		.807		.137		.427									
4.95											3.548		6.63						.137				.107					
9	1	60	.00	.00	.00	0	.0	.0	1.6	0	.000	.000	.000	.04	.04	2.82	20.	.000	.02	68	.000	.000	.000	.000	.000	.000	4	
9	1	120	.00	.00	.00	0	.0	.0	12.8	0	.000	.000	.000	.22	.22	2.77	20.	.000	.02	68	.000	.000	.000	.000	.000	.000	4	

9	1	180	.00	.00	.00	0	.0	.0	17.2	0	.000	.000	.000	.31	.30	2.69	19.	.000	.02	68	.000	.000	.000	.000	4
9	1	240	.00	.00	.00	0	.0	.0	8.4	0	.000	.000	.000	.14	.13	2.66	19.	.000	.01	68	.000	.000	.000	.000	4
9	2	60	.06	.06	.00	0	.0	.0	6.6	0	.000	.000	.000	.09	.09	2.64	18.	.000	.01	69	.000	.000	.000	.000	4
9	2	120	.06	.06	.00	0	.0	.0	10.9	0	.000	.000	.000	.16	.15	2.60	18.	.000	.01	69	.000	.000	.000	.000	4
9	2	180	.06	.06	.00	0	.0	.0	12.9	0	.000	.000	.000	.19	.19	2.55	18.	.000	.01	69	.000	.000	.000	.000	4
9	2	240	.06	.06	.00	0	.0	.0	8.9	0	.000	.000	.000	.13	.12	2.52	17.	.000	.01	69	.000	.000	.000	.000	4
9	3	60	.01	.01	.00	0	.0	.0	4.9	0	.000	.000	.000	.08	.08	2.50	17.	.000	.01	69	.000	.000	.000	.000	4
9	3	120	.01	.01	.00	0	.0	.0	10.3	0	.000	.000	.000	.17	.16	2.46	17.	.000	.01	69	.000	.000	.000	.000	4
9	3	180	.01	.01	.00	0	.0	.0	12.7	0	.000	.000	.000	.21	.20	2.41	17.	.000	.00	69	.000	.000	.000	.000	4
9	3	240	.01	.01	.00	0	.0	.0	8.3	0	.000	.000	.000	.13	.12	2.38	17.	.000	.00	69	.000	.000	.000	.000	4
9	4	60	.00	.00	.00	0	.0	.0	3.2	0	.000	.000	.000	.06	.05	2.37	17.	.000	.00	69	.000	.000	.000	.000	4
9	4	120	.00	.00	.00	0	.0	.0	10.4	0	.000	.000	.000	.17	.16	2.33	17.	.000	.00	69	.000	.000	.000	.000	4
9	4	180	.00	.00	.00	0	.0	.0	12.8	0	.000	.000	.000	.22	.20	2.28	16.	.000	.00	69	.000	.000	.000	.000	4
9	4	240	.00	.00	.00	0	.0	.0	7.3	0	.000	.000	.000	.12	.11	2.25	16.	.000	.00	69	.000	.000	.000	.000	4
9	5	60	.00	.00	.00	0	.0	.0	3.0	0	.000	.000	.000	.05	.05	2.24	16.	.000	.00	69	.000	.000	.000	.000	4
9	5	120	.00	.00	.00	0	.0	.0	11.4	0	.000	.000	.000	.19	.18	2.19	16.	.000	.00	69	.000	.000	.000	.000	4
9	5	180	.00	.00	.00	0	.0	.0	15.1	0	.000	.000	.000	.26	.24	2.13	16.	.000	.00	69	.000	.000	.000	.000	4
9	5	240	.00	.00	.00	0	.0	.0	8.4	0	.000	.000	.000	.13	.12	2.10	16.	.000	.00	69	.000	.000	.000	.000	4
9	6	60	.00	.00	.00	0	.0	.0	4.3	0	.000	.000	.000	.07	.07	2.09	16.	.000	.00	69	.000	.000	.000	.000	4
9	6	120	.00	.00	.00	0	.0	.0	11.8	0	.000	.000	.000	.20	.18	2.04	16.	.000	.00	69	.000	.000	.000	.000	4
9	6	180	.00	.00	.00	0	.0	.0	14.5	0	.000	.000	.000	.25	.22	1.99	15.	.000	.00	69	.000	.000	.000	.000	4
9	6	240	.00	.00	.00	0	.0	.0	8.4	0	.000	.000	.000	.13	.12	1.96	15.	.000	.00	69	.000	.000	.000	.000	4
9	7	60	.28	.28	.00	0	.0	.0	5.3	0	.000	.000	.000	.04	.03	1.95	15.	.000	.00	69	.000	.000	.000	.000	4
9	7	120	.28	.24	.00	0	.0	.0	10.3	0	.000	.000	.040	.08	.07	1.97	15.	.006	.00	69	.001	.001	.003	.001	4
9	7	180	.28	.02	.00	0	.0	.0	11.3	0	.000	.000	.261	.08	.08	2.17	15.	.039	.03	69	.006	.006	.022	.005	4
9	7	240	.28	.02	.00	0	.0	.0	8.3	0	.000	.000	.259	.06	.05	2.37	16.	.041	.05	68	.006	.006	.022	.006	4
9	8	60	.19	.01	.00	0	.0	.0	5.7	0	.000	.000	.175	.05	.05	2.51	17.	.029	.06	66	.005	.005	.016	.004	4
9	8	120	.19	.01	.00	0	.0	.0	8.7	0	.000	.000	.176	.08	.08	2.63	17.	.030	.07	66	.005	.005	.016	.004	4
9	8	180	.19	.02	.00	0	.0	.0	10.7	0	.000	.000	.169	.10	.10	2.75	18.	.031	.08	65	.005	.005	.016	.004	4
9	8	240	.19	.03	.00	0	.0	.0	7.7	0	.000	.000	.164	.07	.07	2.86	19.	.031	.08	65	.005	.005	.016	.004	4
9	9	60	.09	.02	.00	0	.0	.0	3.3	0	.000	.000	.067	.04	.04	2.90	20.	.013	.08	64	.002	.002	.007	.002	4
9	9	120	.09	.01	.00	0	.0	.0	7.0	0	.000	.000	.074	.09	.09	2.94	20.	.015	.08	64	.003	.003	.008	.002	4

BASIN ZONE MM-YY AREA ELEV PP% TINTMX

GULLMUSK 4 9 8510320.0 415. 100.0 .51										COMPUTED LOWER CHURCHILL DRAINAGE																
MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F
9	9	180	.09	.02	.00	0	.0	.0	8.0	0	.000	.000	.063	.10	.10	2.97	21.	.013	.07	65	.002	.002	.007	.002	4	
9	9	240	.09	.02	.00	0	.0	.0	5.3	0	.000	.000	.060	.07	.07	3.00	21.	.013	.07	65	.002	.002	.007	.002	4	
9	10	60	.04	.02	.00	0	.0	.0	2.7	0	.000	.000	.018	.05	.05	3.00	21.	.004	.06	65	.001	.001	.002	.001	4	
9	10	120	.04	.01	.00	0	.0	.0	6.9	0	.000	.000	.024	.10	.10	2.99	21.	.005	.05	66	.001	.001	.003	.001	4	
9	10	180	.04	.02	.00	0	.0	.0	9.2	0	.000	.000	.010	.13	.13	2.97	21.	.002	.05	66	.000	.000	.001	.000	4	
9	10	240	.04	.03	.00	0	.0	.0	5.3	0	.000	.000	.002	.08	.08	2.95	21.	.000	.04	66	.000	.000	.000	.000	4	
9	11	60	.09	.02	.00	0	.0	.0	2.4	0	.000	.000	.069	.04	.04	2.99	21.	.014	.04	67	.002	.002	.008	.002	4	
9	11	120	.09	.01	.00	0	.0	.0	7.0	0	.000	.000	.079	.09	.09	3.04	21.	.017	.05	67	.003	.003	.009	.002	4	
9	11	180	.09	.02	.00	0	.0	.0	9.0	0	.000	.000	.067	.11	.11	3.06	22.	.014	.05	67	.002	.002	.008	.002	4	
9	11	240	.09	.03	.00	0	.0	.0	5.0	0	.000	.000	.060	.06	.06	3.09	22.	.013	.05	66	.002	.002	.007	.002	4	
9	12	60	.01	.01	.00	0	.0	.0	1.3	0	.000	.000	.000	.04	.04	3.08	22.	.000	.04	66	.000	.000	.000	.000	4	

9 12 120	.01	.01	.00	0	.0	.0	6.0	0	.000	.000	.000	.09	.09	3.06	22.	.000	.04	67	.000	.000	.000	.000	4
9 12 180	.01	.01	.00	0	.0	.0	8.0	0	.000	.000	.000	.12	.12	3.03	22.	.000	.03	67	.000	.000	.000	.000	4
9 12 240	.01	.01	.00	0	.0	.0	4.3	0	.000	.000	.000	.07	.07	3.01	21.	.000	.03	68	.000	.000	.000	.000	4
9 13 60	.00	.00	.00	0	.0	.0	2.4	0	.000	.000	.000	.05	.05	3.00	21.	.000	.02	68	.000	.000	.000	.000	4
9 13 120	.00	.00	.00	0	.0	.0	8.6	0	.000	.000	.000	.13	.13	2.97	21.	.000	.02	68	.000	.000	.000	.000	4
9 13 180	.00	.00	.00	0	.0	.0	11.2	0	.000	.000	.000	.18	.18	2.92	21.	.000	.02	68	.000	.000	.000	.000	4
9 13 240	.00	.00	.00	0	.0	.0	6.0	0	.000	.000	.000	.09	.09	2.90	21.	.000	.01	69	.000	.000	.000	.000	4
9 14 60	.07	.07	.00	0	.0	.0	.6	0	.000	.000	.000	.03	.03	2.89	20.	.000	.01	69	.000	.000	.000	.000	4
9 14 120	.06	.06	.00	0	.0	.0	7.3	0	.000	.000	.000	.09	.09	2.87	20.	.000	.01	69	.000	.000	.000	.000	4
9 14 180	.06	.06	.00	0	.0	.0	9.6	0	.000	.000	.001	.13	.13	2.84	20.	.000	.01	69	.000	.000	.000	.000	4
9 14 240	.06	.03	.00	0	.0	.0	4.6	0	.000	.000	.033	.06	.06	2.85	20.	.007	.01	69	.001	.001	.004	.001	4
9 15 60	.01	.01	.00	0	.0	.0	-1.4	0	.000	.000	.000	.02	.02	2.84	20.	.000	.01	69	.000	.000	.000	.000	4
9 15 120	.01	.01	.00	0	.0	.0	4.3	0	.000	.000	.000	.07	.07	2.83	20.	.000	.01	69	.000	.000	.000	.000	4
9 15 180	.01	.01	.00	0	.0	.0	6.3	0	.000	.000	.000	.10	.09	2.80	20.	.000	.01	69	.000	.000	.000	.000	4
9 15 240	.01	.01	.00	0	.0	.0	2.3	0	.000	.000	.000	.05	.04	2.79	20.	.000	.01	69	.000	.000	.000	.000	4
9 16 60	.00	.00	.00	0	.0	.0	-1.4	0	.000	.000	.000	.02	.02	2.79	19.	.000	.00	69	.000	.000	.000	.000	4
9 16 120	.00	.00	.00	0	.0	.0	9.3	0	.000	.000	.000	.14	.14	2.75	19.	.000	.00	69	.000	.000	.000	.000	4
9 16 180	.00	.00	.00	0	.0	.0	13.3	0	.000	.000	.000	.21	.21	2.70	19.	.000	.00	69	.000	.000	.000	.000	4
9 16 240	.00	.00	.00	0	.0	.0	4.6	0	.000	.000	.000	.07	.07	2.68	19.	.000	.00	69	.000	.000	.000	.000	4
9 17 60	.00	.00	.00	0	.0	.0	1.3	0	.000	.000	.000	.04	.04	2.67	19.	.000	.00	69	.000	.000	.000	.000	4
9 17 120	.00	.00	.00	0	.0	.0	14.0	0	.000	.000	.000	.23	.22	2.62	18.	.000	.00	69	.000	.000	.000	.000	4
9 17 180	.00	.00	.00	0	.0	.0	18.3	0	.000	.000	.000	.30	.29	2.54	18.	.000	.00	69	.000	.000	.000	.000	4
9 17 240	.00	.00	.00	0	.0	.0	9.0	0	.000	.000	.000	.14	.13	2.51	17.	.000	.00	69	.000	.000	.000	.000	4
9 18 60	.00	.00	.00	0	.0	.0	10.7	0	.000	.000	.000	.17	.16	2.47	17.	.000	.00	69	.000	.000	.000	.000	4
9 18 120	.00	.00	.00	0	.0	.0	16.3	0	.000	.000	.000	.27	.25	2.41	17.	.000	.00	69	.000	.000	.000	.000	4
9 18 180	.00	.00	.00	0	.0	.0	18.3	0	.000	.000	.000	.30	.28	2.34	17.	.000	.00	69	.000	.000	.000	.000	4
9 18 240	.00	.00	.00	0	.0	.0	14.0	0	.000	.000	.000	.22	.21	2.29	16.	.000	.00	69	.000	.000	.000	.000	4
9 19 60	.01	.01	.00	0	.0	.0	6.0	0	.000	.000	.000	.09	.08	2.27	16.	.000	.00	69	.000	.000	.000	.000	4
9 19 120	.01	.01	.00	0	.0	.0	13.9	0	.000	.000	.000	.22	.20	2.22	16.	.000	.00	69	.000	.000	.000	.000	4
9 19 180	.01	.01	.00	0	.0	.0	16.9	0	.000	.000	.000	.27	.25	2.15	16.	.000	.00	69	.000	.000	.000	.000	4
9 19 240	.01	.01	.00	0	.0	.0	10.6	0	.000	.000	.000	.16	.15	2.12	16.	.000	.00	69	.000	.000	.000	.000	4
9 20 60	.08	.08	.00	0	.0	.0	6.0	0	.000	.000	.000	.07	.07	2.10	16.	.000	.00	69	.000	.000	.000	.000	4
9 20 120	.08	.08	.00	0	.0	.0	11.6	0	.000	.000	.000	.15	.13	2.07	16.	.000	.00	69	.000	.000	.000	.000	4
9 20 180	.08	.08	.00	0	.0	.0	14.6	0	.000	.000	.000	.19	.17	2.02	15.	.000	.00	69	.000	.000	.000	.000	4
9 20 240	.08	.08	.00	0	.0	.0	9.3	0	.000	.000	.000	.11	.10	2.00	15.	.000	.00	69	.000	.000	.000	.000	4
9 21 60	.23	.23	.00	0	.0	.0	.6	0	.000	.000	.000	.02	.02	1.99	15.	.000	.00	69	.000	.000	.000	.000	4
9 21 120	.21	.10	.00	0	.0	.0	11.0	0	.000	.000	.104	.10	.09	2.06	15.	.016	.01	69	.002	.002	.009	.002	4
9 21 180	.21	.02	.00	0	.0	.0	15.4	0	.000	.000	.181	.14	.13	2.18	15.	.028	.03	69	.004	.004	.015	.004	4
9 21 240	.21	.04	.00	0	.0	.0	7.0	0	.000	.000	.170	.06	.05	2.31	16.	.027	.04	68	.004	.004	.015	.004	4
9 22 60	.00	.00	.00	0	.0	.0	.3	0	.000	.000	.000	.03	.03	2.30	16.	.000	.03	67	.000	.000	.000	.000	4
9 22 120	.00	.00	.00	0	.0	.0	5.3	0	.000	.000	.000	.08	.07	2.29	16.	.000	.03	67	.000	.000	.000	.000	4
9 22 180	.00	.00	.00	0	.0	.0	6.6	0	.000	.000	.000	.10	.09	2.26	16.	.000	.02	68	.000	.000	.000	.000	4
9 22 240	.00	.00	.00	0	.0	.0	3.3	0	.000	.000	.000	.05	.05	2.25	16.	.000	.02	68	.000	.000	.000	.000	4

BASIN ZONE MM-YY AREA ELEV PP% TINTMX										COMPUTED LOWER CHURCHILL DRAINAGE																
GULLMUSK 4 9 8510320.0 415. 100.0 .51																										
MO	DAY	HR	PCPN	INT	WE	ATI	CC	LIQD	TA	ATI	MR	MELT	MI	PET	ET	SMI	ROP	RO	BII	BFP	SFRO	SSRO	BFRO	LZRO	ZONE	F
9	23	60	.01	.01	.00	0	.0	.0	-2.4	0	.000	.000	.000	.02	.02	2.25	16.	.000	.02	68	.000	.000	.000	.000	4	

Next output is summary listing for whole watershed listing runoff generated and discharge from watershed from each zone and total from the watershed. Note that at times of peak flow, the program cannot print the full number and replaces the output with ****. An additional output option, not printed here, gives the full number.

PMF STUDY, LOWER CHURCHILL

GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE

AREA BASE-TEMP ZONES

APR-1985 21500. .0 6																			FLAGS BY ZONE	
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL	OBS	1****5****10****15****20
30	240			90	58						7.4	0	6.000	8.000	13.000	.000	27.000	.000		
MAY-1985																				
1	60	.00	.00	90	58	6.0	-5	.000	.01	.02	7.4	65	66	6.003	8.000	13.002	.000	27.005	.000	SSSSSS
1	120	.00	.00	90	58	6.0	2	.240	.01	.04	7.4	65	67	6.020	8.000	13.009	.000	27.029	.000	QCCSSS
1	180	.00	.00	90	58	6.0	4	.241	.12	.05	7.5	65	67	6.175	8.002	13.089	.000	27.266	.000	QDDSSS
1	240	.00	.00	90	58	6.0	-1	.000	.01	.02	7.5	65	63	6.803	8.010	13.237	.001	28.052	.000	SSSSSS
2	60	.01	.01	90	58	6.0	-9	.000	.01	.02	7.5	65	64	8.176	8.039	13.386	.002	29.603	.000	SSSSSS
2	120	.01	.01	90	58	6.0	-4	.000	.01	.02	7.5	65	64	10.213	8.104	13.535	.003	31.856	.000	SSSSSS
2	180	.01	.01	90	58	6.0	-1	.000	.01	.02	7.5	65	65	12.595	8.223	13.684	.004	34.506	.000	SSSSSS
2	240	.01	.01	90	58	6.0	-6	.000	.01	.02	7.5	65	65	14.988	8.407	13.833	.004	37.232	.000	SSSSSS
3	60	.00	.00	90	58	6.0	-10	.000	.01	.02	7.5	65	66	17.136	8.662	13.982	.005	39.785	.000	SSSSSS
3	120	.00	.00	90	58	6.0	-2	.000	.01	.02	7.5	65	66	18.882	8.986	14.131	.006	42.005	.000	SSSSSS
3	180	.00	.00	90	58	6.0	2	.240	.01	.04	7.4	65	67	20.155	9.375	14.281	.007	43.817	.000	CCSSSS
3	240	.00	.00	90	58	6.0	-5	.000	.01	.02	7.4	65	67	20.950	9.818	14.430	.008	45.207	.000	SSSSSS
4	60	.03	.03	90	58	6.0	-10	.000	.01	.02	7.4	65	67	21.309	10.304	14.580	.009	46.202	.000	SSSSSS
4	120	.03	.03	90	58	6.0	-2	.000	.01	.02	7.4	65	67	21.296	10.820	14.729	.010	46.855	.000	SSSSSS
4	180	.03	.03	90	58	6.0	1	.240	.01	.03	7.4	65	67	20.986	11.350	14.879	.011	47.226	.000	CSSSSS
4	240	.03	.03	90	58	6.0	-5	.000	.01	.02	7.4	65	68	20.455	11.882	15.029	.012	47.378	.000	SSSSSS
5	60	.04	.04	90	58	6.0	-7	.000	.01	.02	7.4	65	68	19.771	12.403	15.178	.013	47.366	.000	SSSSSS
5	120	.04	.04	90	58	6.0	-2	.000	.01	.02	7.4	65	68	18.993	12.903	15.328	.015	47.239	.000	SSSSSS
5	180	.04	.04	90	58	6.0	-1	.000	.01	.02	7.4	65	68	18.172	13.371	15.478	.016	47.036	.000	SSSSSS
5	240	.04	.04	90	58	6.0	-4	.000	.01	.02	7.4	65	68	17.344	13.801	15.627	.017	46.789	.000	SSSSSS
6	60	.00	.00	90	58	6.0	-9	.000	.01	.02	7.4	65	68	16.538	14.186	15.777	.018	46.519	.000	SSSSSS
6	120	.00	.00	90	58	6.0	-1	.000	.01	.02	7.4	65	68	15.774	14.524	15.927	.019	46.243	.000	SSSSSS
6	180	.00	.00	90	58	6.0	2	.240	.01	.03	7.4	65	68	15.064	14.810	16.076	.021	45.971	.000	QCSSSS
6	240	.00	.00	90	58	6.0	-4	.000	.01	.02	7.4	65	68	14.416	15.046	16.225	.022	45.709	.000	SSSSSS
7	60	.01	.01	90	58	6.0	-8	.000	.01	.02	7.4	65	68	13.833	15.231	16.374	.023	45.461	.000	SSSSSS
7	120	.01	.01	90	58	6.0	1	.000	.01	.02	7.4	65	68	13.314	15.366	16.523	.025	45.228	.000	SSSSSS
7	180	.01	.01	90	58	6.0	4	.241	.01	.05	7.4	65	68	12.863	15.455	16.675	.026	45.019	.000	DDCDCC
7	240	.01	.01	90	58	6.0	-3	.000	.01	.02	7.4	65	68	12.492	15.500	16.831	.028	44.851	.000	SSSSSS
8	60	.17	.17	90	58	6.0	-8	.000	.01	.01	7.4	65	68	12.212	15.505	16.986	.029	44.732	.000	SSSSSS
8	120	.17	.10	90	58	6.0	-3	.000	.01	.01	7.4	65	68	12.014	15.474	17.141	.031	44.660	.000	AAAAAA
8	180	.17	.00	90	58	6.0	-1	.000	.01	.01	7.4	65	68	11.874	15.414	17.295	.032	44.615	.000	AAAAAA
8	240	.17	.00	90	58	6.0	-5	.000	.01	.01	7.4	65	68	11.771	15.328	17.448	.034	44.581	.000	AAAAAA
9	60	.03	.00	90	58	6.0	-11	.000	.01	.02	7.4	65	68	11.686	15.220	17.601	.036	44.543	.000	AAAAAA
9	120	.03	.00	90	58	6.0	-1	.000	.01	.02	7.4	65	68	11.608	15.094	17.753	.037	44.493	.000	AAAAAA
9	180	.03	.01	90	58	6.0	2	.240	.01	.03	7.4	65	68	11.529	14.954	17.905	.039	44.427	.000	CCCAAA
9	240	.03	.01	90	58	6.0	-6	.000	.01	.02	7.4	65	68	11.446	14.803	18.056	.041	44.345	.000	AAAAAA
10	60	.12	.00	90	58	6.0	-1	.000	.01	.02	7.4	65	68	11.358	14.642	18.206	.042	44.249	.000	AAAAAA
10	120	.10	.00	90	58	6.0	6	.242	.11	.05	7.5	65	68	11.363	14.476	18.420	.045	44.304	.000	DDDDDC

10	180	.10	.01	90	58	6.0	8	.244	.27	.08	7.6	65	64	12.030	14.313	18.846	.048	45.236	.000	DDDDDD
10	240	.12	.02	90	58	6.0	3	.245	.03	.03	7.6	67	54	14.457	14.180	19.422	.051	48.111	.000	DAAAAA
11	60	.04	.01	90	58	6.0	-4	.000	.01	.02	7.6	67	56	19.356	14.126	19.992	.055	53.529	.000	AAAAAA
11	120	.04	.00	90	58	6.0	0	.000	.01	.02	7.6	67	58	26.307	14.211	20.548	.059	61.126	.000	AAAAAA
11	180	.04	.01	90	58	6.0	2	.244	.01	.03	7.6	67	59	34.191	14.491	21.090	.063	69.835	.000	ACAAAA
11	240	.04	.01	90	58	6.0	-2	.000	.01	.02	7.6	67	61	41.870	15.004	21.619	.067	78.560	.000	AAAAAA
12	60	.00	.00	90	58	6.0	-6	.000	.01	.02	7.6	67	62	48.498	15.764	22.135	.071	86.467	.000	SSSSSS

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMUPUTED LOWER CHURCHILL DRAINAGE

AREA BASE-TEMP ZONES																			FLAGS BY ZONE	
MAY-1985	21500.	.0	6																OBS	1***5***10***15***20
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL		
12	120	.00	.00	90	58	6.0	2	.240	.01	.04	7.6	67	63	53.575	16.764	22.638	.075	93.052	.000	SCCSSS
12	180	.00	.00	90	58	6.0	6	.242	.09	.07	7.6	67	64	56.999	17.984	23.176	.079	98.238	.000	DDDDDD
12	240	.00	.00	90	58	6.0	-1	.000	.01	.02	7.6	67	61	59.076	19.388	23.748	.083	102.296	.000	SSSSSS
13	60	.00	.00	90	58	6.0	-7	.000	.01	.02	7.6	67	62	60.215	20.943	24.305	.088	105.551	.000	SSSSSS
13	120	.00	.00	90	58	6.0	1	.240	.01	.03	7.6	67	63	60.606	22.611	24.848	.092	108.156	.000	CSSSSS
13	180	.00	.00	90	58	6.0	4	.241	.02	.05	7.6	67	64	60.283	24.356	25.383	.097	110.119	.000	DDSDCS
13	240	.00	.00	90	58	6.0	-2	.000	.01	.02	7.6	67	64	59.296	26.139	25.911	.101	111.447	.000	SSSSSS
14	60	.00	.00	90	58	6.0	-7	.000	.01	.02	7.6	67	65	57.722	27.921	26.425	.106	112.174	.000	SSSSSS
14	120	.00	.00	90	58	6.0	2	.240	.01	.03	7.6	67	65	55.641	29.667	26.926	.110	112.345	.000	CCSSSS
14	180	.00	.00	90	58	6.0	5	.241	.05	.06	7.6	67	66	53.177	31.342	27.438	.115	112.072	.000	DDDDSC
14	240	.00	.00	90	57	6.0	-2	.000	.01	.02	7.6	67	64	50.550	32.916	27.960	.120	111.545	.000	SSSSSS
15	60	.00	.00	90	57	6.0	-3	.000	.01	.02	7.6	67	65	47.969	34.368	28.467	.124	110.929	.000	SSSSSS
15	120	.00	.00	90	57	6.0	3	.240	.01	.04	7.6	67	66	45.509	35.680	28.963	.129	110.281	.000	DSCCSS
15	180	.00	.00	90	57	6.0	6	.242	.09	.06	7.6	67	66	43.238	36.843	29.496	.134	109.711	.000	DDDDDS
15	240	.00	.00	90	57	6.0	1	.244	.01	.03	7.6	67	63	41.379	37.851	30.065	.140	109.435	.000	SSSSSS
16	60	.00	.00	90	57	6.0	-2	.000	.01	.02	7.6	67	64	40.120	38.711	30.618	.145	109.594	.000	SSSSSS
16	120	.00	.00	90	57	6.0	3	.240	.01	.04	7.6	67	64	39.389	39.433	31.159	.150	110.131	.000	DDSCCS
16	180	.00	.00	90	57	6.0	5	.242	.10	.06	7.6	67	65	39.058	40.029	31.741	.156	110.984	.000	DDDDDS
16	240	.00	.00	90	57	6.0	1	.246	.01	.03	7.6	67	62	39.194	40.517	32.360	.162	112.232	.000	SSSSSS
17	60	.00	.00	90	57	6.0	-2	.000	.01	.02	7.6	67	63	39.866	40.915	32.961	.168	113.910	.000	SSSSSS
17	120	.00	.00	90	57	6.0	4	.241	.03	.05	7.6	67	63	40.907	41.246	33.555	.174	115.882	.000	DDSDCS
17	180	.00	.00	90	57	6.0	6	.243	.13	.07	7.7	67	63	42.184	41.529	34.213	.180	118.106	.000	DDDDDD
17	240	.00	.00	90	57	6.0	2	.248	.01	.03	7.7	68	59	43.869	41.785	34.920	.187	120.761	.000	SSSSSS
18	60	.00	.00	90	57	6.0	-1	.000	.01	.02	7.7	67	60	46.103	42.038	35.607	.193	123.941	.000	SSSSSS
18	120	.00	.00	90	57	6.0	4	.241	.05	.05	7.7	67	62	48.690	42.312	36.293	.200	127.495	.000	DDDDSC
18	180	.00	.00	90	57	6.0	6	.243	.16	.08	7.7	68	61	51.481	42.627	37.061	.207	131.376	.000	DDDDDD
18	240	.00	.00	90	57	6.0	2	.251	.01	.03	7.7	68	56	54.717	43.005	37.887	.215	135.825	.000	SSSSSS
19	60	.00	.00	90	57	6.0	-1	.000	.01	.02	7.7	68	58	58.565	43.470	38.689	.222	140.945	.000	SSSSSS
19	120	.00	.00	90	56	6.0	5	.242	.07	.06	7.7	68	59	62.746	44.043	39.496	.230	146.515	.000	DDDDSC
19	180	.00	.00	90	56	6.0	7	.244	.18	.08	7.8	68	58	67.071	44.744	40.399	.238	152.452	.000	DDDDDD
19	240	.00	.00	90	56	6.0	2	.249	.01	.04	7.8	69	53	71.842	45.589	41.365	.247	159.043	.000	DSSSSS
20	60	.00	.00	90	56	6.0	-1	.000	.01	.02	7.8	69	55	77.252	46.600	42.302	.256	166.409	.000	SSSSSS

20 120	.00	.00	90	56	6.0	5	.244	.09	.06	7.8	69	57	82.944	47.796	43.251	.265	174.255	.000	DDDDDS
20 180	.00	.00	90	56	6.0	7	.246	.21	.09	7.9	69	55	88.708	49.189	44.309	.274	182.480	.000	DDDDDD
20 240	.00	.00	90	56	6.0	3	.248	.03	.04	7.9	70	50	94.959	50.792	45.437	.284	191.473	.000	DSSSSS
21 60	.00	.00	90	56	6.0	0	.000	.01	.03	7.9	70	52	101.969	52.624	46.536	.294	201.423	.000	SSSSSS
21 120	.00	.00	90	55	6.0	5	.246	.11	.06	7.9	70	54	109.318	54.702	47.646	.304	211.970	.000	DDDDDS
21 180	.00	.00	90	55	6.0	8	.248	.23	.10	8.0	70	52	116.708	57.034	48.869	.315	222.926	.000	DDDDDD
21 240	.00	.00	90	55	6.0	3	.251	.04	.04	8.0	71	46	124.564	59.631	50.161	.326	234.682	.000	DDSSSS
22 60	.00	.00	90	55	6.0	0	.000	.01	.03	8.0	71	49	133.160	62.507	51.420	.338	247.425	.000	SSSSSS
22 120	.00	.00	90	55	6.0	6	.248	.13	.07	8.0	71	51	141.984	65.674	52.691	.349	260.699	.000	DDDDDS
22 180	.00	.00	90	55	6.0	8	.251	.24	.10	8.1	71	49	150.680	69.136	54.074	.362	274.252	.000	DDDDDD
22 240	.00	.00	90	55	6.0	4	.251	.06	.05	8.1	72	43	159.744	72.895	55.528	.374	288.541	.000	DDSSSS
23 60	.00	.00	90	55	6.0	1	.272	.01	.03	8.1	72	45	169.534	76.960	56.949	.387	303.830	.000	SSSSSS
23 120	.00	.00	90	54	6.0	6	.252	.16	.07	8.1	72	49	179.535	81.339	58.385	.400	319.659	.000	DDDDDD
23 180	.00	.00	90	54	6.0	8	.254	.27	.11	8.2	72	46	189.425	86.031	59.940	.414	335.810	.000	DDDDDD
23 240	.00	.00	90	54	6.0	4	.255	.08	.05	8.2	73	40	199.876	91.037	61.569	.428	352.911	.000	DDSSSS
24 60	.00	.00	90	54	6.0	1	.278	.01	.03	8.2	73	41	211.377	96.368	63.165	.443	371.352	.000	SSSSSS
24 120	.00	.00	90	54	6.0	7	.255	.19	.08	8.3	73	45	223.330	102.035	64.774	.457	390.597	.000	DDDDDD
24 180	.00	.00	90	53	6.0	9	.258	.31	.12	8.4	73	42	235.321	108.043	66.505	.473	410.342	.000	DDDDDD
24 240	.00	.00	90	53	6.0	4	.259	.10	.05	8.4	74	37	248.110	114.398	68.314	.489	431.311	.000	DDDDSS

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE

			AREA		BASE-TEMP		ZONES																	FLAGS BY ZONE	
MAY-1985			21500.		.0		6																	1****5****10****15****20	
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL	OBS						
25	60	.00	.00	90	53	6.0	2	.278	.01	.03	8.4	74	38	262.268	121.117	70.089	.505	453.980	.000	SSSSSS					
25	120	.00	.00	90	53	6.0	7	.260	.21	.09	8.4	74	41	277.069	128.220	71.874	.522	477.684	.000	DDDDDD					
25	180	.00	.00	90	52	6.0	9	.262	.33	.12	8.5	75	39	291.907	135.716	73.774	.539	501.935	.000	DDDDDD					
25	240	.00	.00	90	52	6.0	5	.263	.12	.06	8.5	75	35	307.490	143.615	75.747	.556	527.408	.000	DDDDSS					
26	60	.00	.00	90	52	6.0	2	.284	.01	.04	8.5	76	35	324.342	151.934	77.684	.574	554.534	.000	SSSSSS					
26	120	.00	.00	90	52	6.0	7	.264	.24	.09	8.6	75	39	341.572	160.692	79.628	.592	582.484	.000	DDDDDD					
26	180	.00	.00	90	51	6.0	9	.267	.35	.13	8.6	76	36	358.475	169.891	81.687	.611	610.664	.000	DDDDDD					
26	240	.00	.00	90	51	6.0	5	.268	.15	.06	8.7	77	33	375.866	179.532	83.819	.631	639.848	.000	DDDDDS					
27	60	.00	.00	90	51	6.0	3	.271	.03	.04	8.7	77	33	394.442	189.627	85.919	.651	670.639	.000	DSSSSS					
27	120	.00	.00	90	51	6.0	8	.269	.29	.10	8.7	77	36	413.448	200.188	88.036	.671	702.342	.000	DDDDDD					
27	180	.00	.00	90	50	6.0	10	.272	.40	.14	8.8	77	34	432.403	211.216	90.275	.692	734.586	.000	DDDDDD					
27	240	.00	.00	90	50	6.0	6	.273	.19	.07	8.8	78	30	452.489	222.717	92.596	.713	768.515	.000	DDDDDD					
28	60	.00	.00	90	50	6.0	4	.273	.08	.05	8.9	78	30	474.721	234.717	94.899	.735	805.072	.000	DDSSSS					
28	120	.00	.00	90	49	6.0	9	.275	.34	.12	8.9	79	32	498.484	247.250	97.228	.757	843.719	.000	DDDDDD					
28	180	.00	.00	90	49	6.0	10	.278	.45	.15	9.0	79	30	523.317	260.347	99.678	.780	884.122	.000	DDDDDD					
28	240	.00	.00	90	49	6.0	7	.280	.25	.08	9.0	80	27	550.363	274.046	102.208	.804	927.421	.000	DDDDDD					
29	60	.00	.00	90	48	6.0	7	.281	.26	.09	9.1	80	27	580.773	288.409	104.758	.828	974.767	.000	DDDDDD					
29	120	.00	.00	90	48	6.0	9	.283	.38	.12	9.1	81	27	614.455	303.516	107.357	.853	1026.182	.000	DDDDDD					
29	180	.00	.00	90	47	6.0	18	.290	.92	.32	9.3	81	26	652.236	319.466	110.149	.879	1082.730	.000	DDDDDD					
29	240	.00	.00	90	45	6.0	21	.297	1.15	.39	9.4	82	20	699.543	336.422	113.244	.907	1150.117	.000	DDDDDD					
30	60	.00	.00	90	44	6.0	21	.302	1.19	.39	9.5	84	16	766.937	354.721	116.590	.936	1239.185	.000	DDDDDD					

30 120	.00	.00	90 42	6.0 24	.306	1.42	.46	9.7 85	12 866.770	374.973	120.118	.9661362.828	.000	DDDDDD
30 180	.00	.00	90 41	6.0 23	.309	1.39	.44	9.8 86	101009.739	398.108	123.783	.9981532.628	.000	DDDDDD
30 240	.00	.00	90 39	6.0 21	.311	1.28	.39	9.9 87	101202.005	425.363	127.548	1.0311755.947	.000	DDDDDD
31 60	.00	.00	90 38	6.0 22	.314	1.37	.41	10.0 88	101442.998	458.190	131.408	1.0642033.660	.000	DDDDDD
31 120	.00	.00	90 36	6.0 24	.317	1.54	.46	10.0 89	101726.691	498.128	135.381	1.0982361.298	.000	DDDDDD
31 180	.00	.00	90 34	6.0 22	.320	1.42	.41	10.1 89	102044.843	546.683	139.467	1.1342732.127	.000	DDDDDD
31 240	.00	.00	90 33	6.0 17	.322	1.07	.30	10.1 90	102387.168	605.218	143.622	1.1703137.179	.000	DDDDDD
V O L U M E - C E N T I M E T E R S														MELT MI PET G-MLT
1.80					21.05			2.58	.56	4.25				24.2 26.1 2.3 1.24
	.73					2.29		1.11		.00			.00	

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1 60	.00	.00	90 32	6.0 14	.323	.86	.23	10.2 90	102738.896	674.834	147.793	1.2073562.731	.000	DDDDDD
1 120	.00	.00	90 31	6.0 12	.324	.71	.18	10.2 91	103080.778	756.210	151.947	1.2453990.180	.000	DDDDDD
1 180	.00	.00	90 31	6.0 10	.324	.56	.14	10.2 91	103392.481	849.469	156.056	1.2824399.288	.000	DDDDDD
1 240	.00	.00	90 30	6.0 8	.324	.41	.10	10.2 91	103656.071	954.106	160.097	1.3204771.595	.000	DDDDDD
2 60	.00	.00	90 30	6.0 8	.324	.41	.10	10.3 91	123858.149	1068.990	164.063	1.3595092.561	.000	DDDDDD
2 120	.00	.00	90 29	6.0 11	.324	.63	.16	10.3 91	133991.920	1192.426	167.988	1.3975353.730	.000	DDDDDD
2 180	.00	.00	90 28	6.0 14	.325	.86	.23	10.3 91	124059.523	1322.310	171.923	1.4365555.192	.000	DDDDDD
2 240	.00	.00	90 27	6.0 12	.326	.72	.18	10.3 91	114071.703	1456.341	175.865	1.4765705.385	.000	DDDDDD
3 60	.53	.51	90 27	6.0 12	.327	.74	.02	10.4 92	104043.269	1592.233	179.788	1.5165816.806	.000	DDDDDD
3 120	1.33	.00	90 25	6.0 14	.406	2.27	.02	10.6 92	103993.996	1727.884	183.829	1.5585907.265	.000	RRRRRR
3 180	6.75	.01	90 23	6.0 16	.677	8.29	.09	11.2 93	103989.128	1861.547	188.647	1.6036040.925	.000	RRRRRR
3 240	3.17	.02	90 21	6.0 18	.498	4.97	.06	11.4 96	104180.298	1992.012	194.451	1.6536368.415	.000	RRRRRR
4 60	1.99	.01	90 19	6.0 18	.439	3.61	.04	11.5 97	104731.113	2118.704	200.798	1.7077052.322	.000	RRRRRR
4 120	1.33	.01	225 18	6.0 18	.406	2.84	.03	11.6 97	105694.340	2241.655	207.482	1.7638145.240	.000	RRRRRR
4 180	1.06	.01	415 16	6.0 17	.393	2.33	.03	11.6 98	106993.915	2361.381	214.380	1.8209571.496	.000	RRRRRR
4 240	.93	.01	415 15	6.0 17	.386	2.06	.03	11.6 98	108483.344	2478.730	221.413	1.880*****	.000	RRR
5 60	.80	.01	415 14	6.0 17	.380	1.92	.03	11.7 98	10*****2594.715	228.539		1.940*****	.000	RRR
5 120	.53	.01	415 13	6.0 12	.366	1.24	.02	11.7 98	10*****2710.351	235.683		2.002*****	.000	RRR

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE

			AREA		BASE-TEMP		ZONES														FLAGS BY ZONE		
JUN-1985			21500.		.0		6														1***5***10***15***20		
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL	OBS				
5	180	.42	.00	415	13	6.0	10	.361	.96	.03	11.7	98	10*****	2826.514	242.757	2.064*****	.000	RRR					
5	240	.11	.01	415	12	6.0	8	.340	.49	.08	11.7	98	10*****	2943.781	249.698	2.127*****	.000	DDD					
6	60	.00	.00	415	12	6.0	6	.339	.24	.07	11.7	98	11*****	3062.279	256.442	2.189*****	.000	DDD					
6	120	.00	.00	415	12	6.0	8	.338	.37	.11	11.6	98	13*****	3181.547	262.993	2.252*****	.000	DDD					
6	180	.00	.00	415	11	6.0	10	.338	.51	.14	11.6	98	14*****	3300.513	269.392	2.314*****	.000	DDD					
6	240	.00	.00	415	11	6.0	8	.338	.37	.11	11.6	98	15*****	3417.599	275.644	2.377*****	.000	DDD					
7	60	.01	.01	415	11	6.0	3	.339	.03	.04	11.6	98	15*****	3530.898	281.696	2.440*****	.000	SSS					
7	120	.01	.01	415	10	6.0	13	.336	.73	.21	11.5	98	19*****	3638.342	287.616	2.503*****	.000	DDD					
7	180	.01	.01	415	9	6.0	17	.338	.98	.29	11.5	98	17*****	3737.875	293.523	2.567*****	.000	DDD					
7	240	.01	.01	415	9	6.0	9	.338	.46	.12	11.5	97	15*****	3827.673	299.355	2.632*****	.000	DDD					

8	60	.11	.11	415	8	6.0	7	.337	.31	.07	11.5	97	159862.4533906	.301	305.020	2.696*****	.000	DDD	
8	120	.11	.11	415	8	6.0	10	.337	.54	.11	11.5	97	178971.7253972	.745	310.539	2.761*****	.000	DDD	
8	180	.11	.08	415	7	6.0	11	.337	.65	.13	11.4	97	178127.9614026	.368	315.954	2.826*****	.000	DDD	
8	240	.11	.04	415	7	6.0	9	.337	.50	.09	11.4	97	177345.9204066	.879	321.255	2.891*****	.000	DDD	
9	60	.00	.00	415	6	6.0	6	.336	.26	.08	11.4	97	176634.1864094	.319	326.402	2.956*****	.000	DDD	
9	120	.00	.00	415	6	6.0	13	.337	.70	.20	11.4	97	195994.8004109	.004	331.426	3.021*****	.000	DDD	
9	180	.00	.00	415	5	6.0	15	.338	.68	.27	11.3	97	185427.1434111	.471	336.374	3.0879878	.075	LDD	
9	240	.00	.00	415	5	6.0	10	.338	.47	.14	11.3	97	184930.5954102	.458	341.211	3.1539377	.417	LDD	
10	60	.13	.13	415	5	6.0	3	.336	.05	.03	11.3	97	184501.3594082	.875	345.876	3.2198933	.330	SSS	
10	120	.13	.06	415	4	6.0	7	.335	.39	.07	11.3	97	224129.8804053	.714	350.381	3.2858537	.260	DDD	
10	180	.13	.02	415	4	6.0	8	.335	.46	.08	11.3	97	223804.8344015	.940	354.789	3.3518178	.915	LDD	
10	240	.13	.02	415	4	6.0	6	.333	.32	.05	11.3	97	213517.9193970	.453	359.100	3.4177850	.888	DDA	
11	60	.13	.01	90	4	6.0	2	.000	.01	.02	11.3	97	223262.6893918	.085	363.250	3.4837547	.508	AAAAAA	
11	120	.12	.01	415	3	6.0	6	.316	.36	.06	11.3	96	253032.0823859	.588	367.269	3.5507262	.489	DDDLDD	
11	180	.12	.01	415	3	6.0	8	.330	.37	.08	11.3	96	242820.3353795	.611	371.222	3.6166990	.785	LDD	
11	240	.12	.02	415	3	6.0	5	.329	.19	.04	11.3	96	242624.9493726	.725	375.076	3.6836730	.433	DAA	
12	60	.00	.00	415	3	6.0	3	.330	.02	.04	11.3	96	252444.3693653	.448	378.772	3.7506480	.339	SSS	
12	120	.00	.00	415	3	6.0	10	.327	.28	.15	11.2	96	272275.9693576	.253	382.336	3.8176238	.375	LDD	
12	180	.00	.00	415	2	6.0	14	.328	.73	.23	11.2	96	282118.7973495	.570	385.909	3.8846004	.159	DDD	
12	240	.00	.00	535	2	6.0	7	.328	.13	.10	11.2	96	251975.8053411	.839	389.454	3.9525781	.050	DDD	
13	60	.00	.00	535	2	6.0	2	.000	.00	.04	11.2	96	271849.4473325	.555	392.831	4.0195571	.852	SS	
13	120	.00	.00	535	2	6.0	12	.322	.24	.19	11.1	96	291737.6123237	.240	396.066	4.0875375	.005	DD	
13	180	.00	.00	535	1	6.0	16	.324	.23	.28	11.1	96	291636.4693147	.387	399.202	4.1545187	.213	LD	
13	240	.00	.00	535	1	6.0	8	.323	.14	.12	11.1	95	311543.6853056	.443	402.218	4.2225006	.568	DD	
14	60	.05	.05	535	1	6.0	5	.322	.04	.05	11.0	95	331457.6562964	.812	405.084	4.2894831	.841	SS	
14	120	.05	.05	535	1	6.0	10	.322	.16	.13	11.0	95	351376.3982872	.850	407.810	4.3574661	.415	LD	
14	180	.05	.05	535	1	6.0	11	.323	.14	.15	11.0	95	361298.3022780	.860	410.416	4.4244494	.001	LD	
14	240	.05	.05	535	1	6.0	7	.322	.11	.09	11.0	95	381222.8632689	.099	412.896	4.4914329	.350	LD	
15	60	.03	.03	535	1	6.0	5	.321	.06	.06	11.0	95	401150.0922597	.788	415.242	4.5584167	.680	DS	
15	120	.03	.03	535	1	6.0	13	.322	.09	.20	10.9	95	431079.8182507	.120	417.455	4.6254009	.018	LD	
15	180	.03	.03	535	1	6.0	16	.324	.09	.26	10.8	95	441011.8282417	.264	419.545	4.6923853	.329	LD	
15	240	.03	.03	535	0	6.0	10	.324	.07	.13	10.8	94	46	946.1452328	.363	421.510	4.7583700	.776	LD
16	60	.00	.00	535	0	6.0	6	.323	.08	.08	10.8	94	47	882.9472240	.545	423.355	4.8253551	.672	DD
16	120	.00	.00	685	0	6.0	15	.324	.24	.27	10.7	94	48	822.8432153	.931	425.119	4.8913406	.784	DD
16	180	.00	.00	685	0	6.0	17	.319	.02	.33	10.7	94	48	767.0872068	.647	426.791	4.9573267	.482	D
16	240	.00	.00	685	0	6.0	12	.319	.01	.19	10.6	93	50	716.3941984	.833	428.322	5.0233134	.572	D
17	60	.00	.00	685	0	6.0	5	.318	.00	.07	10.6	93	51	669.8981902	.629	429.715	5.0893007	.331	S
17	120	.00	.00	685	0	6.0	17	.319	.01	.33	10.5	93	53	625.9041822	.151	430.974	5.1552884	.184	L
17	180	.00	.00	685	0	6.0	21	.322	.01	.43	10.4	92	54	582.9801743	.481	432.103	5.2202763	.784	L
17	240	.00	.00	685	0	6.0	12	.322	.01	.20	10.4	92	55	540.3441666	.665	433.105	5.2852645	.399	L
18	60	.00	.00	685	0	6.0	7	.322	.01	.10	10.3	91	56	497.8031591	.722	433.983	5.3502528	.858	D

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE

AREA BASE-TEMP ZONES

JUN-1985 21500. 0 6

FLAGS BY ZONE

DA HR PCPN INT SNOWLINE WE LR TA MR RG ET SMI ROP BFP SURF SUBSF BASEF LOWERZ TOTAL OBS 1***5***10***15***20

18	120	.00	.00	685	0	6.0	17	.324	.01	.32	10.3	91	58	455.5431518.653	434.741	5.4142414.352	.000	L
18	180	.00	.00	685	0	6.0	20	.326	.01	.40	10.2	91	60	413.9691447.448	435.382	5.4792302.277	.000	L
18	240	.00	.00	685	0	6.0	13	.327	.00	.23	10.1	90	61	373.5791378.092	435.909	5.5432193.122	.000	L
19	60	.12	.12	685	0	6.0	7	.326	.00	.06	10.1	90	63	334.8681310.575	436.325	5.6062087.374	.000	L
19	120	.12	.12	685	0	6.0	13	.326	.00	.15	10.0	90	64	298.2571244.888	436.634	5.6701985.449	.000	L
19	180	.12	.12		0	6.0	16	.328	.02	.21	10.0	89	64	264.0961181.032	436.840	5.7331887.701	.000	D
19	240	.12	.12		0	6.0	11	.000	.00	.12	10.0	89	65	232.6831119.015	436.947	5.7961794.441	.000	
20	60	.07	.07		0	6.0	6	.000	.00	.06	10.0	89	66	204.1801058.853	436.955	5.8581705.846	.000	
20	120	.07	.07		0	6.0	11	.000	.00	.15	9.9	89	66	178.5431000.568	436.865	5.9211621.896	.000	
20	180	.07	.06		0	6.0	13	.000	.00	.19	9.9	88	67	155.598 944.184	436.683	5.9831542.448	.000	
20	240	.07	.05		0	6.0	9	.000	.01	.12	9.8	88	67	135.157 889.727	436.419	6.0451467.348	.000	
21	60	.01	.01		0	6.0	5	.000	.00	.06	9.8	88	67	117.058 837.221	436.074	6.1061396.459	.000	
21	120	.01	.01		0	6.0	13	.000	.00	.24	9.8	87	67	101.132 786.685	435.643	6.1681329.626	.000	
21	180	.01	.01		0	6.0	17	.000	.00	.33	9.7	87	68	87.173 738.136	435.127	6.2291266.665	.000	
21	240	.01	.01		0	6.0	10	.000	.00	.15	9.6	86	68	74.962 691.587	434.530	6.2891207.369	.000	
22	60	.00	.00		0	6.0	5	.000	.00	.07	9.6	86	68	64.295 647.041	433.855	6.3501151.542	.000	
22	120	.00	.00		0	6.0	18	.000	.00	.36	9.5	86	69	54.990 604.496	433.104	6.4101099.000	.000	
22	180	.00	.00		0	6.0	23	.000	.00	.50	9.4	85	69	46.887 563.942	432.278	6.4701049.578	.000	
22	240	.00	.00		0	6.0	13	.000	.00	.23	9.4	84	69	39.847 525.362	431.381	6.5301003.121	.000	
23	60	.00	.00		0	6.0	14	.000	.00	.25	9.3	83	69	33.750 488.732	430.416	6.589 959.487	.000	
23	120	.00	.00		0	6.0	24	.000	.00	.52	9.2	83	69	28.486 454.020	429.383	6.649 918.537	.000	
23	180	.00	.00		0	6.0	27	.000	.00	.61	9.0	81	69	23.958 421.190	428.285	6.708 880.141	.000	
23	240	.00	.00		0	6.0	20	.000	.00	.41	8.9	80	69	20.080 390.198	427.126	6.766 844.170	.000	
24	60	.00	.00		0	6.0	14	.000	.00	.26	8.8	79	70	16.770 360.998	425.905	6.825 810.499	.000	
24	120	.00	.00		0	6.0	24	.000	.00	.52	8.7	78	70	13.958 333.537	424.627	6.883 779.005	.000	
24	180	.00	.00		0	6.0	28	.000	.00	.63	8.6	77	70	11.579 307.759	423.292	6.941 749.570	.000	
24	240	.00	.00		0	6.0	20	.000	.00	.41	8.5	76	70	9.574 283.604	421.902	6.998 722.079	.000	
25	60	.00	.00		0	6.0	14	.000	.00	.26	8.4	75	70	7.891 261.011	420.461	7.056 696.418	.000	
25	120	.00	.00		0	6.0	23	.000	.00	.48	8.3	74	70	6.485 239.915	418.968	7.113 672.481	.000	
25	180	.00	.00		0	6.0	26	.000	.00	.57	8.1	73	70	5.313 220.251	417.427	7.170 650.161	.000	
25	240	.00	.00		0	6.0	19	.000	.00	.39	8.0	72	70	4.341 201.953	415.839	7.226 629.359	.000	
26	60	.00	.00		0	6.0	12	.000	.00	.21	8.0	71	70	3.537 184.954	414.206	7.283 609.979	.000	
26	120	.00	.00		0	6.0	24	.000	.00	.51	7.9	70	70	2.874 169.187	412.529	7.339 591.928	.000	
26	180	.00	.00		0	6.0	28	.000	.00	.63	7.7	69	70	2.330 154.586	410.810	7.395 575.120	.000	
26	240	.00	.00		0	6.0	19	.000	.00	.39	7.6	68	70	1.884 141.085	409.051	7.450 559.471	.000	
27	60	.00	.00		0	6.0	13	.000	.00	.23	7.5	67	70	1.520 128.621	407.253	7.506 544.900	.000	
27	120	.00	.00		0	6.0	24	.000	.00	.51	7.4	66	70	1.224 117.131	405.418	7.561 531.334	.000	
27	180	.00	.00		0	6.0	28	.000	.00	.63	7.3	65	70	.983 106.554	403.548	7.616 518.701	.000	
27	240	.00	.00		0	6.0	19	.000	.00	.39	7.2	63	70	.788 96.831	401.643	7.670 506.933	.000	
28	60	.00	.00		0	6.0	12	.000	.00	.20	7.1	62	70	.631 87.906	399.706	7.725 495.967	.000	
28	120	.00	.00		0	6.0	26	.000	.00	.58	7.0	61	70	.504 79.723	397.737	7.779 485.743	.000	
28	180	.00	.00		0	6.0	32	.000	.00	.77	6.8	60	70	.402 72.232	395.738	7.832 476.204	.000	
28	240	.00	.00		0	6.0	21	.000	.00	.42	6.7	58	70	.320 65.382	393.711	7.886 467.298	.000	
29	60	.00	.00		0	6.0	11	.000	.00	.18	6.6	57	70	.254 59.126	391.656	7.939 458.975	.000	
29	120	.00	.00		0	6.0	18	.000	.00	.35	6.5	56	70	.202 53.419	389.575	7.993 451.189	.000	
29	180	.00	.00		0	6.0	21	.000	.00	.42	6.4	55	70	.160 48.221	387.470	8.045 443.895	.000	
29	240	.00	.00		0	6.0	15	.000	.00	.28	6.4	54	70	.126 43.489	385.340	8.098 437.054	.000	
30	60	.01	.01		0	6.0	10	.000	.00	.14	6.3	53	70	.100 39.189	383.188	8.150 430.627	.000	
30	120	.01	.01		0	6.0	17	.000	.00	.32	6.2	53	70	.079 35.284	381.015	8.203 424.580	.000	

30 180 .01 .01	0 6.0 21 .000 .00 .41 6.1 52 70	.062 31.742 378.822	8.255 418.880	.000
30 240 .01 .01	0 6.0 14 .000 .00 .26 6.1 51 70	.049 28.533 376.609	8.306 413.497	.000
V O L U M E - C E N T I M E T E R S				
21.62	49.84	34.50	4.33	60.65
2.41	6.43	21.77	.06	.00
				MELT MI PET G-MLT
				31.9 52.2 6.4 .47

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE

AREA BASE-TEMP ZONES																		FLAGS BY ZONE	
JUL-1985 21500. .0 6																		1***5***10***15***20	
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL	OBS
1	60	.02	.02	0	6.0	10	.000	.00	.15	6.0	50	70	.038	25.628	374.379	8.358	408.402	.000	
1	120	.02	.02	0	6.0	18	.000	.00	.33	6.0	50	70	.030	23.001	372.131	8.409	403.570	.000	
1	180	.02	.02	0	6.0	21	.000	.00	.40	5.9	49	70	.024	20.627	369.867	8.460	398.978	.000	
1	240	.02	.02	0	6.0	15	.000	.00	.25	5.8	48	70	.018	18.485	367.589	8.510	394.603	.000	
2	60	.01	.01	0	6.0	10	.000	.00	.15	5.8	47	70	.014	16.554	365.296	8.561	390.425	.000	
2	120	.01	.01	0	6.0	22	.000	.00	.46	5.6	47	70	.011	14.814	362.989	8.611	386.425	.000	
2	180	.01	.01	0	6.0	27	.000	.00	.58	5.5	45	70	.009	13.247	360.671	8.661	382.588	.000	
2	240	.01	.01	0	6.0	17	.000	.00	.32	5.4	44	70	.007	11.838	358.341	8.711	378.897	.000	
3	60	.17	.17	0	6.0	16	.000	.00	.19	5.4	43	70	.005	10.572	356.001	8.760	375.339	.000	
3	120	.17	.17	0	6.0	25	.000	.00	.34	5.3	42	70	.004	9.436	353.650	8.810	371.900	.000	
3	180	.17	.17	0	6.0	28	.000	.00	.40	5.2	41	70	.003	8.416	351.291	8.859	368.569	.000	
3	240	.17	.17	0	6.0	22	.000	.00	.28	5.1	40	70	.002	7.502	348.924	8.908	365.336	.000	
4	60	.06	.06	0	6.0	12	.000	.00	.17	5.1	40	70	.002	6.683	346.549	8.956	362.190	.000	
4	120	.06	.06	0	6.0	19	.000	.00	.33	5.0	39	70	.001	5.950	344.168	9.005	359.124	.000	
4	180	.06	.06	0	6.0	22	.000	.00	.39	4.9	39	70	.001	5.294	341.781	9.053	356.129	.000	
4	240	.06	.06	0	6.0	16	.000	.00	.27	4.8	38	70	.001	4.708	339.388	9.101	353.198	.000	
5	60	.03	.03	0	6.0	11	.000	.00	.15	4.8	37	70	.001	4.184	336.992	9.148	350.325	.000	
5	120	.03	.03	0	6.0	23	.000	.00	.45	4.7	37	70	.000	3.716	334.591	9.196	347.504	.000	
5	180	.03	.03	0	6.0	28	.000	.00	.57	4.5	36	70	.000	3.299	332.187	9.243	344.730	.000	
5	240	.03	.03	0	6.0	18	.000	.00	.33	4.5	34	70	.000	2.928	329.780	9.290	341.998	.000	
6	60	.04	.04	0	6.0	13	.000	.00	.19	4.4	34	70	.000	2.597	327.372	9.337	339.305	.000	
6	120	.04	.04	0	6.0	18	.000	.00	.32	4.3	33	70	.000	2.302	324.962	9.384	336.647	.000	
6	180	.04	.04	0	6.0	20	.000	.00	.36	4.2	32	70	.000	2.039	322.551	9.430	334.020	.000	
6	240	.04	.04	0	6.0	16	.000	.00	.27	4.2	32	70	.000	1.806	320.140	9.476	331.422	.000	
7	60	.00	.00	0	6.0	11	.000	.00	.17	4.1	31	70	.000	1.598	317.729	9.522	328.850	.000	
7	120	.00	.00	0	6.0	18	.000	.00	.35	4.0	31	70	.000	1.414	315.320	9.568	326.301	.000	
7	180	.00	.00	0	6.0	21	.000	.00	.41	3.9	30	70	.000	1.251	312.911	9.613	323.775	.000	
7	240	.00	.00	0	6.0	15	.000	.00	.26	3.9	29	70	.000	1.105	310.504	9.658	321.268	.000	
8	60	.26	.26	0	6.0	8	.000	.00	.06	3.8	29	70	.000	.977	308.100	9.703	318.780	.000	
8	120	.26	.26	0	6.0	14	.000	.00	.12	3.8	29	70	.000	.862	305.698	9.748	316.309	.000	
8	180	.26	.04	0	6.0	16	.000	.06	.14	3.9	28	70	.053	.762	303.338	9.793	313.946	.000	
8	240	.26	.04	0	6.0	12	.000	.06	.09	4.1	29	68	.379	.676	301.057	9.838	311.950	.000	
9	60	.01	.01	0	6.0	8	.000	.00	.11	4.0	30	65	1.288	.614	298.815	9.883	310.600	.000	
9	120	.01	.01	0	6.0	14	.000	.00	.25	4.0	30	66	2.888	.588	296.574	9.927	309.977	.000	

9 180	.01	.01	0	6.0	17	.000	.00	.30	3.9	30	67	4.973	.614	294.333	9.972	309.892	.000
9 240	.01	.01	0	6.0	11	.000	.00	.17	3.9	29	67	7.204	.706	292.093	10.016	310.018	.000
10 60	.01	.01	0	6.0	10	.000	.00	.15	3.8	29	68	9.278	.870	289.854	10.060	310.061	.000
10 120	.01	.01	0	6.0	22	.000	.00	.44	3.7	28	68	10.986	1.107	287.617	10.104	309.814	.000
10 180	.01	.01	0	6.0	27	.000	.00	.56	3.6	27	68	12.222	1.413	285.383	10.147	309.164	.000
10 240	.01	.01	0	6.0	17	.000	.00	.32	3.5	26	69	12.957	1.778	283.151	10.190	308.077	.000
11 60	.48	.48	0	6.0	13	.000	.00	.03	3.5	26	69	13.223	2.191	280.923	10.233	306.570	.000
11 120	.48	.04	0	6.0	19	.000	.11	.05	3.8	26	69	13.183	2.638	278.766	10.277	304.864	.000
11 180	.48	.01	0	6.0	21	.000	.13	.06	4.1	28	65	13.346	3.111	276.753	10.320	303.531	.000
11 240	.48	.01	0	6.0	16	.000	.14	.04	4.4	31	60	14.600	3.615	274.888	10.364	303.468	.000
12 60	.07	.01	0	6.0	12	.000	.02	.16	4.4	33	56	17.779	4.174	273.102	10.409	305.464	.000
12 120	.07	.04	0	6.0	18	.000	.01	.30	4.4	33	58	23.035	4.830	271.322	10.453	309.639	.000
12 180	.07	.07	0	6.0	21	.000	.00	.36	4.3	33	59	29.692	5.629	269.539	10.497	315.356	.000
12 240	.07	.07	0	6.0	16	.000	.00	.25	4.2	32	61	36.692	6.609	267.748	10.540	321.589	.000
13 60	.09	.09	0	6.0	10	.000	.00	.11	4.2	32	62	43.067	7.788	265.952	10.584	327.390	.000
13 120	.09	.03	0	6.0	17	.000	.02	.24	4.2	31	63	48.163	9.165	264.161	10.627	332.116	.000
13 180	.09	.06	0	6.0	19	.000	.01	.28	4.1	31	64	51.706	10.721	262.381	10.670	335.479	.000

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE

AREA BASE-TEMP ZONES

JUL-1985	21500.	.0	6														FLAGS BY ZONE
DA HR PCPN INT SNOWLINE WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL	OBS	1***5***10***15***20		
13 240	.09	.07	0	6.0	13	.000	.01	.18	4.1	31	64	53.712	12.427	260.606	10.713	337.458	.000
14 60	.53	.04	0	6.0	12	.000	.15	.02	4.4	31	65	54.479	14.243	258.913	10.756	338.392	.000
14 120	.53	.00	0	6.0	19	.000	.17	.04	4.8	33	60	54.833	16.137	257.389	10.800	339.158	.000
14 180	.53	.01	0	6.0	21	.000	.19	.04	5.1	36	55	56.175	18.090	256.033	10.845	341.143	.000
14 240	.53	.01	0	6.0	16	.000	.20	.03	5.4	39	50	60.112	20.119	254.838	10.889	345.959	.000
15 60	.09	.01	0	6.0	11	.000	.03	.13	5.4	42	45	67.788	22.274	253.724	10.935	354.720	.000
15 120	.09	.03	0	6.0	17	.000	.02	.26	5.4	43	47	79.081	24.633	252.608	10.980	367.301	.000
15 180	.09	.06	0	6.0	19	.000	.01	.30	5.3	42	50	92.506	27.276	251.482	11.024	382.289	.000
15 240	.09	.07	0	6.0	15	.000	.01	.21	5.3	42	53	106.032	30.261	250.340	11.069	397.703	.000
16 60	.64	.05	0	6.0	12	.000	.24	.02	5.6	41	55	118.175	33.611	249.297	11.114	412.196	.000
16 120	.64	.01	0	6.0	15	.000	.29	.03	5.9	45	48	129.054	37.326	248.465	11.160	426.005	.000
16 180	.64	.01	0	6.0	15	.000	.31	.03	6.3	49	41	140.625	41.415	247.832	11.207	441.078	.000
16 240	.64	.01	0	6.0	14	.000	.33	.02	6.6	52	36	155.785	45.921	247.376	11.254	460.336	.000
17 60	.00	.00	0	6.0	10	.000	.00	.15	6.5	55	33	176.662	50.945	246.984	11.302	485.893	.000
17 120	.00	.00	0	6.0	17	.000	.00	.32	6.4	55	36	202.642	56.617	246.549	11.349	517.157	.000
17 180	.00	.00	0	6.0	20	.000	.00	.38	6.3	54	39	230.299	63.051	246.073	11.396	550.818	.000
17 240	.00	.00	0	6.0	14	.000	.00	.24	6.3	53	43	255.493	70.295	245.556	11.443	582.787	.000
18 60	.01	.01	0	6.0	9	.000	.00	.13	6.3	52	47	275.059	78.316	244.999	11.490	609.863	.000
18 120	.01	.01	0	6.0	21	.000	.00	.40	6.2	52	51	287.235	86.999	244.405	11.536	630.175	.000
18 180	.01	.01	0	6.0	25	.000	.00	.51	6.0	51	54	291.541	96.169	243.774	11.582	643.067	.000
18 240	.01	.01	0	6.0	17	.000	.00	.30	6.0	49	56	288.444	105.607	243.108	11.628	648.787	.000
19 60	.06	.06	0	6.0	14	.000	.00	.21	5.9	49	58	278.997	115.077	242.408	11.674	648.156	.000
19 120	.06	.06	0	6.0	21	.000	.00	.35	5.8	48	60	264.541	124.338	241.674	11.720	642.273	.000

19 180	.06	.06	0	6.0	23	.000	.00	.40	5.7	47	62	246.481	133.163	240.909	11.765	632.318	.000
19 240	.06	.06	0	6.0	18	.000	.00	.30	5.6	46	63	226.136	141.349	240.113	11.810	619.408	.000
20 60	.09	.09	0	6.0	11	.000	.00	.13	5.6	45	64	204.655	148.723	239.287	11.855	604.519	.000
20 120	.09	.09	0	6.0	19	.000	.00	.28	5.5	45	65	182.978	155.149	238.432	11.899	588.458	.000
20 180	.09	.09	0	6.0	22	.000	.00	.34	5.5	44	66	161.830	160.527	237.550	11.944	571.851	.000
20 240	.09	.09	0	6.0	16	.000	.00	.22	5.4	43	66	141.740	164.793	236.642	11.988	555.163	.000
21 60	.05	.05	0	6.0	8	.000	.00	.10	5.4	43	67	123.059	167.917	235.708	12.032	538.715	.000
21 120	.05	.05	0	6.0	17	.000	.00	.27	5.3	42	67	105.995	169.898	234.749	12.076	522.717	.000
21 180	.05	.05	0	6.0	20	.000	.00	.33	5.2	42	68	90.639	170.763	233.766	12.119	507.287	.000
21 240	.05	.05	0	6.0	13	.000	.00	.19	5.2	41	68	76.999	170.560	232.761	12.162	492.482	.000
22 60	.28	.28	0	6.0	7	.000	.00	.04	5.2	40	68	65.018	169.354	231.734	12.205	478.311	.000
22 120	.28	.13	0	6.0	14	.000	.06	.11	5.2	40	69	54.655	167.224	230.724	12.248	464.851	.000
22 180	.28	.03	0	6.0	17	.000	.10	.14	5.3	41	66	46.053	164.264	229.790	12.292	452.399	.000
22 240	.28	.04	0	6.0	11	.000	.10	.08	5.5	42	63	39.620	160.578	228.950	12.335	441.483	.000
23 60	.27	.02	0	6.0	12	.000	.11	.09	5.6	43	60	35.865	156.290	228.199	12.379	432.732	.000
23 120	.27	.02	0	6.0	17	.000	.11	.14	5.7	45	57	35.183	151.540	227.532	12.423	426.678	.000
23 180	.27	.04	0	6.0	18	.000	.11	.16	5.8	46	55	37.751	146.481	226.943	12.467	423.642	.000
23 240	.27	.04	0	6.0	15	.000	.11	.12	5.9	47	53	43.500	141.274	226.423	12.512	423.709	.000
24 60	.02	.02	0	6.0	11	.000	.00	.15	5.8	48	51	51.994	136.082	225.918	12.556	426.551	.000
24 120	.02	.02	0	6.0	17	.000	.00	.29	5.8	47	54	62.192	131.054	225.378	12.601	431.225	.000
24 180	.02	.02	0	6.0	20	.000	.00	.36	5.7	46	57	72.584	126.312	224.805	12.645	436.345	.000
24 240	.02	.02	0	6.0	15	.000	.00	.24	5.6	45	59	81.734	121.938	224.198	12.689	440.559	.000
25 60	.15	.15	0	6.0	16	.000	.00	.18	5.6	45	60	88.662	117.973	223.560	12.733	442.927	.000
25 120	.15	.10	0	6.0	18	.000	.03	.22	5.5	44	62	92.918	114.422	222.904	12.776	443.020	.000
25 180	.15	.05	0	6.0	19	.000	.04	.23	5.5	44	62	94.576	111.261	222.257	12.820	440.913	.000
25 240	.15	.06	0	6.0	17	.000	.04	.20	5.5	44	62	94.129	108.450	221.626	12.863	437.068	.000
26 60	.19	.05	0	6.0	14	.000	.06	.14	5.6	44	61	92.287	105.939	221.020	12.906	432.153	.000
26 120	.19	.03	0	6.0	17	.000	.07	.19	5.6	44	60	89.800	103.683	220.452	12.950	426.885	.000

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE

AREA BASE-TEMP ZONES

JUL-1985 21500. .0 6																			FLAGS BY ZONE	
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL	OBS	1***5***10***15***20
26	180	.19	.05		0	6.0	19	.000	.06	.21	5.6	45	59	87.356	101.643	219.919	12.994	421.912	.000	
26	240	.19	.05		0	6.0	16	.000	.06	.17	5.7	45	58	85.478	99.792	219.417	13.037	417.725	.000	
27	60	.41	.04		0	6.0	11	.000	.17	.04	5.9	45	58	84.600	98.114	218.997	13.081	414.792	.000	
27	120	.41	.01		0	6.0	15	.000	.19	.07	6.1	48	53	85.392	96.609	218.714	13.126	413.841	.000	
27	180	.41	.02		0	6.0	16	.000	.19	.07	6.2	50	48	88.897	95.304	218.561	13.171	415.932	.000	
27	240	.41	.02		0	6.0	14	.000	.20	.06	6.4	52	44	96.237	94.254	218.524	13.217	422.232	.000	
28	60	.20	.01		0	6.0	11	.000	.10	.09	6.5	54	40	108.096	93.551	218.552	13.262	433.463	.000	
28	120	.20	.02		0	6.0	14	.000	.09	.14	6.5	54	41	124.183	93.307	218.600	13.308	449.399	.000	
28	180	.20	.03		0	6.0	16	.000	.09	.16	6.5	55	42	143.206	93.636	218.663	13.354	468.859	.000	
28	240	.20	.04		0	6.0	13	.000	.09	.12	6.6	55	42	163.461	94.631	218.741	13.400	490.234	.000	
29	60	.30	.03		0	6.0	10	.000	.15	.06	6.7	56	43	183.476	96.359	218.858	13.447	512.140	.000	
29	120	.30	.02		0	6.0	14	.000	.16	.10	6.8	57	41	202.487	98.853	219.038	13.493	533.871	.000	

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL																			
GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE																			
AREA BASE-TEMP ZONES																		FLAGS BY ZONE	
AUG-1985	21500.	.0	6																
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL	OBS
																			1***5***10***15***20
7	60	.10	.10		0	6.0	15	.000	.00	.19	5.1	40	70	7.261	125.980	210.272	15.039	358.552	.0000
7	120	.10	.10		0	6.0	24	.000	.00	.34	5.0	39	70	5.860	118.534	209.430	15.079	348.902	.0000

7 180	.10	.10	0 6.0 26	.000	.00	.39	4.9 39 70	4.717	111.242	208.566	15.119	339.645	.000
7 240	.10	.10	0 6.0 20	.000	.00	.27	4.9 38 70	3.789	104.143	207.682	15.159	330.773	.000
8 60	.00	.00	0 6.0 17	.000	.00	.29	4.8 37 70	3.036	97.269	206.777	15.198	322.281	.000
8 120	.00	.00	0 6.0 27	.000	.00	.51	4.6 36 70	2.428	90.644	205.854	15.238	314.164	.000
8 180	.00	.00	0 6.0 30	.000	.00	.60	4.5 35 70	1.938	84.288	204.912	15.277	306.416	.000
8 240	.00	.00	0 6.0 23	.000	.00	.43	4.4 34 70	1.544	78.217	203.953	15.316	299.029	.000
9 60	.03	.03	0 6.0 13	.000	.00	.19	4.3 33 70	1.228	72.438	202.977	15.354	291.997	.000
9 120	.03	.03	0 6.0 20	.000	.00	.32	4.3 33 70	.975	66.959	201.985	15.393	285.311	.000
9 180	.03	.03	0 6.0 22	.000	.00	.36	4.2 32 70	.772	61.781	200.977	15.431	278.962	.000
9 240	.03	.03	0 6.0 17	.000	.00	.26	4.1 31 70	.611	56.903	199.955	15.469	272.938	.000
10 60	.00	.00	0 6.0 12	.000	.00	.18	4.1 31 70	.483	52.322	198.918	15.507	267.230	.000
10 120	.00	.00	0 6.0 24	.000	.00	.45	4.0 30 70	.381	48.031	197.868	15.544	261.825	.000
10 180	.00	.00	0 6.0 28	.000	.00	.54	3.8 29 70	.300	44.023	196.805	15.582	256.710	.000
10 240	.00	.00	0 6.0 20	.000	.00	.34	3.7 28 70	.236	40.289	195.730	15.619	251.874	.000
11 60	.22	.22	0 6.0 14	.000	.00	.12	3.7 27 70	.186	36.817	194.643	15.656	247.302	.000
11 120	.22	.22	0 6.0 24	.000	.00	.24	3.6 27 70	.146	33.597	193.546	15.692	242.981	.000
11 180	.22	.17	0 6.0 27	.000	.01	.29	3.6 27 70	.126	30.618	192.446	15.729	238.919	.000
11 240	.22	.07	0 6.0 19	.000	.04	.18	3.7 26 69	.194	27.867	191.368	15.765	235.194	.000
12 60	.24	.05	0 6.0 11	.000	.05	.07	3.8 27 68	.525	25.335	190.335	15.802	231.997	.000
12 120	.24	.02	0 6.0 16	.000	.06	.13	3.9 28 66	1.396	23.019	189.357	15.839	229.611	.000
12 180	.24	.03	0 6.0 18	.000	.06	.16	4.0 29 64	3.102	20.923	188.436	15.875	228.336	.000
12 240	.24	.04	0 6.0 14	.000	.06	.11	4.1 30 63	5.865	19.056	187.569	15.912	228.402	.000
13 60	.13	.03	0 6.0 9	.000	.03	.08	4.2 31 62	9.745	17.438	186.735	15.949	229.867	.000
13 120	.13	.02	0 6.0 13	.000	.03	.14	4.2 31 62	14.580	16.090	185.922	15.986	232.577	.000
13 180	.13	.03	0 6.0 15	.000	.03	.16	4.3 32 62	20.032	15.032	185.127	16.022	236.214	.000
13 240	.13	.04	0 6.0 12	.000	.03	.11	4.3 32 62	25.712	14.279	184.347	16.059	240.397	.000
14 60	.00	.00	0 6.0 6	.000	.00	.07	4.3 32 62	31.233	13.838	183.565	16.096	244.732	.000
14 120	.00	.00	0 6.0 14	.000	.00	.21	4.2 32 63	36.199	13.706	182.765	16.132	248.801	.000
14 180	.00	.00	0 6.0 16	.000	.00	.25	4.2 32 64	40.226	13.866	181.949	16.168	252.209	.000
14 240	.00	.00	0 6.0 11	.000	.00	.14	4.1 31 65	43.049	14.292	181.116	16.204	254.660	.000
15 60	.00	.00	0 6.0 7	.000	.00	.08	4.1 31 66	44.563	14.945	180.268	16.240	256.015	.000
15 120	.00	.00	0 6.0 13	.000	.00	.20	4.1 31 66	44.811	15.781	179.405	16.275	256.272	.000
15 180	.00	.00	0 6.0 16	.000	.00	.25	4.0 30 67	43.941	16.749	178.527	16.310	255.528	.000
15 240	.00	.00	0 6.0 11	.000	.00	.14	4.0 30 67	42.154	17.801	177.636	16.346	253.937	.000
16 60	.09	.09	0 6.0 9	.000	.00	.08	3.9 29 68	39.675	18.886	176.732	16.380	251.674	.000
16 120	.09	.09	0 6.0 14	.000	.00	.16	3.9 29 68	36.723	19.961	175.816	16.415	248.915	.000
16 180	.09	.09	0 6.0 16	.000	.00	.19	3.8 29 68	33.494	20.986	174.888	16.450	245.817	.000
16 240	.09	.09	0 6.0 11	.000	.00	.12	3.8 28 69	30.154	21.928	173.948	16.484	242.514	.000
17 60	.02	.02	0 6.0 11	.000	.00	.15	3.8 28 69	26.834	22.760	172.997	16.518	239.110	.000
17 120	.02	.02	0 6.0 14	.000	.00	.20	3.7 28 69	23.633	23.463	172.037	16.552	235.685	.000
17 180	.02	.02	0 6.0 15	.000	.00	.22	3.7 27 69	20.622	24.022	171.066	16.585	232.296	.000
17 240	.02	.02	0 6.0 13	.000	.00	.18	3.6 27 69	17.843	24.430	170.087	16.619	228.978	.000
18 60	.01	.01	0 6.0 10	.000	.00	.12	3.6 27 69	15.321	24.682	169.098	16.652	225.754	.000
18 120	.01	.01	0 6.0 15	.000	.00	.22	3.5 26 70	13.065	24.782	168.101	16.685	222.634	.000
18 180	.01	.01	0 6.0 17	.000	.00	.26	3.5 26 70	11.071	24.733	167.097	16.718	219.619	.000
18 240	.01	.01	0 6.0 13	.000	.00	.17	3.4 25 70	9.327	24.543	166.085	16.751	216.706	.000
19 60	.00	.00	0 6.0 9	.000	.00	.11	3.4 25 70	7.815	24.224	165.066	16.783	213.888	.000
19 120	.00	.00	0 6.0 19	.000	.00	.30	3.3 25 70	6.516	23.787	164.041	16.815	211.159	.000
19 180	.00	.00	0 6.0 22	.000	.00	.38	3.2 24 70	5.409	23.244	163.010	16.848	208.509	.000

AREA	BASE-TEMP	ZONES
1	100	1
2	100	2
3	100	3
4	100	4
5	100	5
6	100	6
7	100	7
8	100	8
9	100	9
10	100	10
11	100	11
12	100	12
13	100	13
14	100	14
15	100	15
16	100	16
17	100	17
18	100	18
19	100	19
20	100	20
21	100	21
22	100	22
23	100	23
24	100	24
25	100	25
26	100	26
27	100	27
28	100	28
29	100	29
30	100	30
31	100	31
32	100	32
33	100	33
34	100	34
35	100	35
36	100	36
37	100	37
38	100	38
39	100	39
40	100	40
41	100	41
42	100	42
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30	60	.08	.02	415	0	6.0	4	.000	.00	.03	3.1	22	65	14.644	7.898	123.702	18.060	164.304	.000	AAA
30	120	.07	.01		0	6.0	13	.245	.02	.14	3.1	22	66	17.822	7.929	122.982	18.086	166.820	.000	DDD
30	180	.07	.04		0	6.0	16	.000	.01	.20	3.1	22	65	20.652	8.082	122.275	18.113	169.121	.000	
30	240	.07	.05		0	6.0	9	.000	.00	.08	3.1	22	66	23.022	8.354	121.569	18.139	171.083	.000	
31	60	.01	.01		0	6.0	6	.000	.00	.06	3.1	22	66	24.846	8.739	120.860	18.164	172.610	.000	
31	120	.01	.01		0	6.0	12	.000	.00	.15	3.0	22	67	26.057	9.226	120.145	18.190	173.618	.000	
31	180	.01	.01		0	6.0	15	.000	.00	.20	3.0	22	67	26.621	9.796	119.424	18.216	174.057	.000	
31	240	.01	.01		0	6.0	10	.000	.00	.11	3.0	21	68	26.553	10.429	118.699	18.241	173.922	.000	
VOLUME - CENTIMETERS																				MELT MI PET G-MLT
8.49																				.1 3.5 6.6 .01
		4.94																		.00

SEP-1985

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE

SEP-1985		21500.		.0		6		AREA BASE-TEMP ZONES												FLAGS BY ZONE	
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL	OBS	1***5***10***15***20	
1	60	.00	.00		0	6.0	4	.000	.00	.04	2.9	21	68	25.917	11.102	117.968	18.266	173.253	.000		
1	120	.00	.00		0	6.0	15	.000	.00	.21	2.9	21	68	24.806	11.790	117.233	18.291	172.120	.000		
1	180	.00	.00		0	6.0	20	.000	.00	.30	2.8	21	69	23.330	12.471	116.493	18.316	170.610	.000		
1	240	.00	.00		0	6.0	11	.000	.00	.13	2.8	20	69	21.601	13.122	115.750	18.341	168.814	.000		
2	60	.06	.06		0	6.0	9	.000	.00	.09	2.8	20	69	19.721	13.725	115.003	18.365	166.814	.000		
2	120	.06	.06		0	6.0	13	.000	.00	.15	2.7	20	69	17.779	14.264	114.253	18.389	164.686	.000		
2	180	.06	.06		0	6.0	15	.000	.00	.18	2.7	19	69	15.848	14.727	113.499	18.413	162.487	.000		
2	240	.06	.06		0	6.0	11	.000	.00	.12	2.6	19	69	13.984	15.103	112.742	18.437	160.267	.000		
3	60	.01	.01		0	6.0	7	.000	.00	.07	2.6	19	69	12.225	15.388	111.983	18.461	158.057	.000		
3	120	.01	.01		0	6.0	13	.000	.00	.16	2.6	19	70	10.599	15.578	111.222	18.485	155.883	.000		
3	180	.01	.01		0	6.0	15	.000	.00	.20	2.5	18	70	9.119	15.673	110.458	18.508	153.758	.000		
3	240	.01	.01		0	6.0	11	.000	.00	.12	2.5	18	70	7.791	15.676	109.693	18.532	151.690	.000		
4	60	.00	.00		0	6.0	6	.000	.00	.05	2.5	18	70	6.614	15.590	108.925	18.555	149.684	.000		
4	120	.00	.00		0	6.0	13	.000	.00	.16	2.5	18	70	5.582	15.421	108.157	18.578	147.737	.000		
4	180	.00	.00		0	6.0	15	.000	.00	.20	2.4	18	70	4.685	15.176	107.387	18.600	145.848	.000		
4	240	.00	.00		0	6.0	10	.000	.00	.11	2.4	17	70	3.913	14.862	106.616	18.623	144.014	.000		
5	60	.00	.00		0	6.0	6	.000	.00	.05	2.4	17	70	3.253	14.488	105.844	18.646	142.231	.000		
5	120	.00	.00		0	6.0	14	.000	.00	.17	2.3	17	70	2.693	14.062	105.071	18.668	140.494	.000		
5	180	.00	.00		0	6.0	18	.000	.00	.23	2.3	17	70	2.220	13.591	104.298	18.690	138.799	.000		
5	240	.00	.00		0	6.0	11	.000	.00	.12	2.2	17	70	1.824	13.085	103.525	18.712	137.145	.000		
6	60	.00	.00		0	6.0	7	.000	.00	.06	2.2	17	70	1.493	12.550	102.752	18.734	135.528	.000		
6	120	.00	.00		0	6.0	14	.000	.00	.17	2.2	16	70	1.218	11.994	101.978	18.755	133.946	.000		
6	180	.00	.00		0	6.0	17	.000	.00	.22	2.1	16	70	.990	11.425	101.205	18.777	132.397	.000		
6	240	.00	.00		0	6.0	11	.000	.00	.11	2.1	16	70	.803	10.848	100.433	18.798	130.882	.000		
7	60	.28	.28		0	6.0	8	.000	.00	.03	2.1	16	70	.650	10.268	99.661	18.819	129.398	.000		
7	120	.28	.24		0	6.0	13	.000	.01	.06	2.1	16	70	.529	9.691	98.893	18.840	127.954	.000		

7	180	.28	.02		0	6.0	14	.000	.04	.07	2.3	16	70	.490	9.122	98.156	18.861	126.629	.000
7	240	.28	.02		0	6.0	11	.000	.04	.05	2.5	17	68	.686	8.568	97.470	18.882	125.607	.000
8	60	.19	.01		0	6.0	8	.000	.03	.05	2.6	18	67	1.349	8.038	96.827	18.904	125.117	.000
8	120	.19	.01		0	6.0	11	.000	.03	.08	2.8	19	66	2.650	7.547	96.220	18.925	125.342	.000
8	180	.19	.02		0	6.0	13	.000	.03	.10	2.9	20	65	4.638	7.114	95.648	18.946	126.346	.000
8	240	.19	.03		0	6.0	10	.000	.03	.07	3.0	20	65	7.260	6.762	95.109	18.967	128.098	.000
9	60	.08	.02		0	6.0	6	.000	.01	.04	3.0	21	64	10.391	6.510	94.593	18.988	130.482	.000
9	120	.08	.01		0	6.0	10	.000	.02	.08	3.1	22	65	13.820	6.378	94.088	19.009	133.294	.000
9	180	.08	.02		0	6.0	11	.000	.01	.10	3.1	22	65	17.283	6.379	93.594	19.030	136.286	.000
9	240	.08	.02		0	6.0	8	.000	.01	.07	3.1	22	65	20.535	6.522	93.110	19.051	139.218	.000
10	60	.03	.02	685	0	6.0	5	.000	.00	.04	3.1	22	65	23.386	6.808	92.629	19.072	141.894	.000
10	120	.03	.01		0	6.0	9	.243	.01	.10	3.1	22	66	25.691	7.230	92.148	19.092	144.161	.000
10	180	.03	.02		0	6.0	12	.000	.00	.13	3.1	22	66	27.355	7.776	91.665	19.113	145.909	.000
10	240	.03	.03		0	6.0	8	.000	.00	.07	3.1	22	67	28.336	8.428	91.177	19.133	147.074	.000
11	60	.09	.02	685	0	6.0	5	.000	.01	.04	3.1	22	67	28.653	9.163	90.693	19.153	147.663	.000
11	120	.09	.01		0	6.0	10	.243	.02	.08	3.2	22	67	28.410	9.959	90.223	19.173	147.765	.000
11	180	.09	.02		0	6.0	12	.000	.02	.11	3.2	23	67	27.787	10.790	89.766	19.193	147.536	.000
11	240	.09	.03		0	6.0	8	.000	.01	.06	3.2	23	67	26.973	11.635	89.320	19.213	147.141	.000
12	60	.01	.01		0	6.0	4	.000	.00	.04	3.2	23	67	26.101	12.476	88.875	19.233	146.686	.000
12	120	.01	.01		0	6.0	9	.000	.00	.09	3.2	23	67	25.211	13.298	88.424	19.253	146.187	.000
12	180	.01	.01		0	6.0	11	.000	.00	.12	3.2	23	68	24.268	14.088	87.967	19.272	145.595	.000
12	240	.01	.01		0	6.0	7	.000	.00	.07	3.1	23	68	23.217	14.834	87.504	19.292	144.846	.000
13	60	.00	.00		0	6.0	5	.000	.00	.05	3.1	23	68	22.025	15.523	87.035	19.311	143.893	.000
13	120	.00	.00		0	6.0	11	.000	.00	.13	3.1	22	69	20.687	16.146	86.560	19.330	142.723	.000
13	180	.00	.00		0	6.0	14	.000	.00	.17	3.1	22	69	19.224	16.692	86.080	19.349	141.345	.000

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMPUTED LOWER CHURCHILL DRAINAGE

AREA BASE-TEMP ZONES																
SEP-1985	21500.	.0	6													
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF
FLAGS BY ZONE																
OBS	1***5***10***15***20															
13	240	.00	.00	0	6.0	9	.000	.00	.09	3.0	22	69	17.671	17.155	85.596	19.368
14	60	.07	.07	0	6.0	3	.000	.00	.03	3.0	22	69	16.071	17.527	85.107	19.386
14	120	.06	.06	0	6.0	10	.000	.00	.09	3.0	22	69	14.467	17.804	84.613	19.405
14	180	.06	.05	0	6.0	12	.000	.00	.12	3.0	21	69	12.900	17.985	84.117	19.423
14	240	.06	.03	0	6.0	7	.000	.01	.06	3.0	21	69	11.414	18.070	83.623	19.441
15	60	.01	.01	0	6.0	1	.000	.00	.02	3.0	21	69	10.057	18.061	83.128	19.460
15	120	.01	.01	0	6.0	7	.000	.00	.06	3.0	21	69	8.858	17.962	82.630	19.477
15	180	.01	.01	0	6.0	9	.000	.00	.09	2.9	21	69	7.815	17.779	82.129	19.495
15	240	.01	.01	0	6.0	5	.000	.00	.04	2.9	21	70	6.906	17.521	81.624	19.513
16	60	.00	.00	0	6.0	1	.000	.00	.02	2.9	21	70	6.109	17.194	81.116	19.530
16	120	.00	.00	0	6.0	12	.000	.00	.14	2.9	21	70	5.402	16.806	80.604	19.548
16	180	.00	.00	0	6.0	16	.000	.00	.21	2.8	21	70	4.768	16.365	80.090	19.565
16	240	.00	.00	0	6.0	7	.000	.00	.07	2.8	20	70	4.197	15.879	79.574	19.582
17	60	.00	.00	0	6.0	4	.000	.00	.04	2.8	20	70	3.680	15.355	79.055	19.599
17	120	.00	.00	0	6.0	17	.000	.00	.21	2.8	20	70	3.213	14.800	78.534	19.615

17 180	.00	.00	0	6.0	21	.000	.00	.29	2.7	20	70	2.792	14.221	78.011	19.632	114.656	.000
17 240	.00	.00	0	6.0	12	.000	.00	.13	2.7	19	70	2.414	13.623	77.486	19.649	113.172	.000
18 60	.00	.00	0	6.0	13	.000	.00	.15	2.6	19	70	2.077	13.014	76.960	19.665	111.715	.000
18 120	.00	.00	0	6.0	19	.000	.00	.25	2.6	19	70	1.777	12.397	76.432	19.681	110.288	.000
18 180	.00	.00	0	6.0	21	.000	.00	.28	2.5	18	70	1.514	11.779	75.902	19.697	108.892	.000
18 240	.00	.00	0	6.0	17	.000	.00	.21	2.4	18	70	1.283	11.163	75.372	19.713	107.530	.000
19 60	.01	.01	0	6.0	9	.000	.00	.08	2.4	18	70	1.082	10.553	74.840	19.729	106.204	.000
19 120	.01	.01	0	6.0	16	.000	.00	.20	2.4	18	70	.909	9.952	74.308	19.744	104.913	.000
19 180	.01	.01	0	6.0	19	.000	.00	.24	2.3	17	70	.760	9.364	73.775	19.760	103.658	.000
19 240	.01	.01	0	6.0	13	.000	.00	.14	2.3	17	70	.633	8.792	73.241	19.775	102.440	.000
20 60	.08	.08	0	6.0	9	.000	.00	.06	2.3	17	70	.525	8.236	72.707	19.790	101.258	.000
20 120	.08	.08	0	6.0	14	.000	.00	.13	2.2	17	70	.434	7.700	72.172	19.805	100.111	.000
20 180	.08	.08	0	6.0	17	.000	.00	.17	2.2	16	70	.357	7.184	71.637	19.820	98.999	.000
20 240	.08	.08	0	6.0	12	.000	.00	.10	2.2	16	70	.293	6.690	71.102	19.835	97.920	.000
21 60	.23	.23	0	6.0	3	.000	.00	.02	2.2	16	70	.240	6.218	70.568	19.850	96.875	.000
21 120	.20	.10	0	6.0	14	.000	.02	.08	2.2	16	70	.210	5.769	70.044	19.864	95.887	.000
21 180	.20	.02	0	6.0	18	.000	.03	.12	2.3	16	69	.274	5.344	69.548	19.879	95.044	.000
21 240	.20	.03	0	6.0	10	.000	.03	.05	2.5	17	68	.569	4.946	69.088	19.893	94.496	.000
22 60	.00	.00	0	6.0	3	.000	.00	.03	2.5	18	67	1.228	4.582	68.643	19.908	94.361	.000
22 120	.00	.00	0	6.0	8	.000	.00	.07	2.4	18	68	2.250	4.261	68.197	19.922	94.629	.000
22 180	.00	.00	0	6.0	9	.000	.00	.09	2.4	18	68	3.491	3.990	67.748	19.936	95.166	.000
22 240	.00	.00	0	6.0	6	.000	.00	.05	2.4	18	68	4.761	3.777	67.298	19.950	95.786	.000
23 60	.01	.01	0	6.0	0	.000	.00	.02	2.4	17	69	5.899	3.624	66.846	19.964	96.333	.000
23 120	.01	.01	0	6.0	11	.000	.00	.10	2.4	17	69	6.803	3.530	66.392	19.978	96.703	.000
23 180	.01	.01	0	6.0	15	.000	.00	.16	2.3	17	69	7.423	3.491	65.938	19.992	96.843	.000
23 240	.01	.01	0	6.0	6	.000	.00	.05	2.3	17	69	7.756	3.501	65.482	20.005	96.744	.000
24 60	.01	.01	0	6.0	8	.000	.00	.07	2.3	17	69	7.825	3.551	65.025	20.019	96.419	.000
24 120	.01	.01	0	6.0	12	.000	.00	.11	2.3	17	69	7.672	3.632	64.567	20.032	95.903	.000
24 180	.01	.01	0	6.0	13	.000	.00	.13	2.2	17	70	7.344	3.735	64.108	20.045	95.232	.000
24 240	.01	.01	0	6.0	10	.000	.00	.09	2.2	17	70	6.889	3.851	63.649	20.058	94.447	.000
25 60	.14	.14	0	6.0	5	.000	.00	.03	2.2	16	70	6.351	3.972	63.189	20.071	93.583	.000
25 120	.14	.06	0	6.0	13	.000	.01	.09	2.3	16	70	5.780	4.090	62.737	20.084	92.691	.000
25 180	.14	.02	0	6.0	15	.000	.02	.12	2.3	17	69	5.260	4.200	62.306	20.096	91.862	.000
25 240	.14	.03	0	6.0	10	.000	.02	.06	2.4	17	69	4.914	4.299	61.897	20.109	91.218	.000
26 60	.00	.00	0	6.0	6	.000	.00	.05	2.4	17	68	4.842	4.388	61.497	20.122	90.849	.000
26 120	.00	.00	0	6.0	13	.000	.00	.15	2.4	17	68	5.050	4.470	61.096	20.134	90.751	.000

SSARR SNOWBAND MODEL (METRIC) - ACRES PMF STUDY, LOWER CHURCHILL

GULLMUSK COMUPUTED LOWER CHURCHILL DRAINAGE

AREA BASE-TEMP ZONES

SEP-1985 21500. .0 6																			FLAGS BY ZONE		
DA	HR	PCPN	INT	SNOWLINE	WE	LR	TA	MR	RG	ET	SMI	ROP	BFP	SURF	SUBSF	BASEF	LOWERZ	TOTAL	OBS	1***5***10***15***20	
26	180	.00	.00		0	6.0	16	.000	.00	.18	2.3	17	69	5.442	4.551	60.693	20.147	90.833	.000		
26	240	.00	.00		0	6.0	10	.000	.00	.10	2.3	17	69	5.890	4.633	60.289	20.159	90.971	.000		
27	60	.15	.14		0	6.0	8	.000	.00	.05	2.3	17	69	6.290	4.720	59.884	20.171	91.065	.000		
27	120	.15	.02		0	6.0	10	.000	.02	.06	2.4	17	69	6.595	4.811	59.493	20.183	91.082	.000		
27	180	.15	.02		0	6.0	11	.000	.02	.07	2.5	17	68	6.860	4.907	59.128	20.195	91.090	.000		

27	240	.15	.02	0	6.0	9	.000	.02	.06	2.6	18	68	7.212	5.009	58.790	20.207	91.218	.000										
28	60	.81	.02	0	6.0	7	.000	.15	.01	3.2	18	67	7.904	5.122	58.549	20.220	91.795	.000										
28	120	.81	.00	0	6.0	10	.000	.19	.01	3.8	23	62	9.556	5.260	58.491	20.233	93.539	.000										
28	180	.81	.00	0	6.0	11	.000	.23	.01	4.4	28	56	13.310	5.456	58.637	20.247	97.649	.000										
28	240	.81	.00	0	6.0	9	.000	.27	.01	5.0	33	49	20.704	5.775	58.994	20.261	105.734	.000										
29	60	.06	.00	0	6.0	6	.000	.02	.04	5.0	38	42	33.007	6.321	59.451	20.277	119.055	.000										
29	120	.06	.01	0	6.0	10	.000	.02	.09	5.0	38	45	50.023	7.227	59.898	20.292	137.440	.000										
29	180	.06	.02	0	6.0	11	.000	.02	.10	5.0	38	48	69.820	8.622	60.334	20.307	159.083	.000										
29	240	.06	.03	0	6.0	8	.000	.02	.07	5.0	39	51	89.825	10.603	60.757	20.322	181.507	.000										
30	60	.03	.02	415	0	6.0	3	.000	.00	.02	5.0	39	53	107.835	13.216	61.163	20.337	202.551	.000									
30	120	.03	.01	0	6.0	7	.242	.01	.05	5.0	39	55	122.339	16.457	61.550	20.352	220.697	.000										
30	180	.03	.01	0	6.0	9	.000	.00	.08	5.0	39	57	132.550	20.272	61.917	20.366	235.106	.000										
30	240	.03	.02	685	0	6.0	5	.000	.00	.04	5.0	38	59	138.297	24.572	62.264	20.381	245.514	.000									
														V O L U M E	- C E N T I M E T E R S													
														9.40			1.50			.18			1.00			1.54		
														2.86			3.00			.13			.23			.00		
														60.09			78.84			38.75			11.39			75.29		
														16.83			24.83			24.51			.64			.00		

AAAAA
DDD
A
MELT MI PET G-MLT
.0 6.5 3.2 .01
MELT MI PET G-MLT
56.2 101.2 25.1 1.73

*

RIVER LOCHURCH

MODEL LOCHURCH RUNNING RIVER MODEL FOR 612 PERIODS.

FINAL FILE OF TIME RECORDS IS ON UNIT 21

ZR L 4

ZS GULLMUSK,,,1,2,3,4,5,6,7

STATISTICAL SUMMARY ACRES PMF STUDY, LOWER CHURCHILL

COMPUTED
GULLMUSK COMUPUTED LOWER CHURCHILL DRAINAGE

	1985					1986							1986		
	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	TOT	
1. COMPUTED MAXIMUM FL OW	1397	17528	639	690	218									17528	
2. DAY COMPUTED MAX OCCURRED	30	6	19	1	30									JUN 6	
3. COMPUTED MINIMUM FL OW	27	425	305	158	91									27	
4. DAY COMPUTED MIN OCCURRED	1	30	11	29	26									MAY 1	
5. COMPUTED MEAN F LOW	260	4957	422	297	129									1224	
6. COMPUTED VOLUME, CM.	3.13	61.75	5.08	3.70	1.60									75.27	
7. ACCUM. COMPUTED VOL., CM	3.13	64.88	69.97	73.67	75.27									75.27	

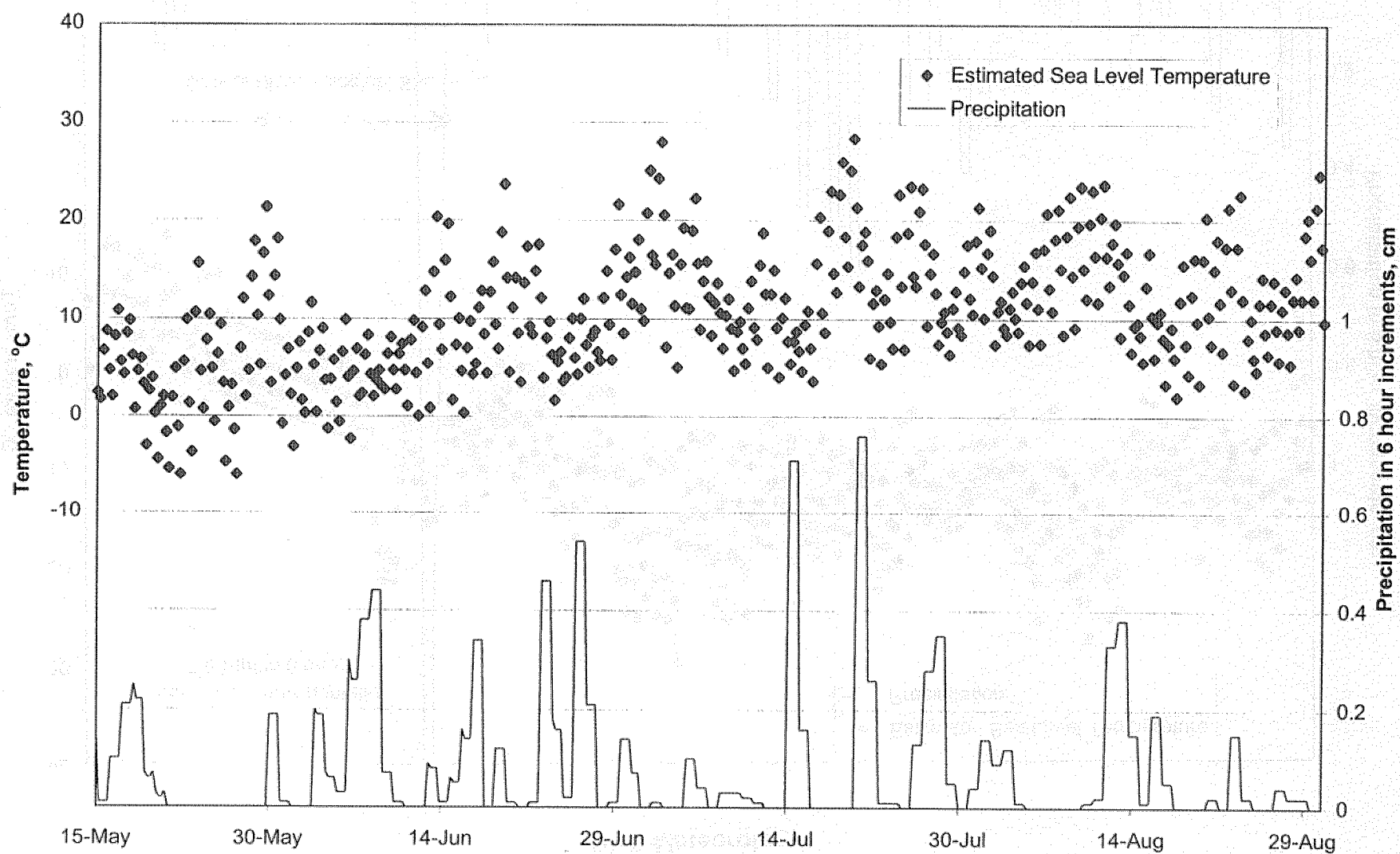
PR GULLMUSK1

END OF INPUT

Repeat of total flow as one column of values deleted from output file.

Appendix E Sensitivity Checks

1981 Meteorology

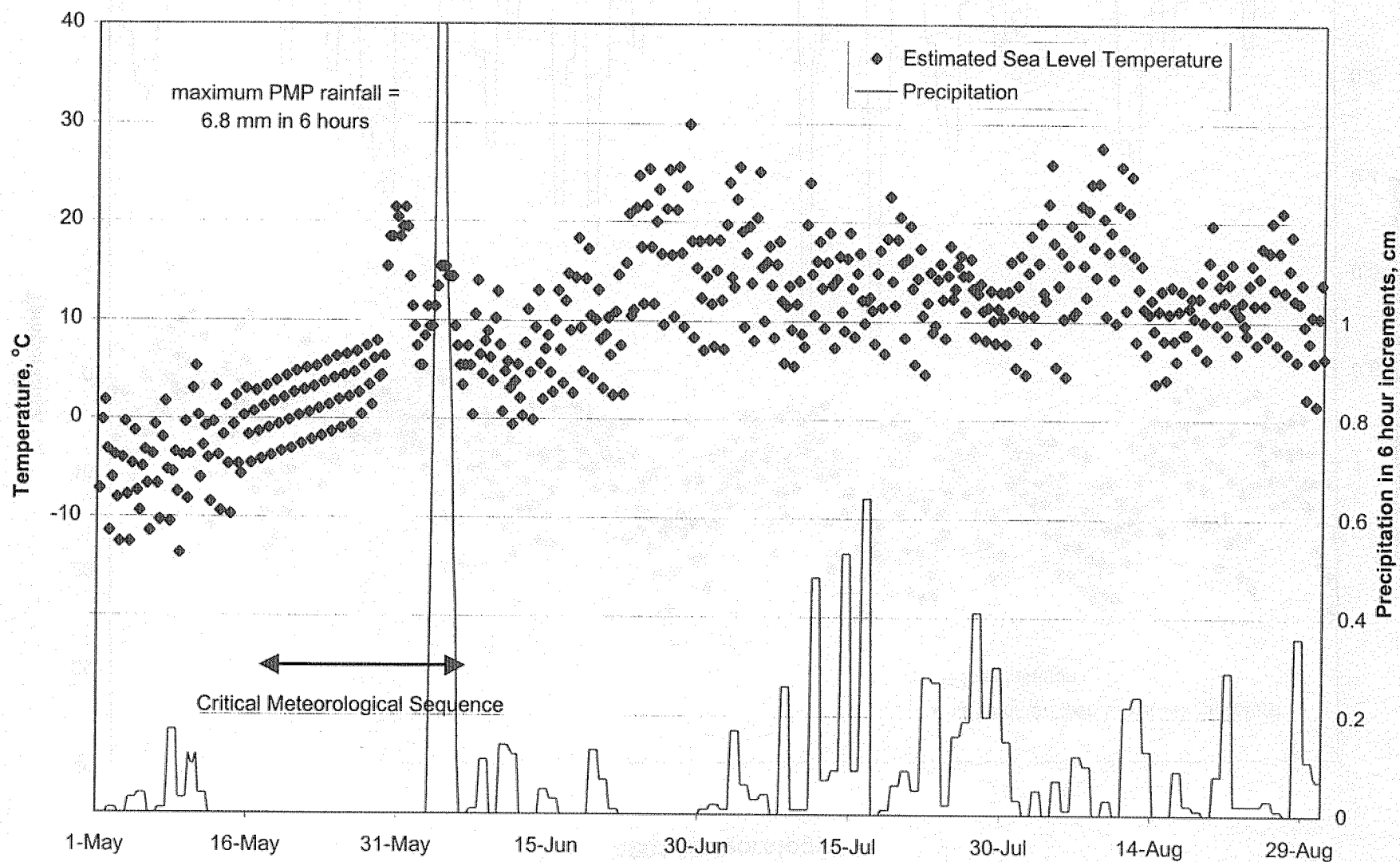


P12858

81out details: Met

Acres -12/3/98

PMF Meteorology

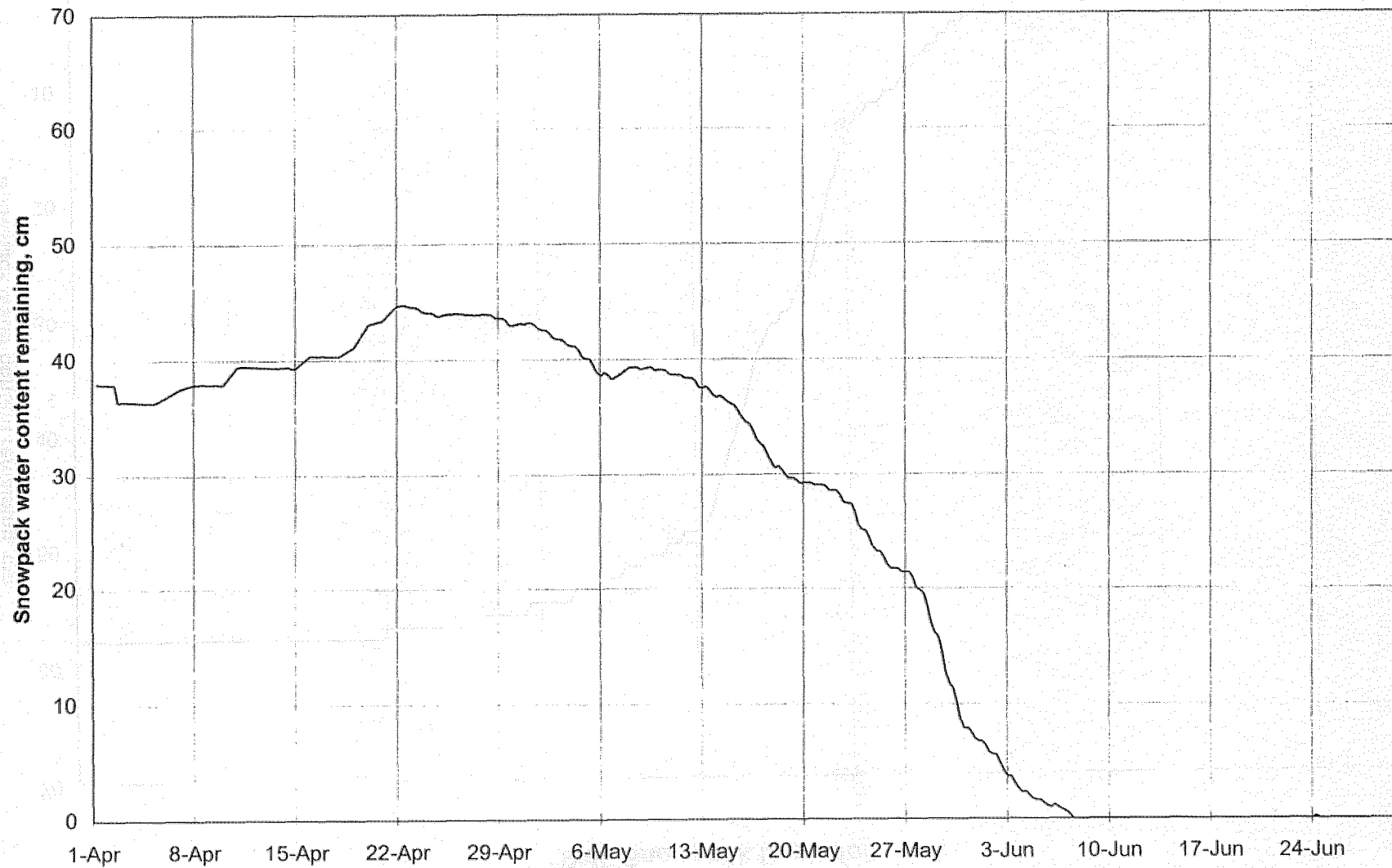


P12858

pmf details: met

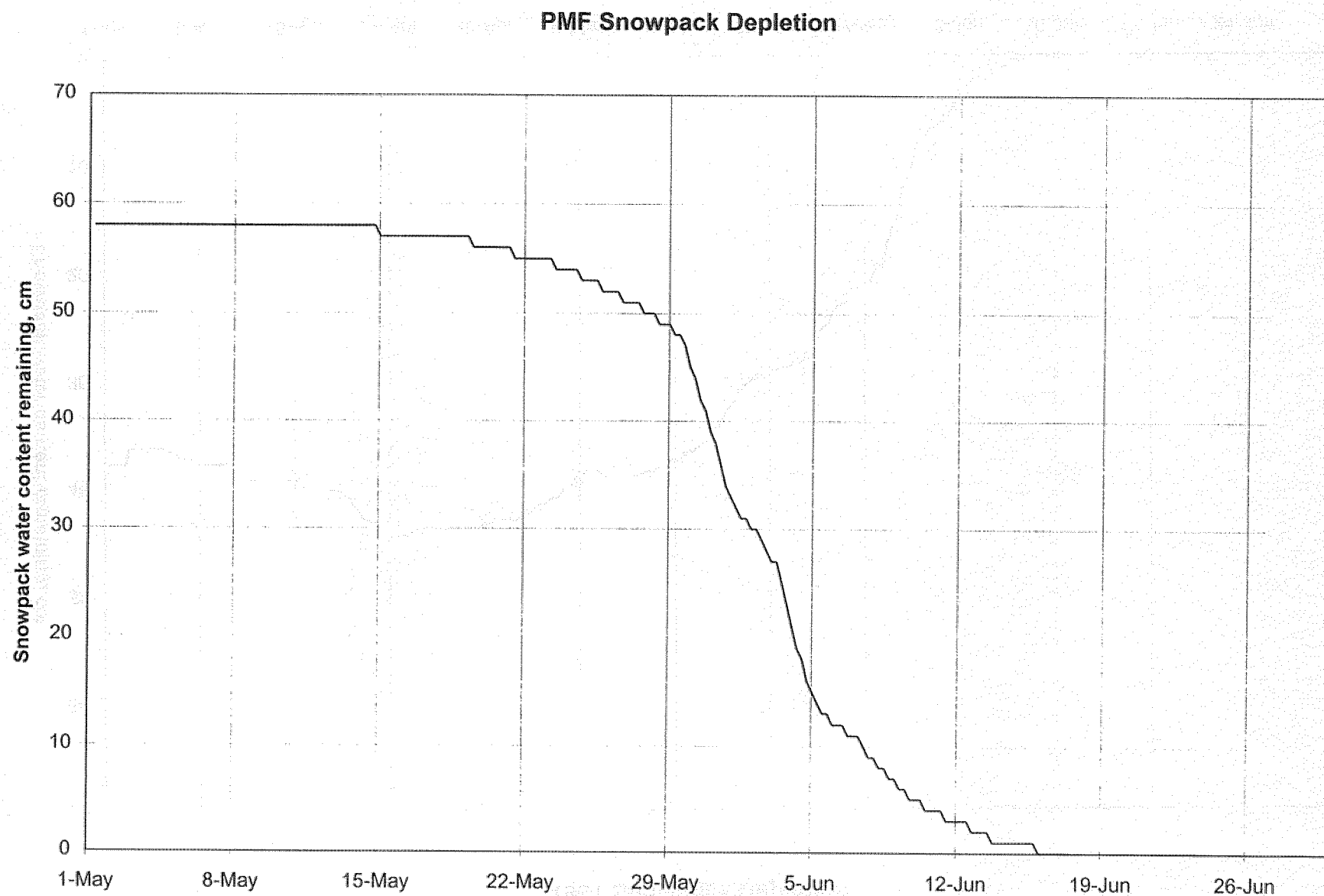
Acres - 12/3/98

1981 Snowpack Depletion



P12858
81out details: snowpack

Acres -12/3/98

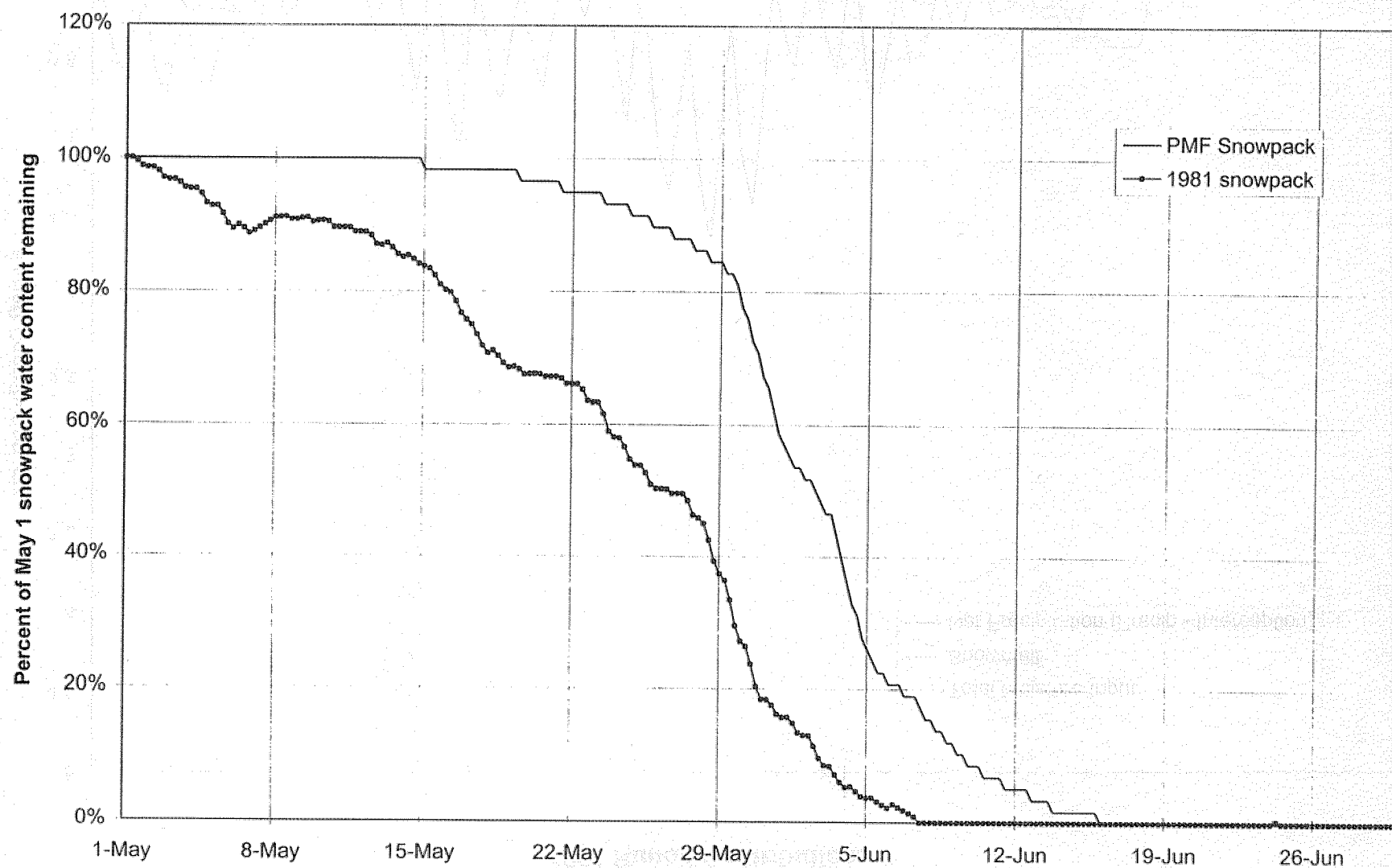


P12858

pmf details: snowpack depletion

Acres - 12/3/98

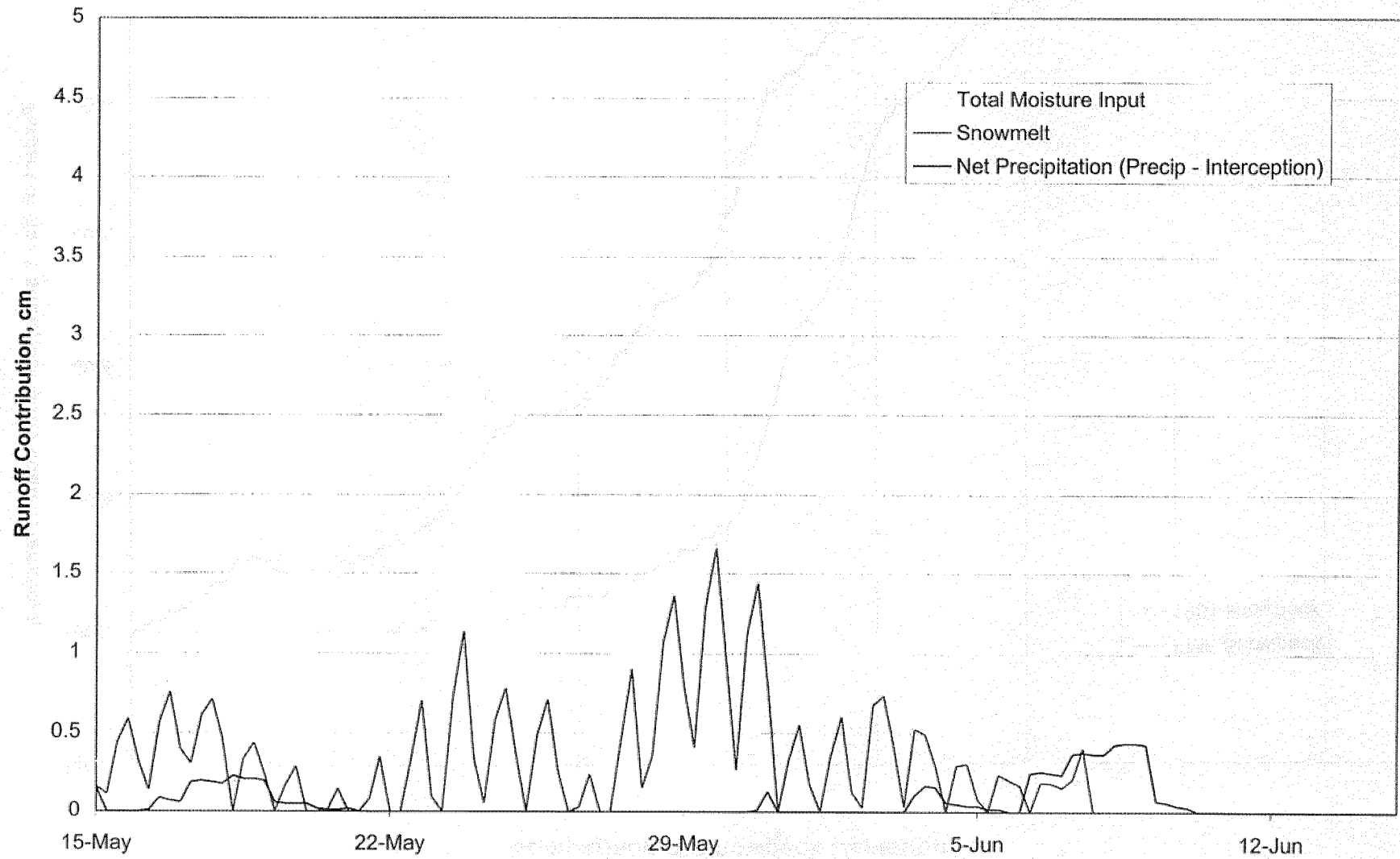
Comparison of Snowpack Depletion



P12858

pmf details: snowwater

Acres - 12/3/98

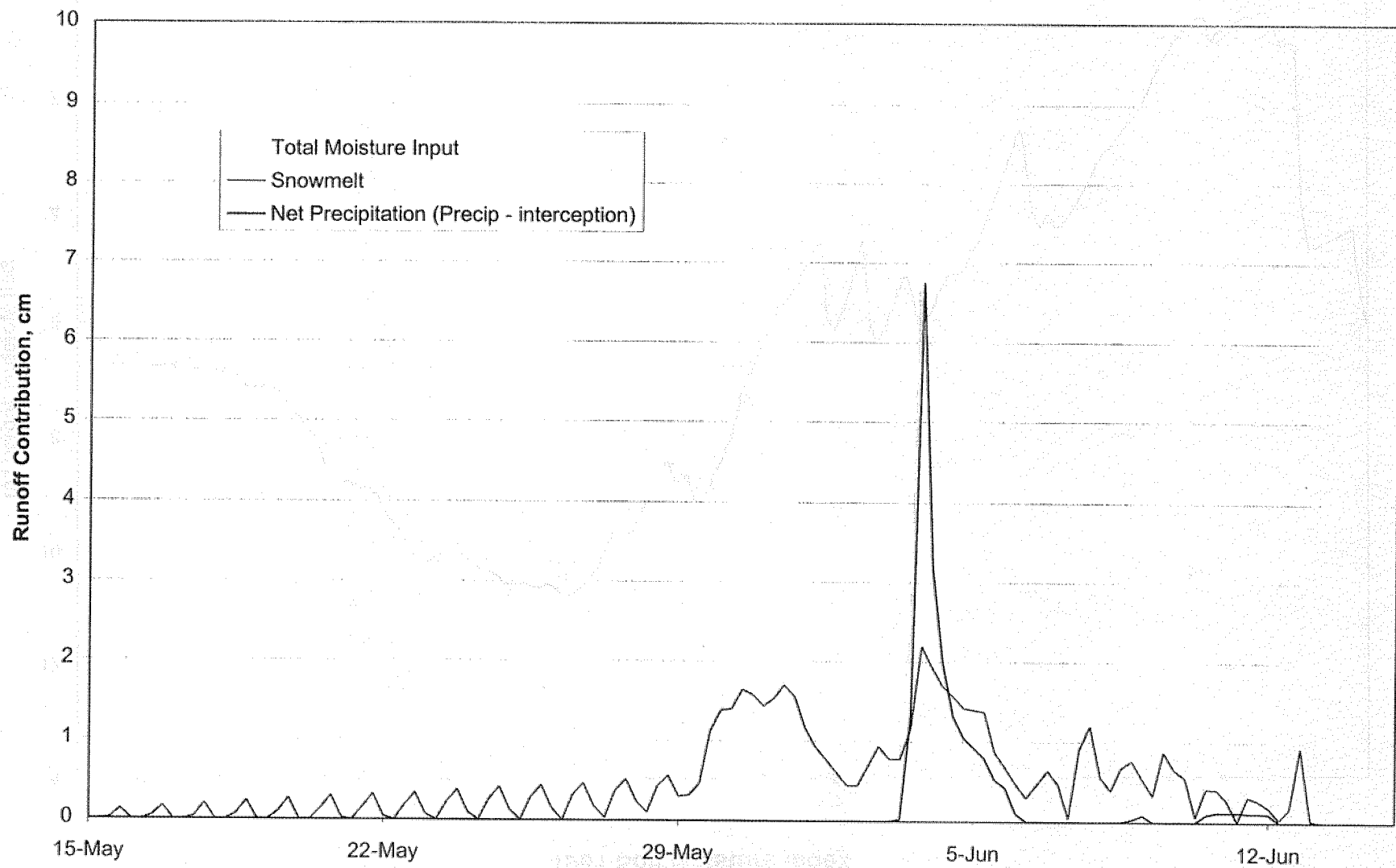


81out details: ml

Acres -12/3/98



PMF Runoff Contributions

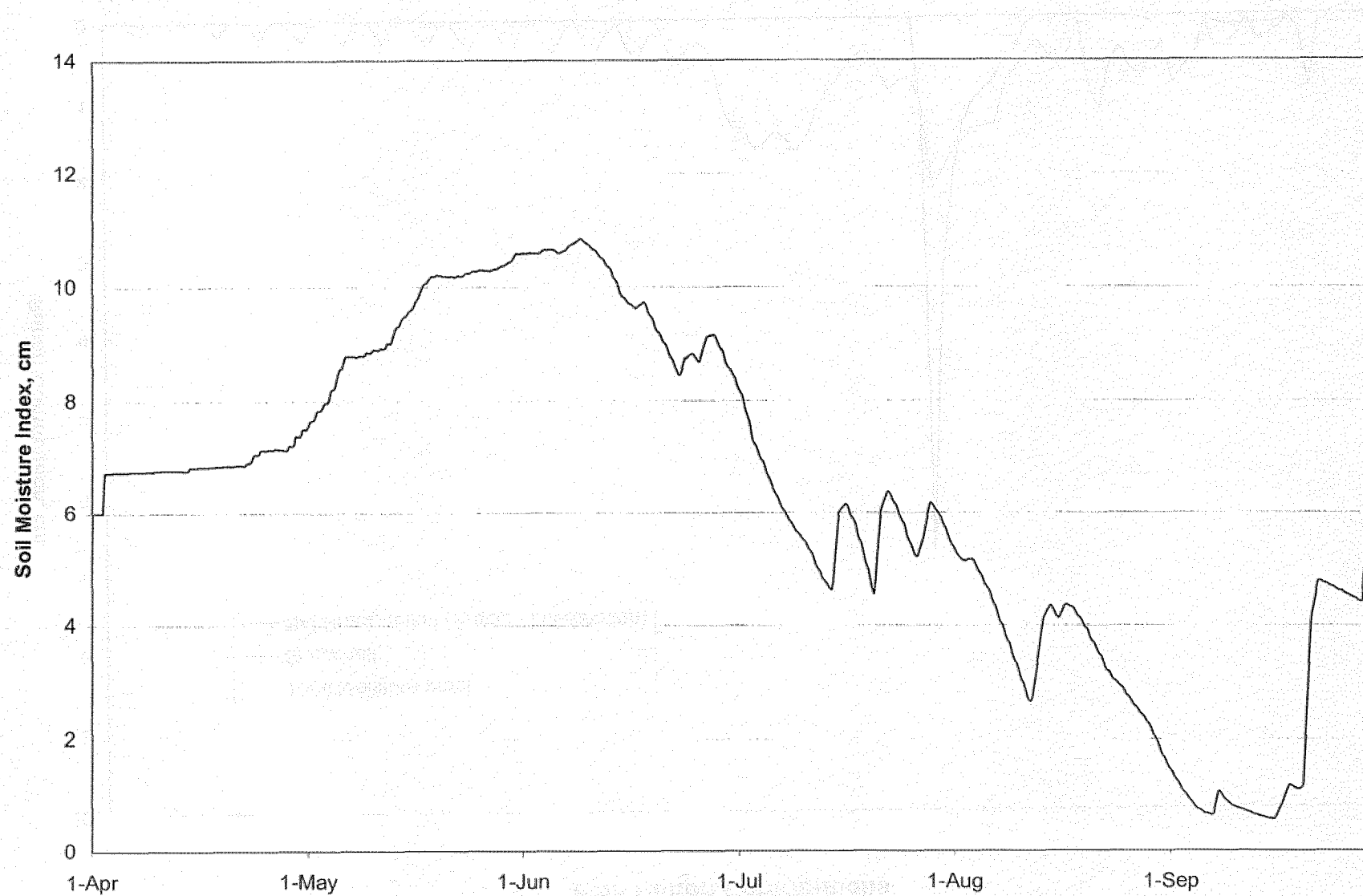


P12858

pmf details: MI

Acres - 12/3/98

1981 Soil Moisture Index

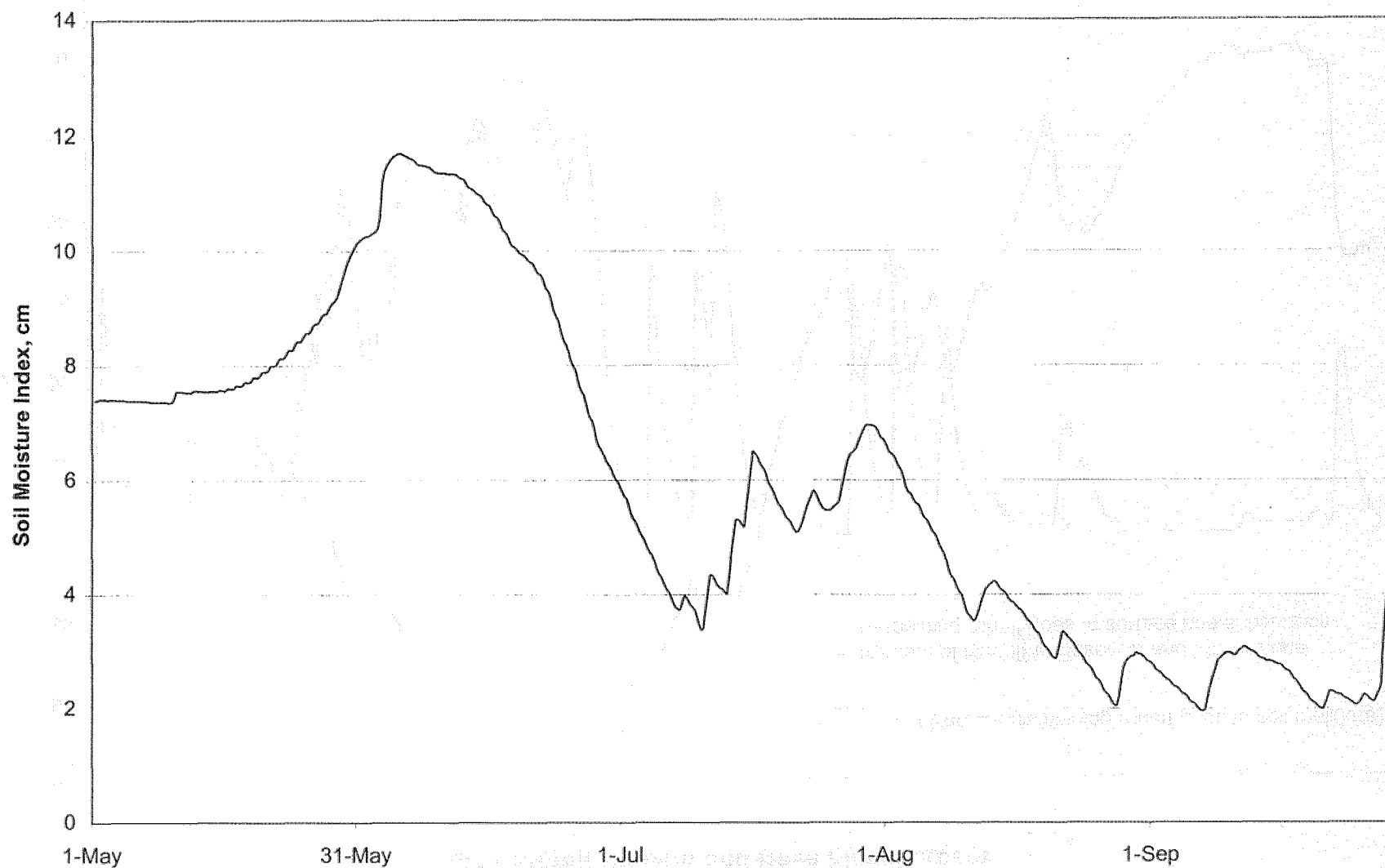


P12858

81out details: SMI

Acres -12/3/98

PMF Soil Moisture Index

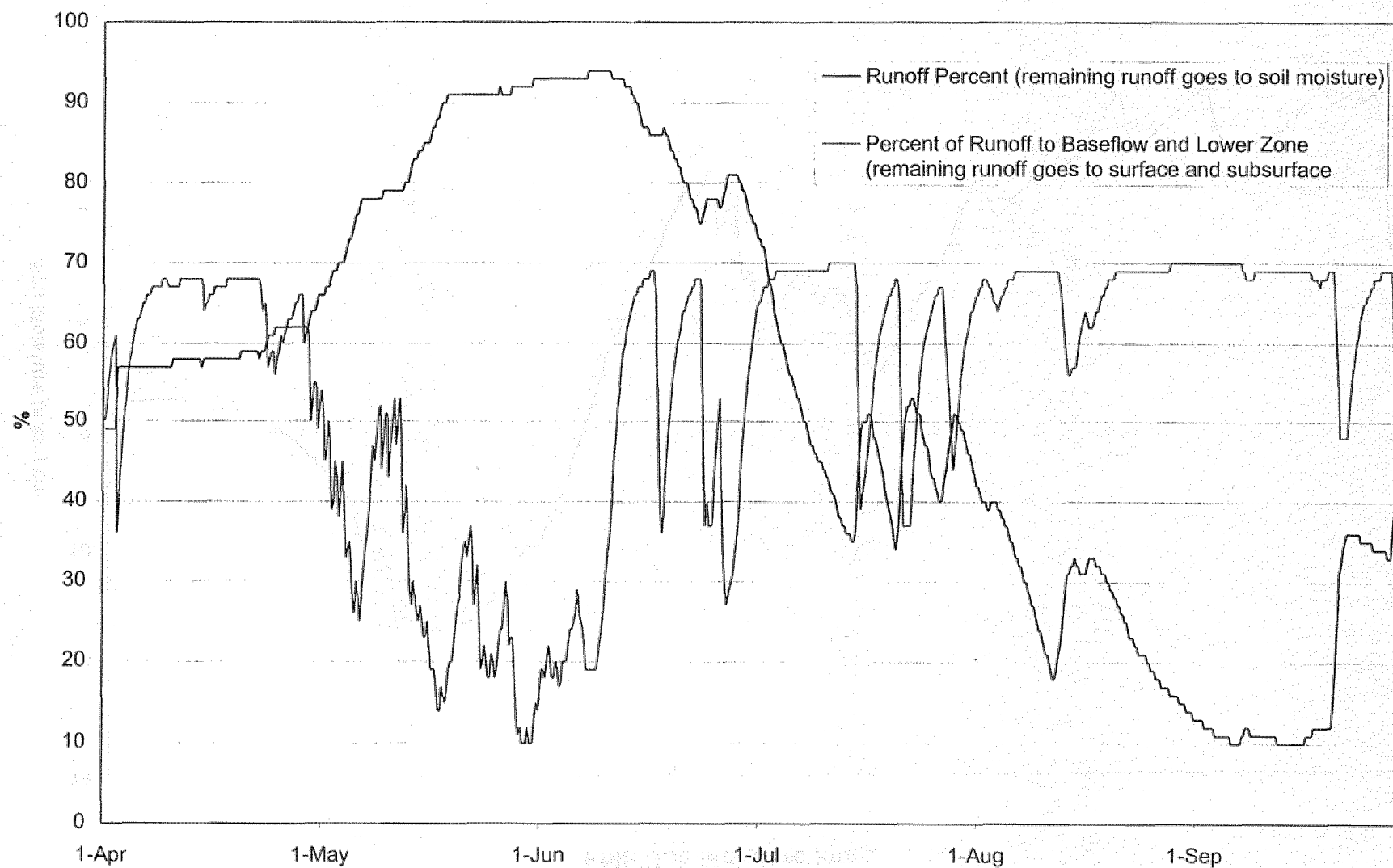


P12858

pmf details: SMI

Acres - 12/3/98

1981 Runoff Percent and Base Flow Percent

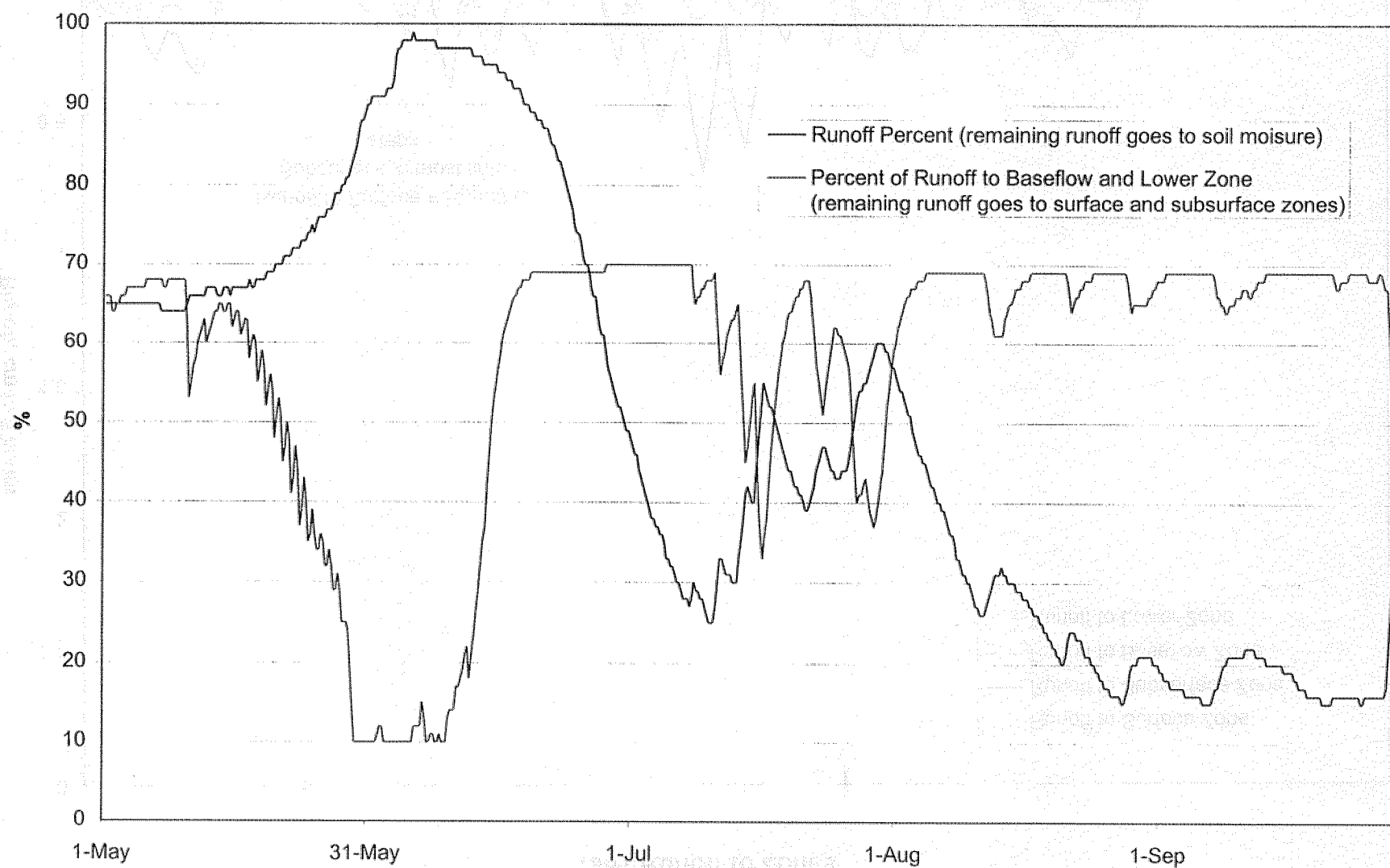


P12858

81out details: Percent chart

Acres -12/3/98

PMF Runoff Percent and Base Flow Percent

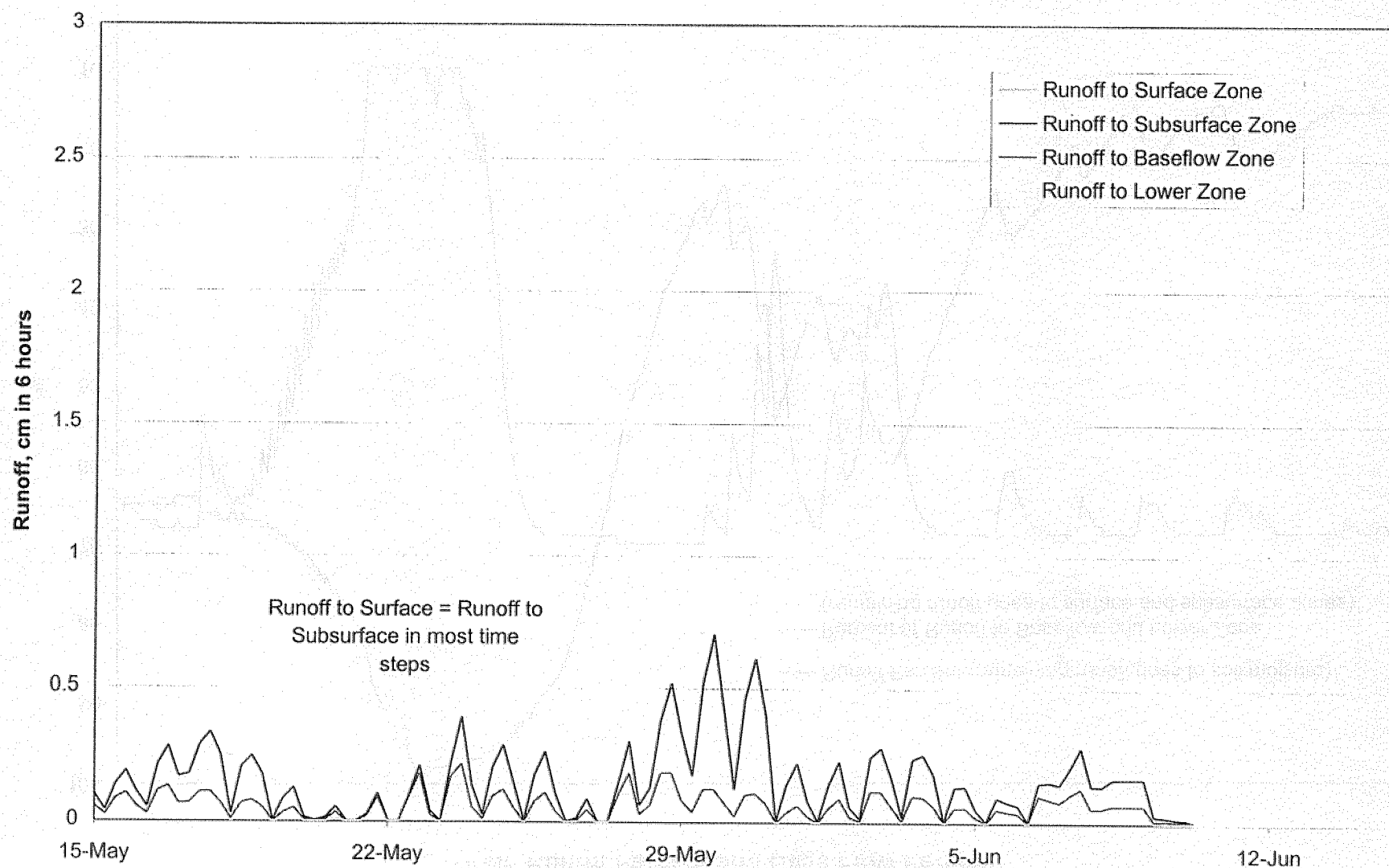


P12858

pmf details: Percent chart

Acres - 12/3/98

1981 Runoff to Zones

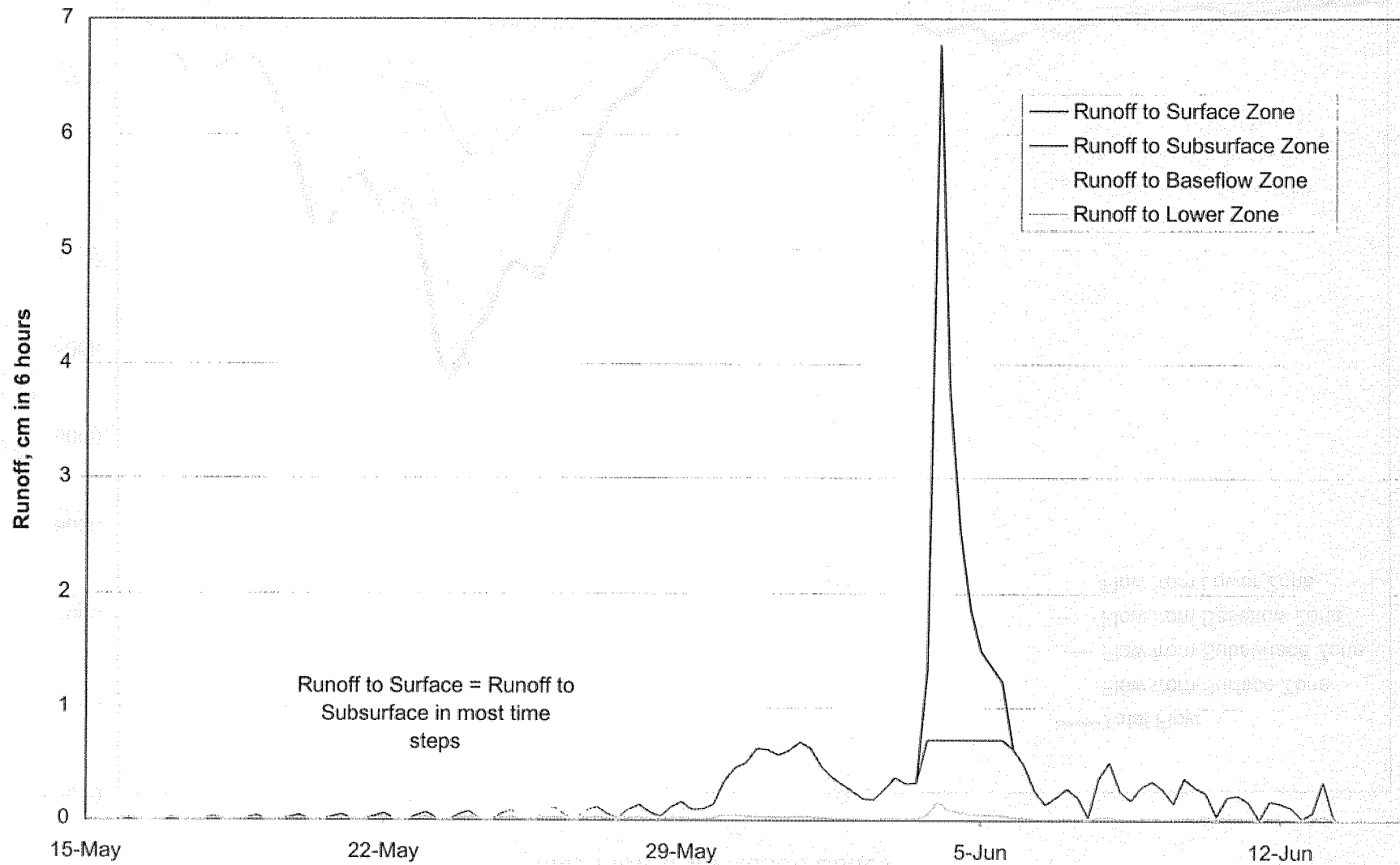


P12858

81out details: into zones

Acres -12/3/98

PMF Runoff to Zones

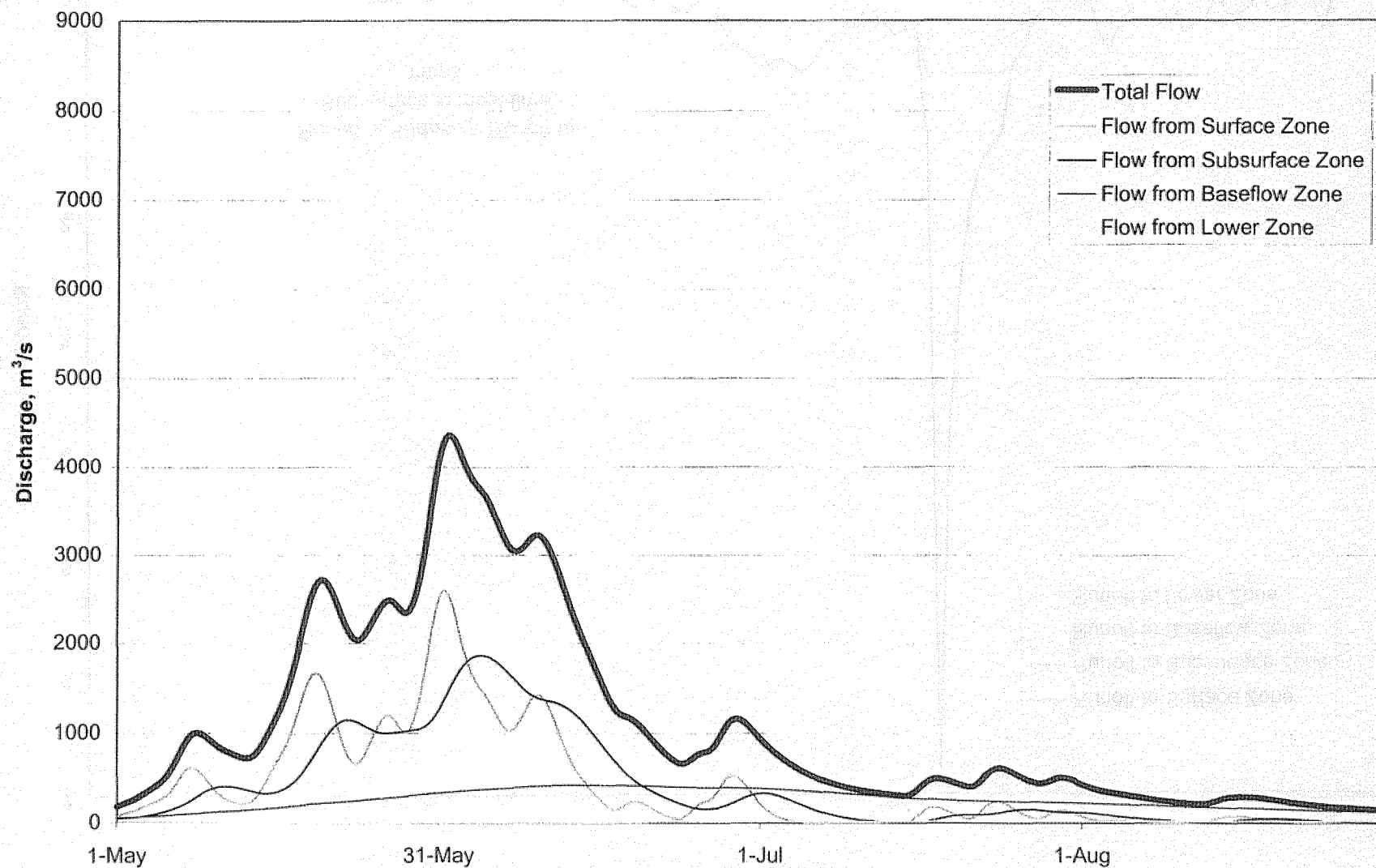


P12858

pmf details: into zones

Acres - 12/3/98

1981 Flow from Runoff Zones

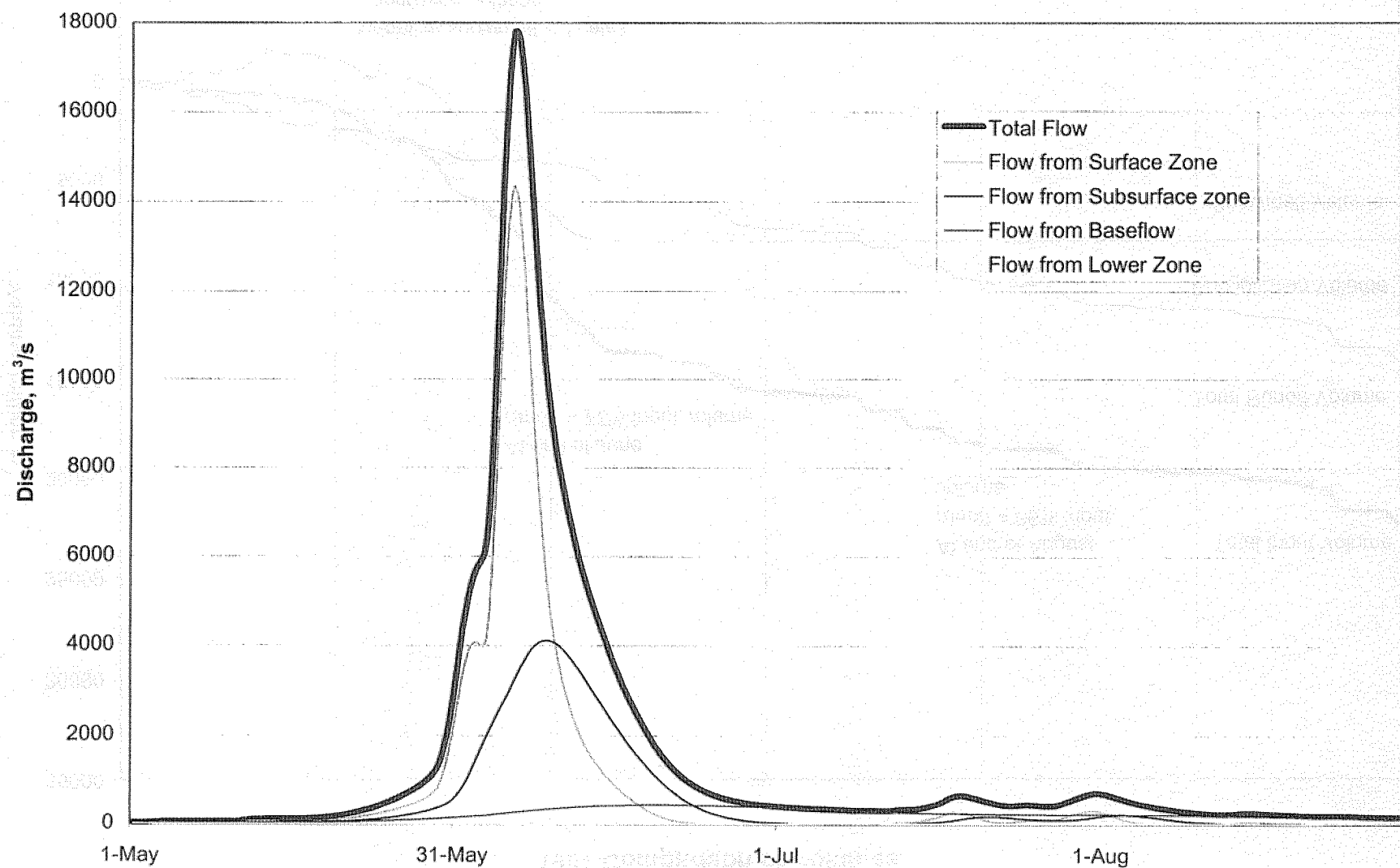


P12858

81out details: zone flow

Acres -12/3/98

PMF Flow from Runoff Zones

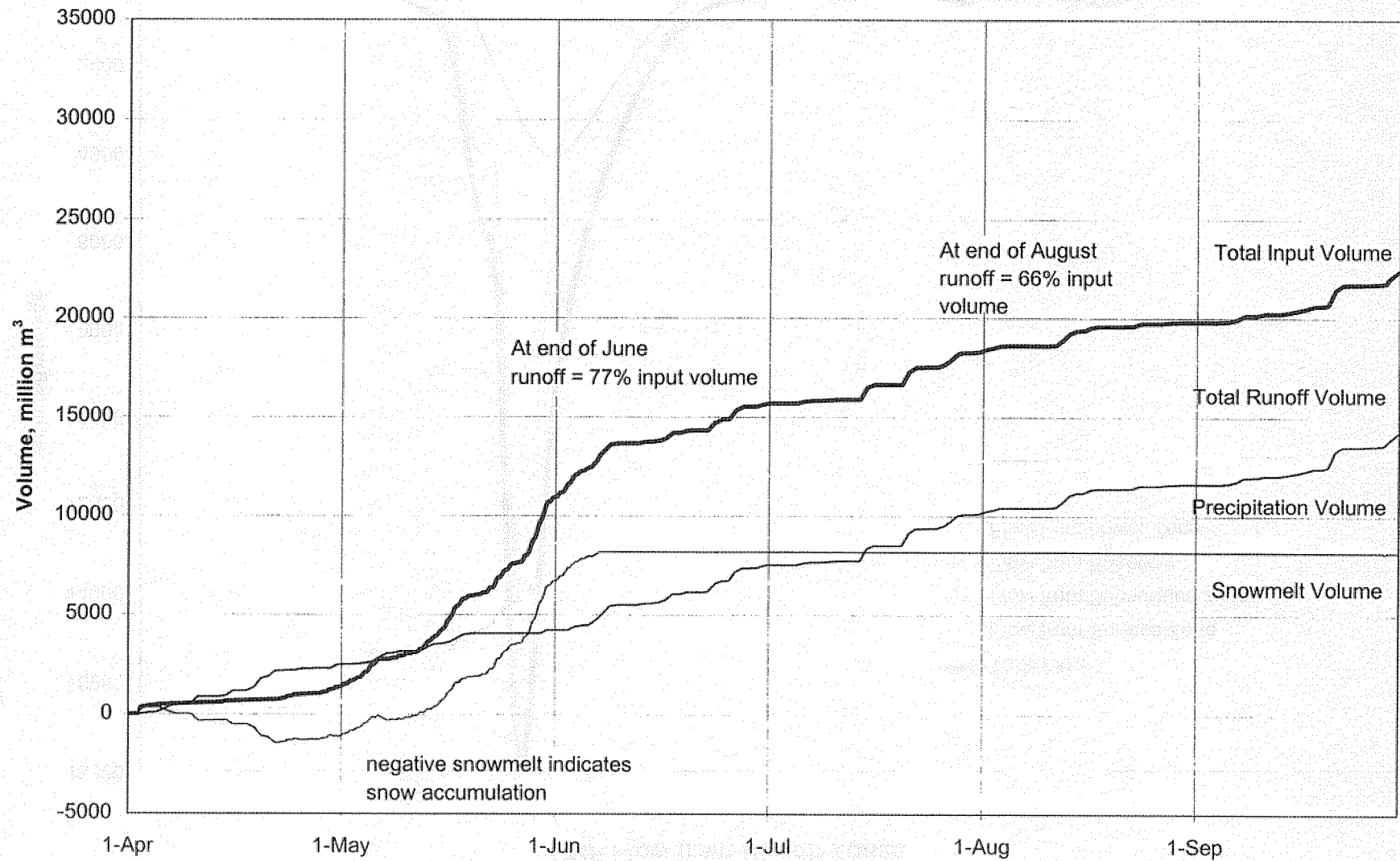


P12858

pmf details: flow from zones

Acres - 12/3/98

1981 Comparison of Volumes

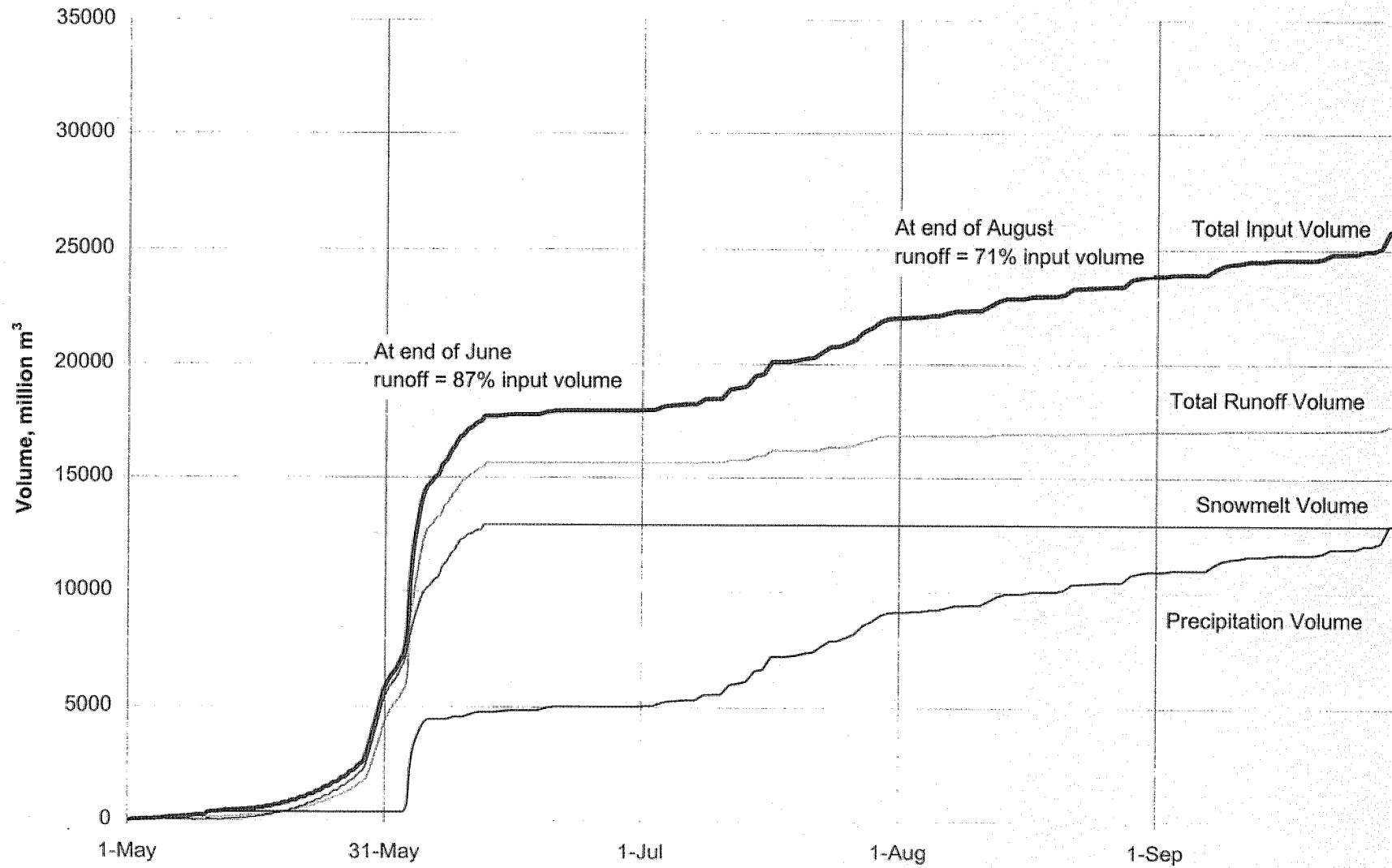


P12858

81out details: band 4 volumes chart

Acres -12/3/98

PMF Comparison of Volumes



Appendix F Upper Basin SSARR Input Files

npmf.bat

```
COPY PMFJTNB.DAT+CHARNB.DAT+PMFICNB.DAT+MODNB.DAT FIRST.DAT
COPY UPMFCFAL.TMP+UPMFWSH.TMP+UPMFSCHF.TMP+UPMFCFAL.PRE+UPMFWSH.PRE+UPMFSCHF.PRE ALLMET.DAT
COPY FIRST.DAT+ALLMET.DAT+RUNNB.DAT allcards.DAT
SSARR NPMFWAT.OUT NPMFPLOT.OUT <allcards.DAT> NPMFOUT.OUT
```

spmfbat

```
COPY PMFJTSE.DAT+CHARSE.DAT+PMFICSE.DAT+MODSE.DAT FIRST.DAT
COPY UPMFCFAL.TMP+UPMFWSH.TMP+UPMFSCHF.TMP+UPMFCFAL.PRE+UPMFWSH.PRE+UPMFSCHF.PRE ALLMET.DAT
COPY FIRST.DAT+ALLMET.DAT+RUNSE.DAT allcards.DAT
SSARR SPMFWAT.OUT SPMFPLOT.OUT <allcards.DAT> SPMFOUT.OUT
```

pmfjtnb.dat

```
J MPLUSR METRIC BATCH JOB=Northern Basin PMF
T 0 010585
153 06
RETURN
```

pmfjtsb.dat

```
J MPLUSR METRIC BATCH JOB=Southern Basin PMF
T 0 010585
153 06
RETURN
```

charnb.dat

```
BASIN CHARACTERISTIC
ZCA NORTHBSN 50 50
ZCP NORTHBSN 500 0 550 50 600 100
ZC1 NORTHBSN COMPUTED LOCAL DRAINAGE
ZC2 NORTHBSN 45169 2 2 75 2 200 2 600 2 3000 36 2.5 .2 20 .1
ZC3 NORTHBSN EVSWP TVSMRCR 0.9 0.84 0.34 0.02 0.9 5000 6.0
ZC4 NORTHBSN SMIVSROP BIIVSBFP SVSS RIVSEDE TVSET SMIVSDKE MVSDKE
ZC5 NORTHBSN 0.51 0 1.7 0.043 0.085 0.04 EVSDKE 5 60 1
ZC6 NORTHBSN MVSPCT
```

TABLES OF BASIN CHARACTERISTICS

ZCT EVSWP 2 30 98 300 99 400 100 600 100 760 99
 ZCT TVSMRCR 3 0 0.24 0.04 28 0.30 0.04 56 0.32 0.04
 ZCT TVSMRCR 83 0.35 0.04
 ZCT TVSMRCR 111 0.37 0.04 139 0.37 0.04 999 0.37 0.04
 ZCT SMIVSROP 2 0 8 2.5 17 5.1 39 7.6 67 10.2 91 12 100 999 100
 ZCT BIIVSBFP 2 0 70 0.5 38 1 26 1.5 20 2 15 2.5 10
 ZCT SVSS 2 0 0 0.15 0.075 0.24 0.12 0.35 0.23 10 9.88
 ZCT RIVSEDE 2 0 100 0.5 70 1.0 50 2 10 5 10
 ZCT TVSET 2 -50 0.01 -20 0.01 -2 0.02 3 0.05 8 0.12 18 0.3 28 0.5
 ZCT TVSET 38 0.74 999 0.74
 ZCT SMIVSDKE 2 0 0 1 50 2 90 3 100 999 100
 ZCT MVSDKE 2 1 70 2 76 3 102 4 113 5 137 6 141 7 141
 ZCT MVSDKE 8 128 9 108 10 91 11 74 12 67 13 70
 ZCT EVSDKE 2 0 100 9999 100
 ZCT MVSPCT 2 1 100 2 100 3 100 4 100 5 100 6 100 7 100 8 100 9 100 10 100
 ZCT MVSPCT 11 100 12 100 13 100

MET GAUGE INFO

ZCH NORTHBSN 4 CFAL 75 4 WBSH 75 4 SCHF 150
 ZCH NORTHBSN 3 CFAL 75 3 WBSH 75 3 SCHF 150
 ZH CFAL 440 115 1.7
 ZH WBSH 550 115 1.7
 ZH SCHF 522 115 1.7

charsb.dat

BASIN CHARACTERISTIC

ZCA SOUTHBSN 50 50
 ZCP SOUTHBSN 500 0 550 50 600 100
 ZC1 SOUTHBSN COMPUTED LOCAL DRAINAGE
 ZC2 SOUTHBSN 22388 2 2 75 2 200 2 600 2 3000 36 2.5 1.2 20 .1
 ZC3 SOUTHBSN EVSWP TVSMRCR 0.9 0.84 0.34 0.02 0.9 5000 6.0
 ZC4 SOUTHBSN SMIVSROP BIIVSBFP SVSS RIVSEDE TVSET SMIVSDKE MVSDKE
 ZC5 SOUTHBSN 0.51 0 1.7 0.043 0.085 0.04 EVSDKE 5 60 1
 ZC6 SOUTHBSN MVSPCT

TABLES OF BASIN CHARACTERISTICS

ZCT EVSWP 2 30 98 300 99 400 100 600 100 760 99
 ZCT TVSMRCR 3 0 0.24 0.04 28 0.30 0.04 56 0.32 0.04

ZCT TVSMRCR 83 0.35 0.04
 ZCT TVSMRCR 111 0.37 0.04 139 0.37 0.04 999 0.37 0.04
 ZCT SMIVSROP 2 0 8 2.5 17 5.1 39 7.6 67 10.2 91 12 100 999 100
 ZCT BIIVSBFP 2 0 70 0.5 38 1 26 1.5 20 2 15 2.5 10
 ZCT SVSS 2 0 0 0.15 0.075 0.24 0.12 0.35 0.23 10 9.88
 ZCT RIVSEDE 2 0 100 0.5 70 1.0 50 2 10 5 10
 ZCT TVSET 2 -50 0.01 -20 0.01 -2 0.02 3 0.05 8 0.12 18 0.3 28 0.5
 ZCT TVSET 38 0.74 999 0.74
 ZCT SMIVSDKE 2 0 0 1 50 2 90 3 100 999 100
 ZCT MVSDKE 2 1 70 2 76 3 102 4 113 5 137 6 141 7 141
 ZCT MVSDKE 8 128 9 108 10 91 11 74 12 67 13 70
 ZCT EVSDKE 2 0 100 9999 100
 ZCT MVSPCT 2 1 100 2 100 3 100 4 100 5 100 6 100 7 100 8 100 9 100 10 100
 ZCT MVSPCT 11 100 12 100 13 100

MET GAUGE INFO

ZCH SOUTHBSN 4 CFAL 160 4 WBSH 40
 ZCH SOUTHBSN 3 CFAL 160 3 WBSH 40
 ZH CFAL 440 115 1.7
 ZH WBSH 550 115 1.7

PMFicnb.dat

station,date,rop,bfp,cc,sligw,atimr,aticc,we,smi,bii,tint
 Z201 NORTHBSN, , , 65 0 2 0 0 55 6.8 , ,0
 Z202 NORTHBSN, , , 65 0 2 0 0 55 6.8 , ,0

Z2B NORTHBSN,144 144
 Z2LZ NORTHBSN,,36 36
 Z2S NORTHBSN,,60 60
 Z2SS NORTHBSN,,60 60

PMFicsb.dat

station,date,rop,bfp,cc,sligw,atimr,aticc,we,smi,bii,tint
 Z201 SOUTHBSN, , , 65 0 2 0 0 55 6.8 , ,0
 Z202 SOUTHBSN, , , 65 0 2 0 0 55 6.8 , ,0

Z2B SOUTHBSN,144 144
 Z2LZ SOUTHBSN,,36 36
 Z2S SOUTHBSN,,60 60
 Z2SS SOUTHBSN,,60 60

modnb.dat

N UPCHURCH
P NORTHBSN

modnb.dat

N UPCHURCH
P SOUTHBSN

Upmfcfal.tmp

4D 60 CFAL8 600201854-370-280-240-310-290-240-220-260
4D 60 CFAL8 600401854-340-270-250-300-310-250-230-280
4D 60 CFAL8 600601854-260-230-220-240-220-170-150-190
4D 60 CFAL8 600801854-200-150-140-170-140 -80 -60-110
4D 60 CFAL8 601001854-190-130-110-160-240-180-160-210
4D 60 CFAL8 601201854-290-190-150-230-240-210-190-220
4D 60 CFAL8 601401854-270-220-200-240-260-230-220-240
4D 60 CFAL8 601601854-260-210-190-230-290-250-240-270
4D 60 CFAL8 601801854-280-200-170-230-170 -60 -20-100
4D 60 CFAL8 602001854-180-130-110-150-170-120-100-140
4D 60 CFAL8 602201854-230-160-130-190-240-180-160-200
4D 60 CFAL8 602401854-180-130-110-150-250-160-130-200
4D 60 CFAL8 602601854-270-200-170-230-290-200-170-240
4D 60 CFAL8 602801854-170-140-130-150-210-160-150-180
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4D 60 CFAL8 602702854-360-180-110-260-380-260-210-310

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4D	60	CFAL8	601004854	-230	-120	-80	-160	-180	-60	-10	-110
4D	60	CFAL8	601204854	-180	-110	-80	-140	-250	-170	-140	-200
4D	60	CFAL8	601404854	-250	-90	-30	-150	-70	10	40	-30
4D	60	CFAL8	601604854	0	50	70	30	-180	-50	-10	-100
4D	60	CFAL8	601804854	-190	-140	-120	-160	-150	-90	-60	-110
4D	60	CFAL8	602004854	-140	-80	-60	-110	-140	-70	-40	-100
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4D	60	CFAL8	602804854	-110	-20	10	-60	-80	0	40	-30
4D	60	CFAL8	603004854	-90	-10	10	-40	-60	10	30	-20
4D	60	CFAL8	600205854	-120	-70	-50	-90	-140	-50	-10	-90
4D	60	CFAL8	600405854	-140	-50	-10	-80	-100	-50	-30	-70
4D	60	CFAL8	600605854	-120	-40	-10	-70	-100	-20	20	-50
4D	60	CFAL8	600805854	-120	-70	-50	-90	-160	-50	-10	-100
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4D	60	CFAL8	600306854	100	120	140	160	160	160	150	150
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4D	60	CFAL8	601306854	-10	90	130	50	20	80	100	50
4D	60	CFAL8	601506854	30	100	130	70	30	120	150	90
4D	60	CFAL8	601706854	20	140	180	90	60	160	190	120
4D	60	CFAL8	601906854	50	110	140	90	40	110	130	80
4D	60	CFAL8	602106854	30	130	170	90	40	170	220	120
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4D	60	CFAL8	602506854	120	200	230	170	90	210	250	160
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4D	60	CFAL8	602906854	80	150	180	120	70	150	190	120
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4D	60	SCHF8	602612854	-255	-214	-198	-231	-224	-193	-180	-205
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4D	60	CFAL8	601103853	2	2	2	2	10	10	10	10
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4D	60	CFAL8	601503853	8	8	8	8	11	11	11	11
4D	60	CFAL8	601703853	2	2	2	2	0	0	0	0
4D	60	CFAL8	601903853	0	0	0	0	3	3	3	3
4D	60	CFAL8	602103853	6	6	6	6	0	0	0	0
4D	60	CFAL8	602303853	16	16	16	16	15	15	15	15
4D	60	CFAL8	602503853	7	7	7	7	8	8	8	8
4D	60	CFAL8	602703853	1	1	1	1	0	0	0	0
4D	60	CFAL8	602903853	0	0	0	0	4	4	4	4
4D	60	CFAL8	603103853	0	0	0	0	0	0	0	0
4D	60	CFAL8	600204853	0	0	0	0	1	1	1	1
4D	60	CFAL8	600404853	0	0	0	0	0	0	0	0
4D	60	CFAL8	600604853	31	31	31	31	12	12	12	12
4D	60	CFAL8	600804853	1	1	1	1	1	1	1	1
4D	60	CFAL8	601004853	0	0	0	0	4	4	4	4

4D	60	CFAL8	601204853	14	14	14	14	2	2	2	2
4D	60	CFAL8	601404853	0	0	0	0	2	2	2	2
4D	60	CFAL8	601604853	26	26	26	26	64	64	64	64
4D	60	CFAL8	601804853	32	32	32	32	10	10	10	10
4D	60	CFAL8	602004853	4	4	4	4	0	0	0	0
4D	60	CFAL8	602204853	1	1	1	1	0	0	0	0
4D	60	CFAL8	602404853	0	0	0	0	6	6	6	6
4D	60	CFAL8	602604853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602804853	0	0	0	0	0	0	0	0
4D	60	CFAL8	603004853	0	0	0	0	0	0	0	0
4D	60	CFAL8	600205853	1	1	1	1	0	0	0	0
4D	60	CFAL8	600405853	0	0	0	0	1	1	1	1
4D	60	CFAL8	600605853	0	0	0	0	1	1	1	1
4D	60	CFAL8	600805853	21	21	21	21	3	3	3	3
4D	60	CFAL8	601005853	14	14	14	14	4	4	4	4
4D	60	CFAL8	601205853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601405853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601605853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601805853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602005853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602205853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602405853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602605853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602805853	0	0	0	0	0	0	0	0
4D	60	CFAL8	603005853	0	0	0	0	0	0	0	0
4D	60	CFAL8	600106853	0	0	0	0	0	0	0	0
4D	60	CFAL8	600306853	43	107	546	257	161	107	86	75
4D	60	CFAL8	600506853	64	43	34	9	0	0	0	0
4D	60	CFAL8	600706853	0	0	0	0	3	3	3	3
4D	60	CFAL8	600906853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601106853	3	3	3	3	0	0	0	0
4D	60	CFAL8	601306853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601506853	1	1	1	1	0	0	0	0
4D	60	CFAL8	601706853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601906853	11	11	11	11	3	3	3	3
4D	60	CFAL8	602106853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602306853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602506853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602706853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602906853	0	0	0	0	0	0	0	0
4D	60	CFAL8	600107853	0	0	0	0	1	1	1	1
4D	60	CFAL8	600307853	22	22	22	22	2	2	2	2
4D	60	CFAL8	600507853	4	4	4	4	5	5	5	5
4D	60	CFAL8	600707853	0	0	0	0	3	3	3	3
4D	60	CFAL8	600907853	0	0	0	0	1	1	1	1
4D	60	CFAL8	601107853	60	60	60	60	9	9	9	9
4D	60	CFAL8	601307853	13	13	13	13	35	35	35	35
4D	60	CFAL8	601507853	2	2	2	2	73	73	73	73
4D	60	CFAL8	601707853	0	0	0	0	1	1	1	1

4D	60	CFAL8	601907853	1	1	1	1	13	13	13	13
4D	60	CFAL8	602107853	0	0	0	0	25	25	25	25
4D	60	CFAL8	602307853	35	35	35	35	3	3	3	3
4D	60	CFAL8	602507853	17	17	17	17	0	0	0	0
4D	60	CFAL8	602707853	37	37	37	37	11	11	11	11
4D	60	CFAL8	602907853	33	33	33	33	7	7	7	7
4D	60	CFAL8	603107853	4	4	4	4	0	0	0	0
4D	60	CFAL8	600208853	7	7	7	7	0	0	0	0
4D	60	CFAL8	600408853	2	2	2	2	1	1	1	1
4D	60	CFAL8	600608853	16	16	16	16	0	0	0	0
4D	60	CFAL8	600808853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601008853	0	0	0	0	31	31	31	31
4D	60	CFAL8	601208853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601408853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601608853	9	9	9	9	0	0	0	0
4D	60	CFAL8	601808853	1	1	1	1	0	0	0	0
4D	60	CFAL8	602008853	0	0	0	0	7	7	7	7
4D	60	CFAL8	602208853	2	2	2	2	3	3	3	3
4D	60	CFAL8	602408853	3	3	3	3	0	0	0	0
4D	60	CFAL8	602608853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602808853	46	46	46	46	0	0	0	0
4D	60	CFAL8	603008853	9	9	9	9	0	0	0	0
4D	60	CFAL8	600109853	0	0	0	0	8	8	8	8
4D	60	CFAL8	600309853	1	1	1	1	0	0	0	0
4D	60	CFAL8	600509853	0	0	0	0	0	0	0	0
4D	60	CFAL8	600709853	37	37	37	37	25	25	25	25
4D	60	CFAL8	600909853	7	7	7	7	2	2	2	2
4D	60	CFAL8	601109853	4	4	4	4	1	1	1	1
4D	60	CFAL8	601309853	0	0	0	0	5	5	5	5
4D	60	CFAL8	601509853	1	1	1	1	0	0	0	0
4D	60	CFAL8	601709853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601909853	1	1	1	1	7	7	7	7
4D	60	CFAL8	602109853	22	22	22	22	0	0	0	0
4D	60	CFAL8	602309853	1	1	1	1	2	2	2	2
4D	60	CFAL8	602509853	20	20	20	20	0	0	0	0
4D	60	CFAL8	602709853	17	17	17	17	75	75	75	75
4D	60	CFAL8	602909853	8	8	8	8	2	2	2	2
4D	60	CFAL8	600110853	0	0	0	0	10	10	10	10
4D	60	CFAL8	600310853	3	3	3	3	0	0	0	0
4D	60	CFAL8	600510853	6	6	6	6	25	25	25	25
4D	60	CFAL8	600710853	1	1	1	1	2	2	2	2
4D	60	CFAL8	600910853	24	24	24	24	3	3	3	3
4D	60	CFAL8	601110853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601310853	0	0	0	0	4	4	4	4
4D	60	CFAL8	601510853	5	5	5	5	17	17	17	17
4D	60	CFAL8	601710853	6	6	6	6	10	10	10	10
4D	60	CFAL8	601910853	16	16	16	16	1	1	1	1
4D	60	CFAL8	602110853	2	2	2	2	7	7	7	7
4D	60	CFAL8	602310853	0	0	0	0	0	0	0	0

4D	60	CFAL8	602510853	33	33	33	33	16	16	16	16
4D	60	CFAL8	602710853	13	13	13	13	20	20	20	20
4D	60	CFAL8	602910853	4	4	4	4	4	4	4	4
4D	60	CFAL8	603110853	0	0	0	0	0	0	0	0
4D	60	CFAL8	600211853	0	0	0	0	0	0	0	0
4D	60	CFAL8	600411853	0	0	0	0	3	3	3	3
4D	60	CFAL8	600611853	0	0	0	0	3	3	3	3
4D	60	CFAL8	600811853	5	5	5	5	2	2	2	2
4D	60	CFAL8	601011853	0	0	0	0	0	0	0	0
4D	60	CFAL8	601211853	2	2	2	2	0	0	0	0
4D	60	CFAL8	601411853	2	2	2	2	0	0	0	0
4D	60	CFAL8	601611853	2	2	2	2	0	0	0	0
4D	60	CFAL8	601811853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602011853	16	16	16	16	4	4	4	4
4D	60	CFAL8	602211853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602411853	1	1	1	1	9	9	9	9
4D	60	CFAL8	602611853	4	4	4	4	0	0	0	0
4D	60	CFAL8	602811853	4	4	4	4	1	1	1	1
4D	60	CFAL8	603011853	0	0	0	0	1	1	1	1
4D	60	CFAL8	600212853	65	65	65	65	22	22	22	22
4D	60	CFAL8	600412853	1	1	1	1	0	0	0	0
4D	60	CFAL8	600612853	8	8	8	8	11	11	11	11
4D	60	CFAL8	600812853	8	8	8	8	3	3	3	3
4D	60	CFAL8	601012853	2	2	2	2	0	0	0	0
4D	60	CFAL8	601212853	2	2	2	2	0	0	0	0
4D	60	CFAL8	601412853	3	3	3	3	3	3	3	3
4D	60	CFAL8	601612853	3	3	3	3	1	1	1	1
4D	60	CFAL8	601812853	1	1	1	1	2	2	2	2
4D	60	CFAL8	602012853	0	0	0	0	0	0	0	0
4D	60	CFAL8	602212853	0	0	0	0	7	7	7	7
4D	60	CFAL8	602412853	4	4	4	4	10	10	10	10
4D	60	CFAL8	602612853	8	8	8	8	1	1	1	1
4D	60	CFAL8	602812853	1	1	1	1	0	0	0	0
4D	60	CFAL8	603012853	3	3	3	3	5	5	5	5

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4D	60	WBSH8	600201853	9	9	9	9	2	2	2	2
4D	60	WBSH8	600401853	4	4	4	4	0	0	0	0
4D	60	WBSH8	600601853	3	3	3	3	3	3	3	3
4D	60	WBSH8	600801853	10	10	10	10	11	11	11	11
4D	60	WBSH8	601001853	0	0	0	0	0	0	0	0
4D	60	WBSH8	601201853	0	0	0	0	1	1	1	1
4D	60	WBSH8	601401853	0	0	0	0	0	0	0	0
4D	60	WBSH8	601601853	16	16	16	16	6	6	6	6
4D	60	WBSH8	601801853	5	5	5	5	20	20	20	20

4D	60	WBSH8	602001853	7	7	7	7	10	10	10	10
4D	60	WBSH8	602201853	13	13	13	13	4	4	4	4
4D	60	WBSH8	602401853	1	1	1	1	0	0	0	0
4D	60	WBSH8	602601853	1	1	1	1	0	0	0	0
4D	60	WBSH8	602801853	1	1	1	1	0	0	0	0
4D	60	WBSH8	603001853	0	0	0	0	0	0	0	0
4D	60	WBSH8	600102853	1	1	1	1	1	1	1	1
4D	60	WBSH8	600302853	0	0	0	0	1	1	1	1
4D	60	WBSH8	600502853	0	0	0	0	5	5	5	5
4D	60	WBSH8	600702853	6	6	6	6	12	12	12	12
4D	60	WBSH8	600902853	1	1	1	1	0	0	0	0
4D	60	WBSH8	601102853	0	0	0	0	0	0	0	0
4D	60	WBSH8	601302853	1	1	1	1	25	25	25	25
4D	60	WBSH8	601502853	9	9	9	9	2	2	2	2
4D	60	WBSH8	601702853	0	0	0	0	0	0	0	0
4D	60	WBSH8	601902853	0	0	0	0	0	0	0	0
4D	60	WBSH8	602102853	1	1	1	1	9	9	9	9
4D	60	WBSH8	602302853	0	0	0	0	0	0	0	0
4D	60	WBSH8	602502853	0	0	0	0	7	7	7	7
4D	60	WBSH8	602702853	11	11	11	11	0	0	0	0
4D	60	WBSH8	600103853	8	8	8	8	4	4	4	4
4D	60	WBSH8	600303853	6	6	6	6	0	0	0	0
4D	60	WBSH8	600503853	0	0	0	0	0	0	0	0
4D	60	WBSH8	600703853	6	6	6	6	3	3	3	3
4D	60	WBSH8	600903853	0	0	0	0	0	0	0	0
4D	60	WBSH8	601103853	6	6	6	6	8	8	8	8
4D	60	WBSH8	601303853	9	9	9	9	38	38	38	38
4D	60	WBSH8	601503853	24	24	24	24	7	7	7	7
4D	60	WBSH8	601703853	0	0	0	0	0	0	0	0
4D	60	WBSH8	601903853	1	1	1	1	3	3	3	3
4D	60	WBSH8	602103853	1	1	1	1	0	0	0	0
4D	60	WBSH8	602303853	0	0	0	0	1	1	1	1
4D	60	WBSH8	602503853	1	1	1	1	2	2	2	2
4D	60	WBSH8	602703853	0	0	0	0	0	0	0	0
4D	60	WBSH8	602903853	0	0	0	0	1	1	1	1
4D	60	WBSH8	603103853	0	0	0	0	0	0	0	0
4D	60	WBSH8	600204853	2	2	2	2	0	0	0	0
4D	60	WBSH8	600404853	1	1	1	1	0	0	0	0
4D	60	WBSH8	600604853	19	19	19	19	5	5	5	5
4D	60	WBSH8	600804853	3	3	3	3	2	2	2	2
4D	60	WBSH8	601004853	0	0	0	0	5	5	5	5
4D	60	WBSH8	601204853	3	3	3	3	0	0	0	0
4D	60	WBSH8	601404853	0	0	0	0	1	1	1	1
4D	60	WBSH8	601604853	32	32	32	32	35	35	35	35
4D	60	WBSH8	601804853	0	0	0	0	0	0	0	0
4D	60	WBSH8	602004853	0	0	0	0	0	0	0	0
4D	60	WBSH8	602204853	0	0	0	0	0	0	0	0
4D	60	WBSH8	602404853	0	0	0	0	0	0	0	0
4D	60	WBSH8	602604853	0	0	0	0	1	1	1	1

4D	60	WBSH8	602804853	0	0	0	0	0	0	0	0
4D	60	WBSH8	603004853	0	0	0	0	11	11	11	11
4D	60	WBSH8	600205853	0	0	0	0	0	0	0	0
4D	60	WBSH8	600405853	0	0	0	0	0	0	0	0
4D	60	WBSH8	600605853	0	0	0	0	0	0	0	0
4D	60	WBSH8	600805853	0	0	0	0	10	10	10	10
4D	60	WBSH8	601005853	1	1	1	1	0	0	0	0
4D	60	WBSH8	601205853	0	0	0	0	0	0	0	0
4D	60	WBSH8	601405853	0	0	0	0	0	0	0	0
4D	60	WBSH8	601605853	0	0	0	0	0	0	0	0
4D	60	WBSH8	601805853	0	0	0	0	0	0	0	0
4D	60	WBSH8	602005853	0	0	0	0	0	0	0	0
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4D	60	WBSH8	602405853	0	0	0	0	0	0	0	0
4D	60	WBSH8	602605853	0	0	0	0	0	0	0	0
4D	60	WBSH8	602805853	0	0	0	0	0	0	0	0
4D	60	WBSH8	603005853	0	0	0	0	0	0	0	0
4D	60	WBSH8	600106853	0	0	0	0	0	0	0	0
4D	60	WBSH8	600306853	43	107	546	257	161	107	86	75
4D	60	WBSH8	600506853	64	43	34	9	0	0	0	0
4D	60	WBSH8	600706853	0	0	0	0	0	0	0	0
4D	60	WBSH8	600906853	0	0	0	0	0	0	0	0
4D	60	WBSH8	601106853	0	0	0	0	0	0	0	0
4D	60	WBSH8	601306853	0	0	0	0	0	0	0	0
4D	60	WBSH8	601506853	16	16	16	16	0	0	0	0
4D	60	WBSH8	601706853	0	0	0	0	1	1	1	1
4D	60	WBSH8	601906853	23	23	23	23	7	7	7	7
4D	60	WBSH8	602106853	0	0	0	0	0	0	0	0
4D	60	WBSH8	602306853	0	0	0	0	16	16	16	16
4D	60	WBSH8	602506853	5	5	5	5	0	0	0	0
4D	60	WBSH8	602706853	0	0	0	0	0	0	0	0
4D	60	WBSH8	602906853	0	0	0	0	0	0	0	0
4D	60	WBSH8	600107853	0	0	0	0	0	0	0	0
4D	60	WBSH8	600307853	0	0	0	0	2	2	2	2
4D	60	WBSH8	600507853	42	42	42	42	8	8	8	8
4D	60	WBSH8	600707853	0	0	0	0	0	0	0	0
4D	60	WBSH8	600907853	0	0	0	0	5	5	5	5
4D	60	WBSH8	601107853	50	50	50	50	4	4	4	4
4D	60	WBSH8	601307853	5	5	5	5	62	62	62	62
4D	60	WBSH8	601507853	1	1	1	1	62	62	62	62
4D	60	WBSH8	601707853	0	0	0	0	0	0	0	0
4D	60	WBSH8	601907853	9	9	9	9	6	6	6	6
4D	60	WBSH8	602107853	0	0	0	0	13	13	13	13
4D	60	WBSH8	602307853	12	12	12	12	2	2	2	2
4D	60	WBSH8	602507853	12	12	12	12	8	8	8	8
4D	60	WBSH8	602707853	17	17	17	17	6	6	6	6
4D	60	WBSH8	602907853	31	31	31	31	3	3	3	3
4D	60	WBSH8	603107853	2	2	2	2	4	4	4	4
4D	60	WBSH8	600208853	0	0	0	0	5	5	5	5

4D	60	WBSH8	600408853	5	5	5	5	0	0	0	0
4D	60	WBSH8	600608853	1	1	1	1	0	0	0	0
4D	60	WBSH8	600808853	38	38	38	38	1	1	1	1
4D	60	WBSH8	601008853	0	0	0	0	6	6	6	6
4D	60	WBSH8	601208853	1	1	1	1	0	0	0	0
4D	60	WBSH8	601408853	1	1	1	1	12	12	12	12
4D	60	WBSH8	601608853	3	3	3	3	7	7	7	7
4D	60	WBSH8	601808853	2	2	2	2	9	9	9	9
4D	60	WBSH8	602008853	14	14	14	14	24	24	24	24
4D	60	WBSH8	602208853	5	5	5	5	17	17	17	17
4D	60	WBSH8	602408853	2	2	2	2	0	0	0	0
4D	60	WBSH8	602608853	0	0	0	0	0	0	0	0
4D	60	WBSH8	602808853	15	15	15	15	0	0	0	0
4D	60	WBSH8	603008853	18	18	18	18	0	0	0	0
4D	60	WBSH8	600109853	0	0	0	0	8	8	8	8
4D	60	WBSH8	600309853	0	0	0	0	0	0	0	0
4D	60	WBSH8	600509853	0	0	0	0	0	0	0	0
4D	60	WBSH8	600709853	17	17	17	17	5	5	5	5
4D	60	WBSH8	600909853	3	3	3	3	0	0	0	0
4D	60	WBSH8	601109853	7	7	7	7	2	2	2	2
4D	60	WBSH8	601309853	0	0	0	0	3	3	3	3
4D	60	WBSH8	601509853	0	0	0	0	0	0	0	0
4D	60	WBSH8	601709853	0	0	0	0	6	6	6	6
4D	60	WBSH8	601909853	0	0	0	0	25	25	25	25
4D	60	WBSH8	602109853	11	11	11	11	0	0	0	0
4D	60	WBSH8	602309853	6	6	6	6	3	3	3	3
4D	60	WBSH8	602509853	5	5	5	5	0	0	0	0
4D	60	WBSH8	602709853	29	29	29	29	33	33	33	33
4D	60	WBSH8	602909853	3	3	3	3	3	3	3	3
4D	60	WBSH8	600110853	0	0	0	0	7	7	7	7
4D	60	WBSH8	600310853	0	0	0	0	0	0	0	0
4D	60	WBSH8	600510853	16	16	16	16	10	10	10	10
4D	60	WBSH8	600710853	0	0	0	0	8	8	8	8
4D	60	WBSH8	600910853	46	46	46	46	0	0	0	0
4D	60	WBSH8	601110853	0	0	0	0	0	0	0	0
4D	60	WBSH8	601310853	1	1	1	1	4	4	4	4
4D	60	WBSH8	601510853	19	19	19	19	10	10	10	10
4D	60	WBSH8	601710853	0	0	0	0	11	11	11	11
4D	60	WBSH8	601910853	0	0	0	0	1	1	1	1
4D	60	WBSH8	602110853	5	5	5	5	1	1	1	1
4D	60	WBSH8	602310853	0	0	0	0	0	0	0	0
4D	60	WBSH8	602510853	18	18	18	18	1	1	1	1
4D	60	WBSH8	602710853	7	7	7	7	9	9	9	9
4D	60	WBSH8	602910853	1	1	1	1	5	5	5	5
4D	60	WBSH8	603110853	0	0	0	0	1	1	1	1
4D	60	WBSH8	600211853	0	0	0	0	0	0	0	0
4D	60	WBSH8	600411853	0	0	0	0	3	3	3	3
4D	60	WBSH8	600611853	0	0	0	0	23	23	23	23
4D	60	WBSH8	600811853	11	11	11	11	3	3	3	3

4D	60	WBSH8	601011853	0	0	0	0	0	0	0	0
4D	60	WBSH8	601211853	1	1	1	1	0	0	0	0
4D	60	WBSH8	601411853	3	3	3	3	1	1	1	1
4D	60	WBSH8	601611853	0	0	0	0	0	0	0	0
4D	60	WBSH8	601811853	0	0	0	0	2	2	2	2
4D	60	WBSH8	602011853	26	26	26	26	3	3	3	3
4D	60	WBSH8	602211853	1	1	1	1	0	0	0	0
4D	60	WBSH8	602411853	0	0	0	0	6	6	6	6
4D	60	WBSH8	602611853	4	4	4	4	3	3	3	3
4D	60	WBSH8	602811853	0	0	0	0	0	0	0	0
4D	60	WBSH8	603011853	0	0	0	0	8	8	8	8
4D	60	WBSH8	600212853	47	47	47	47	10	10	10	10
4D	60	WBSH8	600412853	2	2	2	2	0	0	0	0
4D	60	WBSH8	600612853	1	1	1	1	2	2	2	2
4D	60	WBSH8	600812853	1	1	1	1	0	0	0	0
4D	60	WBSH8	601012853	1	1	1	1	5	5	5	5
4D	60	WBSH8	601212853	0	0	0	0	0	0	0	0
4D	60	WBSH8	601412853	4	4	4	4	1	1	1	1
4D	60	WBSH8	601612853	0	0	0	0	0	0	0	0
4D	60	WBSH8	601812853	0	0	0	0	4	4	4	4
4D	60	WBSH8	602012853	0	0	0	0	0	0	0	0
4D	60	WBSH8	602212853	0	0	0	0	5	5	5	5
4D	60	WBSH8	602412853	2	2	2	2	25	25	25	25
4D	60	WBSH8	602612853	4	4	4	4	2	2	2	2
4D	60	WBSH8	602812853	2	2	2	2	0	0	0	0
4D	60	WBSH8	603012853	1	1	1	1	10	10	10	10

upmfschf.pre

4D	60	SCHF8	600201853	0	0	0	0	1	1	1	1
4D	60	SCHF8	600401853	1	1	1	1	2	2	2	2
4D	60	SCHF8	600601853	5	5	5	5	8	8	8	8
4D	60	SCHF8	600801853	14	14	14	14	7	7	7	7
4D	60	SCHF8	601001853	2	2	2	2	1	1	1	1
4D	60	SCHF8	601201853	0	0	0	0	0	0	0	0
4D	60	SCHF8	601401853	0	0	0	0	1	1	1	1
4D	60	SCHF8	601601853	23	23	23	23	13	13	13	13
4D	60	SCHF8	601801853	15	15	15	15	11	11	11	11
4D	60	SCHF8	602001853	2	2	2	2	15	15	15	15
4D	60	SCHF8	602201853	12	12	12	12	3	3	3	3
4D	60	SCHF8	602401853	3	3	3	3	3	3	3	3
4D	60	SCHF8	602601853	3	3	3	3	1	1	1	1
4D	60	SCHF8	602801853	2	2	2	2	0	0	0	0
4D	60	SCHF8	603001853	1	1	1	1	0	0	0	0
4D	60	SCHF8	600102853	1	1	1	1	1	1	1	1
4D	60	SCHF8	600302853	0	0	0	0	1	1	1	1

4D	60	SCHF8	600502853	1	1	1	1	3	3	3	3
4D	60	SCHF8	600702853	5	5	5	5	9	9	9	9
4D	60	SCHF8	600902853	4	4	4	4	2	2	2	2
4D	60	SCHF8	601102853	0	0	0	0	0	0	0	0
4D	60	SCHF8	601302853	0	0	0	0	11	11	11	11
4D	60	SCHF8	601502853	10	10	10	10	1	1	1	1
4D	60	SCHF8	601702853	1	1	1	1	0	0	0	0
4D	60	SCHF8	601902853	0	0	0	0	0	0	0	0
4D	60	SCHF8	602102853	1	1	1	1	7	7	7	7
4D	60	SCHF8	602302853	0	0	0	0	0	0	0	0
4D	60	SCHF8	602502853	0	0	0	0	10	10	10	10
4D	60	SCHF8	602702853	1	1	1	1	1	1	1	1
4D	60	SCHF8	600103853	6	6	6	6	3	3	3	3
4D	60	SCHF8	600303853	8	8	8	8	0	0	0	0
4D	60	SCHF8	600503853	0	0	0	0	0	0	0	0
4D	60	SCHF8	600703853	1	1	1	1	4	4	4	4
4D	60	SCHF8	600903853	2	2	2	2	1	1	1	1
4D	60	SCHF8	601103853	4	4	4	4	0	0	0	0
4D	60	SCHF8	601303853	3	3	3	3	5	5	5	5
4D	60	SCHF8	601503853	9	9	9	9	3	3	3	3
4D	60	SCHF8	601703853	0	0	0	0	0	0	0	0
4D	60	SCHF8	601903853	2	2	2	2	7	7	7	7
4D	60	SCHF8	602103853	4	4	4	4	0	0	0	0
4D	60	SCHF8	602303853	0	0	0	0	1	1	1	1
4D	60	SCHF8	602503853	0	0	0	0	0	0	0	0
4D	60	SCHF8	602703853	1	1	1	1	1	1	1	1
4D	60	SCHF8	602903853	7	7	7	7	2	2	2	2
4D	60	SCHF8	603103853	0	0	0	0	0	0	0	0
4D	60	SCHF8	600204853	0	0	0	0	1	1	1	1
4D	60	SCHF8	600404853	6	6	6	6	0	0	0	0
4D	60	SCHF8	600604853	18	18	18	18	16	16	16	16
4D	60	SCHF8	600804853	3	3	3	3	0	0	0	0
4D	60	SCHF8	601004853	0	0	0	0	2	2	2	2
4D	60	SCHF8	601204853	5	5	5	5	0	0	0	0
4D	60	SCHF8	601404853	1	1	1	1	7	7	7	7
4D	60	SCHF8	601604853	8	8	8	8	49	49	49	49
4D	60	SCHF8	601804853	0	0	0	0	1	1	1	1
4D	60	SCHF8	602004853	0	0	0	0	0	0	0	0
4D	60	SCHF8	602204853	0	0	0	0	0	0	0	0
4D	60	SCHF8	602404853	0	0	0	0	0	0	0	0
4D	60	SCHF8	602604853	2	2	2	2	2	2	2	2
4D	60	SCHF8	602804853	0	0	0	0	0	0	0	0
4D	60	SCHF8	603004853	0	0	0	0	0	0	0	0
4D	60	SCHF8	600205853	1	1	1	1	0	0	0	0
4D	60	SCHF8	600405853	0	0	0	0	1	1	1	1
4D	60	SCHF8	600605853	2	2	2	2	0	0	0	0
4D	60	SCHF8	600805853	0	0	0	0	10	10	10	10
4D	60	SCHF8	601005853	6	6	6	6	1	1	1	1
4D	60	SCHF8	601205853	0	0	0	0	0	0	0	0

4D	60	SCHF8	601405853	0	0	0	0	0	0	0	0
4D	60	SCHF8	601605853	0	0	0	0	0	0	0	0
4D	60	SCHF8	601805853	0	0	0	0	0	0	0	0
4D	60	SCHF8	602005853	0	0	0	0	0	0	0	0
4D	60	SCHF8	602205853	0	0	0	0	0	0	0	0
4D	60	SCHF8	602405853	0	0	0	0	0	0	0	0
4D	60	SCHF8	602605853	0	0	0	0	0	0	0	0
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4D	60	SCHF8	603005853	0	0	0	0	0	0	0	0
4D	60	SCHF8	600106853	0	0	0	0	0	0	0	0
4D	60	SCHF8	600306853	43	107	546	257	161	107	86	75
4D	60	SCHF8	600506853	64	43	34	9	0	0	0	0
4D	60	SCHF8	600706853	0	0	0	0	0	0	0	0
4D	60	SCHF8	600906853	0	0	0	0	0	0	0	0
4D	60	SCHF8	601106853	0	0	0	0	0	0	0	0
4D	60	SCHF8	601306853	0	0	0	0	0	0	0	0
4D	60	SCHF8	601506853	1	1	1	1	0	0	0	0
4D	60	SCHF8	601706853	0	0	0	0	0	0	0	0
4D	60	SCHF8	601906853	3	3	3	3	5	5	5	5
4D	60	SCHF8	602106853	0	0	0	0	0	0	0	0
4D	60	SCHF8	602306853	0	0	0	0	4	4	4	4
4D	60	SCHF8	602506853	0	0	0	0	0	0	0	0
4D	60	SCHF8	602706853	0	0	0	0	0	0	0	0
4D	60	SCHF8	602906853	0	0	0	0	2	2	2	2
4D	60	SCHF8	600107853	0	0	0	0	0	0	0	0
4D	60	SCHF8	600307853	3	3	3	3	0	0	0	0
4D	60	SCHF8	600507853	10	10	10	10	0	0	0	0
4D	60	SCHF8	600707853	0	0	0	0	0	0	0	0
4D	60	SCHF8	600907853	0	0	0	0	3	3	3	3
4D	60	SCHF8	601107853	36	36	36	36	7	7	7	7
4D	60	SCHF8	601307853	5	5	5	5	10	10	10	10
4D	60	SCHF8	601507853	1	1	1	1	2	2	2	2
4D	60	SCHF8	601707853	0	0	0	0	7	7	7	7
4D	60	SCHF8	601907853	47	47	47	47	0	0	0	0
4D	60	SCHF8	602107853	9	9	9	9	0	0	0	0
4D	60	SCHF8	602307853	2	2	2	2	14	14	14	14
4D	60	SCHF8	602507853	2	2	2	2	0	0	0	0
4D	60	SCHF8	602707853	11	11	11	11	10	10	10	10
4D	60	SCHF8	602907853	1	1	1	1	4	4	4	4
4D	60	SCHF8	603107853	6	6	6	6	0	0	0	0
4D	60	SCHF8	600208853	0	0	0	0	11	11	11	11
4D	60	SCHF8	600408853	1	1	1	1	0	0	0	0
4D	60	SCHF8	600608853	9	9	9	9	1	1	1	1
4D	60	SCHF8	600808853	5	5	5	5	1	1	1	1
4D	60	SCHF8	601008853	0	0	0	0	0	0	0	0
4D	60	SCHF8	601208853	0	0	0	0	2	2	2	2
4D	60	SCHF8	601408853	0	0	0	0	1	1	1	1
4D	60	SCHF8	601608853	23	23	23	23	3	3	3	3
4D	60	SCHF8	601808853	0	0	0	0	9	9	9	9

4D	60	SCHF8	602008853	15	15	15	15	5	5	5	5
4D	60	SCHF8	602208853	0	0	0	0	1	1	1	1
4D	60	SCHF8	602408853	4	4	4	4	0	0	0	0
4D	60	SCHF8	602608853	2	2	2	2	0	0	0	0
4D	60	SCHF8	602808853	18	18	18	18	0	0	0	0
4D	60	SCHF8	603008853	0	0	0	0	0	0	0	0
4D	60	SCHF8	600109853	0	0	0	0	16	16	16	16
4D	60	SCHF8	600309853	0	0	0	0	0	0	0	0
4D	60	SCHF8	600509853	0	0	0	0	0	0	0	0
4D	60	SCHF8	600709853	36	36	36	36	9	9	9	9
4D	60	SCHF8	600909853	2	2	2	2	1	1	1	1
4D	60	SCHF8	601109853	3	3	3	3	0	0	0	0
4D	60	SCHF8	601309853	0	0	0	0	7	7	7	7
4D	60	SCHF8	601509853	0	0	0	0	0	0	0	0
4D	60	SCHF8	601709853	0	0	0	0	8	8	8	8
4D	60	SCHF8	601909853	5	5	5	5	18	18	18	18
4D	60	SCHF8	602109853	2	2	2	2	0	0	0	0
4D	60	SCHF8	602309853	4	4	4	4	4	4	4	4
4D	60	SCHF8	602509853	5	5	5	5	1	1	1	1
4D	60	SCHF8	602709853	1	1	1	1	1	1	1	1
4D	60	SCHF8	602909853	21	21	21	21	2	2	2	2
4D	60	SCHF8	600110853	0	0	0	0	5	5	5	5
4D	60	SCHF8	600310853	7	7	7	7	3	3	3	3
4D	60	SCHF8	600510853	22	22	22	22	7	7	7	7
4D	60	SCHF8	600710853	3	3	3	3	3	3	3	3
4D	60	SCHF8	600910853	22	22	22	22	0	0	0	0
4D	60	SCHF8	601110853	1	1	1	1	0	0	0	0
4D	60	SCHF8	601310853	0	0	0	0	0	0	0	0
4D	60	SCHF8	601510853	2	2	2	2	35	35	35	35
4D	60	SCHF8	601710853	12	12	12	12	10	10	10	10
4D	60	SCHF8	601910853	12	12	12	12	1	1	1	1
4D	60	SCHF8	602110853	6	6	6	6	4	4	4	4
4D	60	SCHF8	602310853	0	0	0	0	0	0	0	0
4D	60	SCHF8	602510853	4	4	4	4	2	2	2	2
4D	60	SCHF8	602710853	1	1	1	1	10	10	10	10
4D	60	SCHF8	602910853	2	2	2	2	4	4	4	4
4D	60	SCHF8	603110853	0	0	0	0	0	0	0	0
4D	60	SCHF8	600211853	1	1	1	1	0	0	0	0
4D	60	SCHF8	600411853	0	0	0	0	3	3	3	3
4D	60	SCHF8	600611853	0	0	0	0	12	12	12	12
4D	60	SCHF8	600811853	15	15	15	15	5	5	5	5
4D	60	SCHF8	601011853	0	0	0	0	6	6	6	6
4D	60	SCHF8	601211853	4	4	4	4	1	1	1	1
4D	60	SCHF8	601411853	1	1	1	1	0	0	0	0
4D	60	SCHF8	601611853	3	3	3	3	0	0	0	0
4D	60	SCHF8	601811853	1	1	1	1	1	1	1	1
4D	60	SCHF8	602011853	16	16	16	16	4	4	4	4
4D	60	SCHF8	602211853	1	1	1	1	2	2	2	2
4D	60	SCHF8	602411853	0	0	0	0	9	9	9	9

4D	60	SCHF8	602611853	2	2	2	2	1	1	1	1
4D	60	SCHF8	602811853	3	3	3	3	2	2	2	2
4D	60	SCHF8	603011853	0	0	0	0	0	0	0	0
4D	60	SCHF8	600212853	30	30	30	30	25	25	25	25
4D	60	SCHF8	600412853	3	3	3	3	0	0	0	0
4D	60	SCHF8	600612853	7	7	7	7	8	8	8	8
4D	60	SCHF8	600812853	1	1	1	1	1	1	1	1
4D	60	SCHF8	601012853	5	5	5	5	2	2	2	2
4D	60	SCHF8	601212853	1	1	1	1	0	0	0	0
4D	60	SCHF8	601412853	0	0	0	0	1	1	1	1
4D	60	SCHF8	601612853	3	3	3	3	3	3	3	3
4D	60	SCHF8	601812853	6	6	6	6	3	3	3	3
4D	60	SCHF8	602012853	0	0	0	0	0	0	0	0
4D	60	SCHF8	602212853	0	0	0	0	6	6	6	6
4D	60	SCHF8	602412853	3	3	3	3	25	25	25	25
4D	60	SCHF8	602612853	9	9	9	9	1	1	1	1
4D	60	SCHF8	602812853	2	2	2	2	0	0	0	0
4D	60	SCHF8	603012853	0	0	0	0	3	3	3	3

Runnb.dat

IA
 BASIN UPCHURCH
 RIVER UPCHURCH
 ZR L 1 2
 ZS NORTHBSN,,,1,2,3,4,5,6,7
 PR NORTHBSN1

Runsbs.dat

IA
 BASIN UPCHURCH
 RIVER UPCHURCH
 ZR L 1 2
 ZS SOUTHBSN,,,1,2,3,4,5,6,7
 PR SOUTHBSN1

Appendix G
Upper Basin Operation Model

Upper Churchill System Routing Model

Model Flow Regime

Reservoirs

- A East Forebay
- B West Forebay
- C Smallwood
- D Gabbro
- E Ossok

Channels	Dependent on
1 Power Flow	specified
2 Forebay Spill	water level A
3 Whitefish	water level B
4 Jacobie Spill	water level B
5 Lobstick	water level C
6 Local North	specified
7 Gabbro	water level D
8 20% Local South	specified
9 Channel	water levels D&E
10 80% Local South	specified
11 Ossok Spill	water level E

Inflows and Outflows

	Reservoir				
	East Forebay	West Forebay	Smallwood	Gabbro	Ossok
Inflow	Whitefish	Lobstick	North Local + Gabbro	20% Local South + Channel	80% Local South
Outflow	Power + Forebay Spill	Whitefish + Jacobie	Lobstick	Gabbro	Channel + Ossok

Upper Churchill System Routing Model

Storage Curves

Notes

1. Equation form: $Ax + B$
2. Regression performed on "Volume" curves. "Elevation" curves are derived exactly from them.
3. Source is 1989 Flood Handling Study

Reservoir	Curve	A	B
Ossok	Volume	1.07E+04	-5.07E+06
	Elevation	9.37E-05	4.75E+02
Gabbro	Volume	2.60E+04	-1.24E+07
	Elevation	3.84E-05	4.75E+02
Smallwood	Volume	2.59E+05	-1.21E+08
	Elevation	3.86E-06	4.68E+02
West	Volume	2.64E+03	-1.18E+06
	Elevation	3.79E-04	4.48E+02
East	Volume	6.06E+03	-2.69E+06
	Elevation	1.65E-04	4.44E+02

A Ossokmanuan Lake

Elevation (m)	Volume (hm ³)	Volume (m ³ /s 6hr)
475.03	0	0
475.50	79	3657
476.00	170	7870
476.50	265	12269
477.00	361	16713
477.50	459	21250
478.00	560	25926
478.50	668	30926
479.00	788	36481
479.50	922	42685
480.00	1072	49630
480.50	1237	57269
481.00	1417	65602

$$\text{Volume} = 1.067343\text{E}+04x - 5.073443\text{E}+06$$

B Gabbro Lake

Elevation (m)	Volume (hm ³)	Volume (m ³ /s 6hr)	Volume 2.6009569E+04x - 1.2363261E+07
475.03	0	0	
475.50	192	8889	
476.00	414	19167	
476.50	645	29861	
477.00	879	40694	
477.50	1117	51713	
478.00	1363	63102	
478.50	1626	75278	
479.00	1918	88796	
479.50	2247	104028	
480.00	2612	120926	
480.50	3014	139537	
481.00	3453	159861	

C Smallwood

Elevation (m)	Volume (hm ³)	Volume (m ³ /s 6hr)	Volume 2.5924553E+05x - 1.2129356E+08
464.05	0	0	
466.34	1756	81296	
469.39	9921	459306	
470.92	17000	787037	
472.44	24875	1151620	
472.74	26585	1230787	
472.90	27535	1274769	
473.05	28436	1316481	
473.35	30255	1400694	
473.66	32185	1490046	
473.96	34109	1579120	
475.49	44528	2061481	

D West Forebay

Elevation (m)	Volume (hm ³)	Volume (m ³ /s 6hr)	Volume
445.00	0.0	0	2.6372661E+03x - 1.1809497E+06
445.50	6.6	306	
446.00	13.4	620	
447.00	31.1	1440	
448.00	54.1	2505	
449.00	82.9	3838	
450.00	119.6	5537	
451.00	167.4	7750	
452.00	230.8	10685	
452.93	308.7	14292	

E East Forebay

Elevation (m)	Volume (hm ³)	Volume (m ³ /s 6hr)	Volume
443.80	0	0	6.05579026E+03x - 2.68890030E+06
445.00	123	5694	
447.10	372	17222	
448.70	589	27269	
449.88	764	35370	
451.10	958	44352	

Upper Churchill System Routing Model

Discharge Curves

Summary of Coefficients

Equation Form: $Ax^2 + Bx + C$

Channel	A	B	C
Forebay	1.41E+01	-1.22E+04	2.65E+06
Whitefish	430.68736	-191888.33	(linear)
Jacobie	6.23E+00	-5.14E+03	1.05E+06
Lobstick	1.12E+01	-9.98E+03	2.23E+06
Gabbro	8.24E+00	-7.51E+03	1.71E+06
Ossok	6.49E+01	-6.13E+04	1.45E+07

Channel Q = optimized Mannings equation (see calculations)

Tables

2 Forebay Spillway $y = 1.4081534E+01x^2 - 1.2213708E+04x + 2.6482359E+06$

Elevation	Flow
436.47	0.0
438.90	169.9
440.40	396.4
441.96	736.2
443.50	1189.3
445.00	1699.0
446.50	2265.4
448.06	2718.4
448.67	2973.3
449.28	3199.8

3 Whitefish $y = 430.68736x - 191888.33482$

Elevation	Flow
448.97	0.00
449.58	1274.37
451.10	2378.67
451.41	2506.00
451.71	2675.90
452.02	2803.40
452.32	2930.80
452.63	3058.20
452.93	3185.60
455.00	4064.00

4 Jacobie

$$y = 6.2280581E+00x^2 - 5.1370647E+03x + 1.0543080E+06$$

Elevation	Flow
440.90	0.00
445.00	1764.00
446.50	2307.00
448.10	2904.00
449.60	3557.00
451.10	4269.00
452.63	5045.00
454.15	5888.00
455.00	6359.41

5 Lobstick

$$y = 1.1169454E+01x^2 - 9.9764656E+03x + 2.2265478E+06$$

Elevation	Flow
457.20	0.00
463.30	2094.90
466.30	3283.96
469.40	4586.20
470.90	5265.70
472.40	6114.96
472.70	6341.40
475.00	8074.00

7 Gabbro

$$y = 8.2396287E+00x^2 - 7.5109149E+03x + 1.7092635E+06$$

Elevation	Flow
472.90	0.00
474.00	382.30
475.50	764.60
477.00	1302.60
477.90	1642.40
478.50	1868.90
479.10	2095.40
479.80	2350.30
480.00	2423.10

11 Ossokmanuan

$$y = 6.4869524E+01x^2 - 6.1345943E+04x + 1.4503304E+07$$

Elevation	Flow
474.20	0
475.50	311
476.30	623
477.00	962
477.80	1472
478.50	2066
479.15	2348
480.50	3679

Elevation Limits for Operation of Control Structures

Channel	Minimum	Reservoir	Maximum	Reservoir	Minimum 2	Reservoir
1 Power Flow	447.60	East F	448.67	East F		
2 Forebay Spill	447.60	East F			473.00	Smallwood
3 Whitefish	451.71	West F	448.67	East F		
4 Jacobie Spill	451.71	West F				
5 Lobstick	469.68	Smallwood	454.81	West F	472.74	Smallwood
7 Gabbro	475.03	Gabbro	469.98	Smallwood		
9 Channel	475.03	Gabbro				
11 Ossok Spill	475.03	Ossok			479.15	Ossok

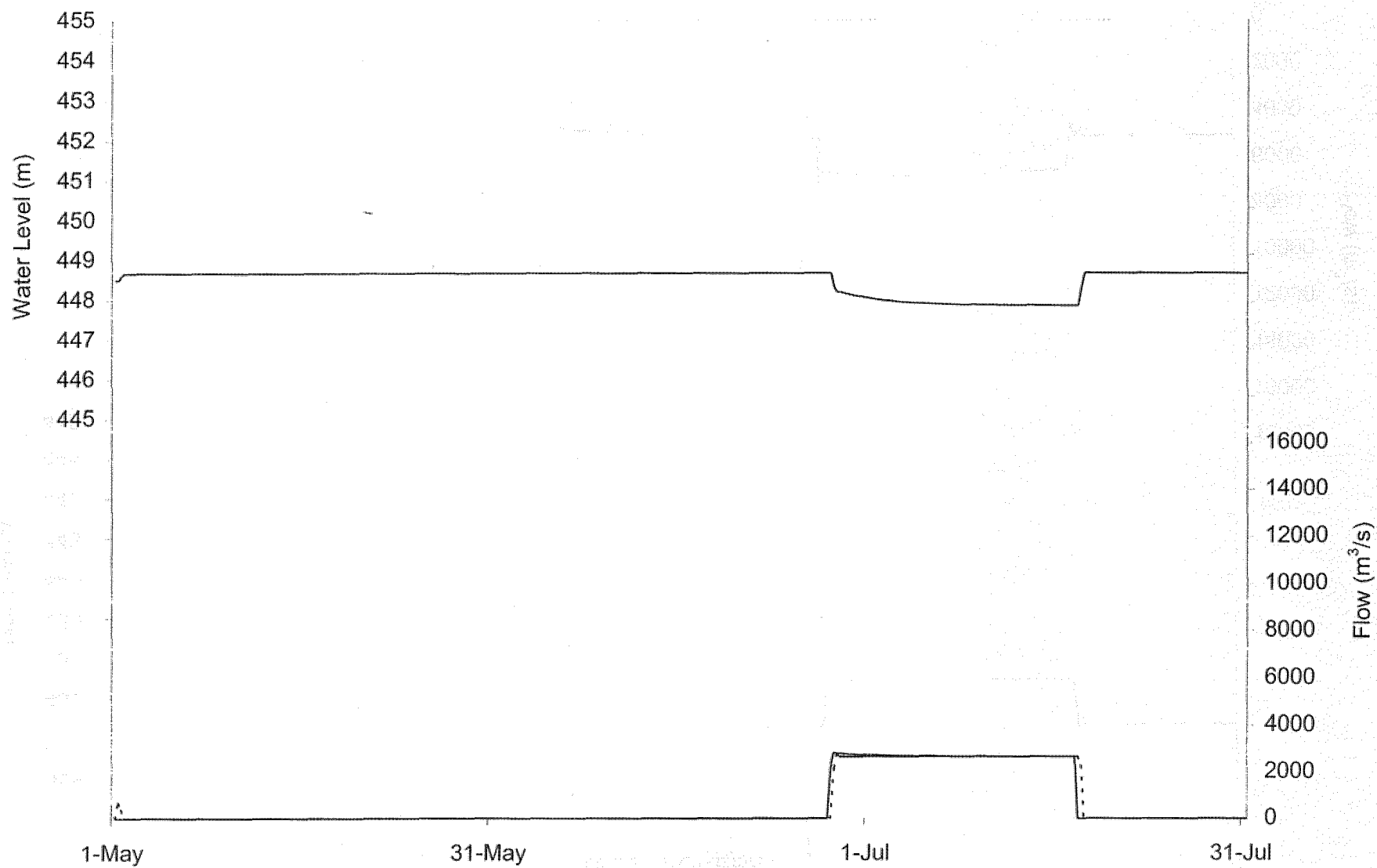
Storage Limits for Operation of Control Structures

Channel	Minimum	Reservoir	Maximum	Reservoir	Minimum 2	Reservoir
1 Power Flow	21671	East F	28151	East F		
2 Forebay Spill	21671	East F			1329576	Smallwood
3 Whitefish	10330	West F	28151	East F		
4 Jacobie Spill	10330	West F				
5 Lobstick	468881	Smallwood	18505	West F	1262172	Smallwood
7 Gabbro	-7935	Gabbro	546654	Smallwood		
9 Channel	-7935	Gabbro				
11 Ossok Spill	-3244	Ossok			40731	Ossok

Control Structure Operation Dates

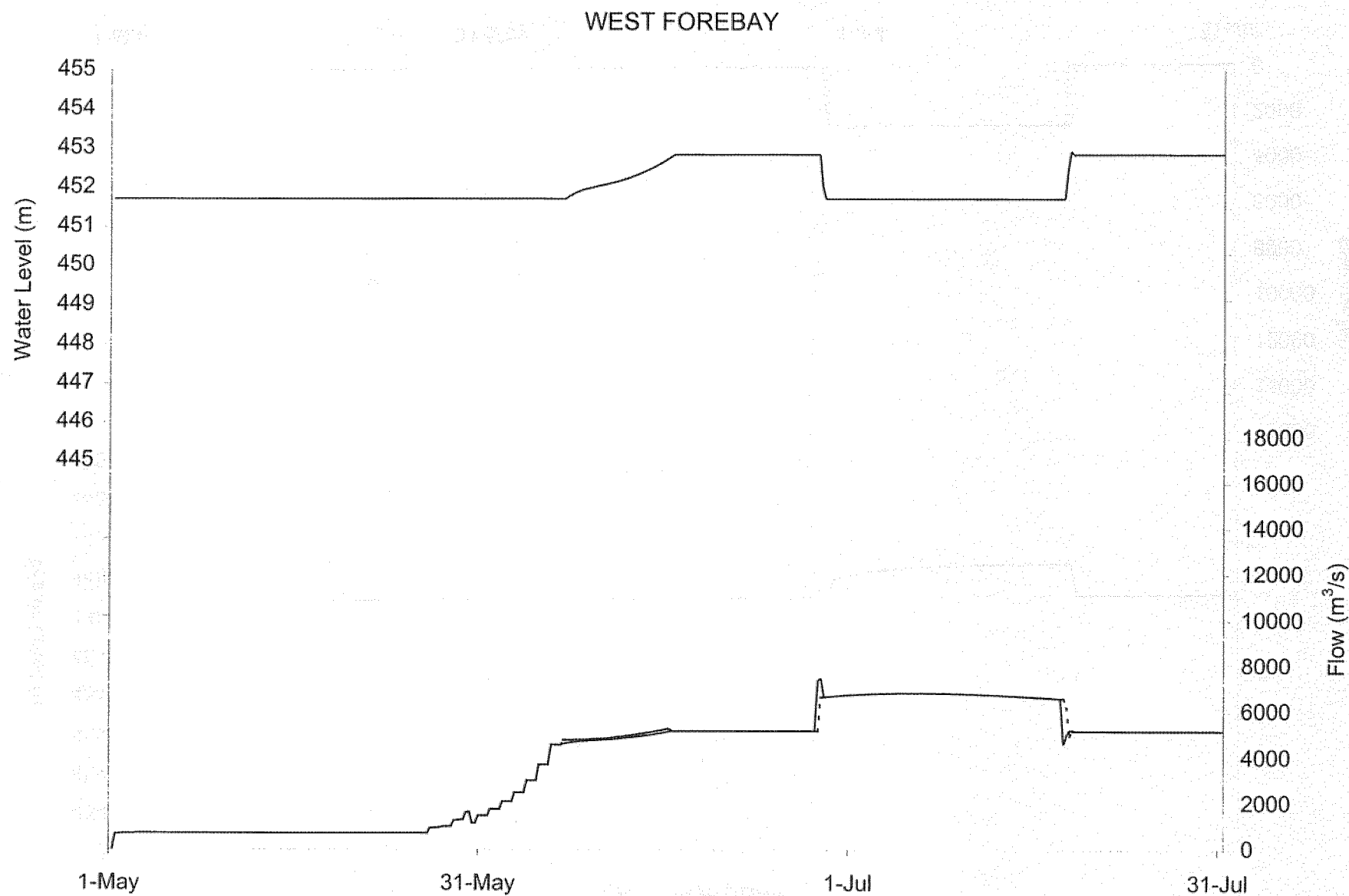
Channel	Date
1 Power Flow Shut Off	1-May
1 Power Flow Restored	1-Sep
2 Close Forebay Spill until	1-Apr
4 Close Jacobie Spill until	1-Apr
5 Lobstick End of Rule Curve	1-Sep
7 Close Gabbro Control	31-May
11 Do not open Ossok until	1-Apr
11 Do not open Ossok after	1-Sep

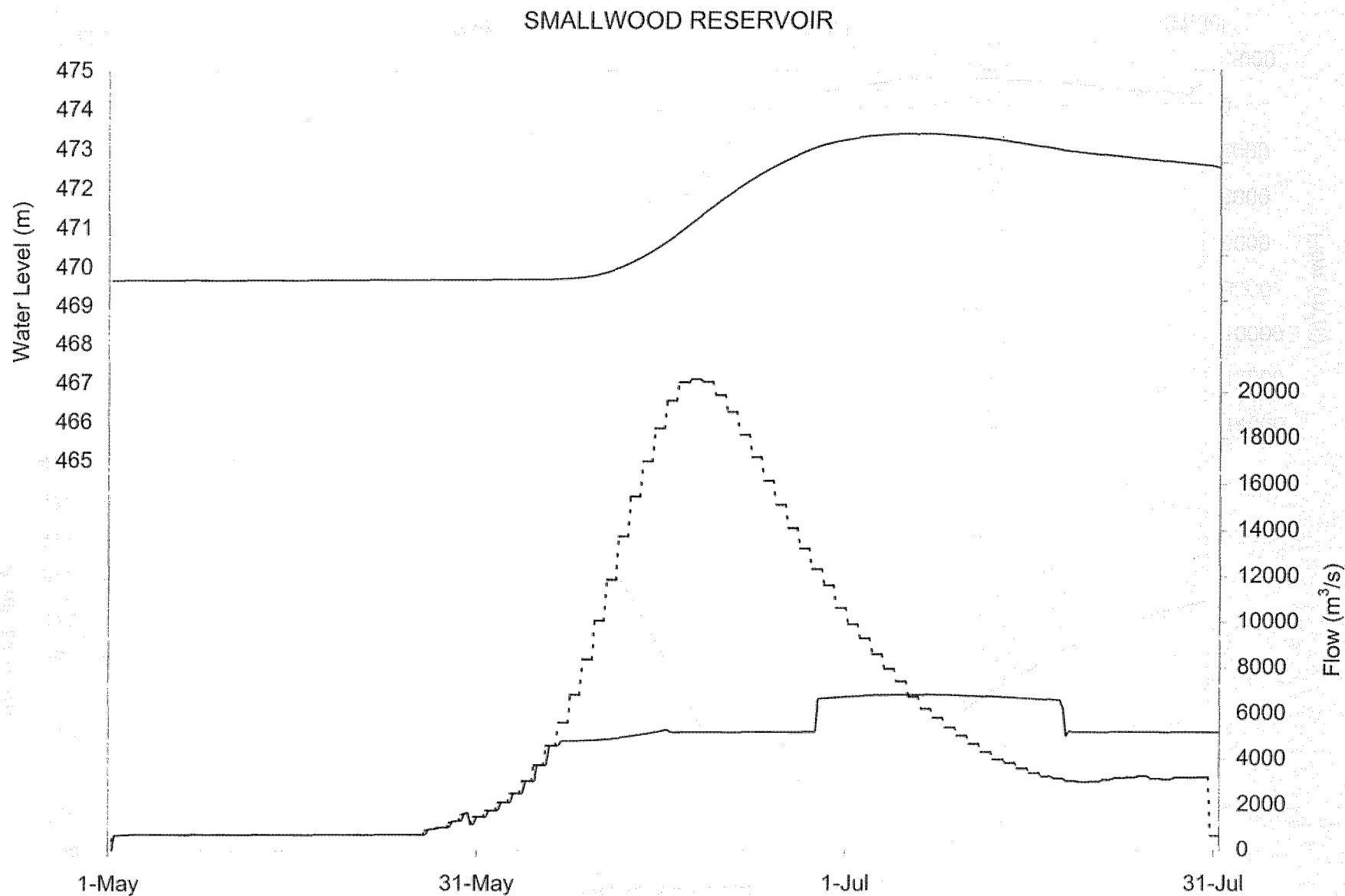
EAST FOREBAY



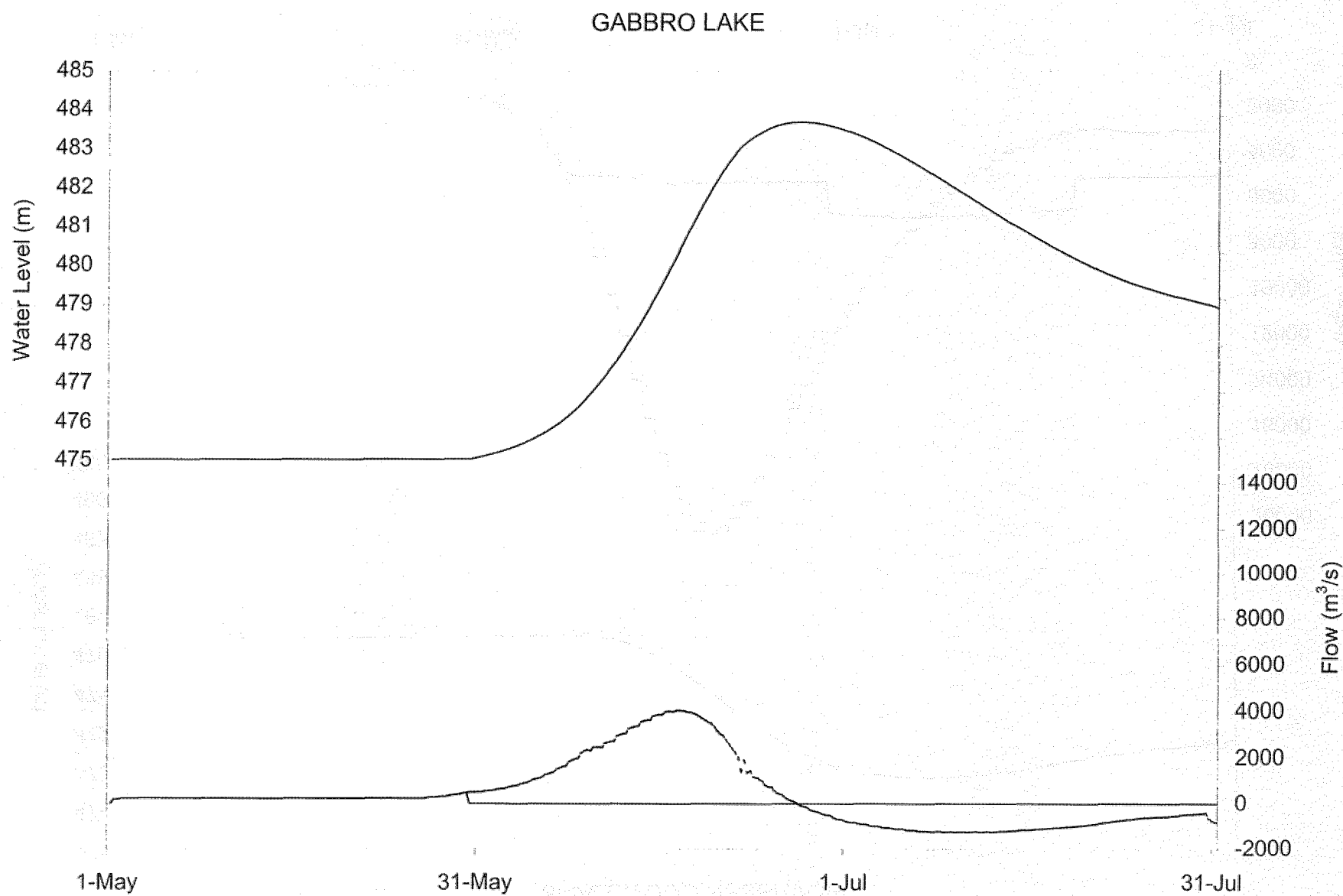
Duplication of 1989 PMF Base Case: East Forebay

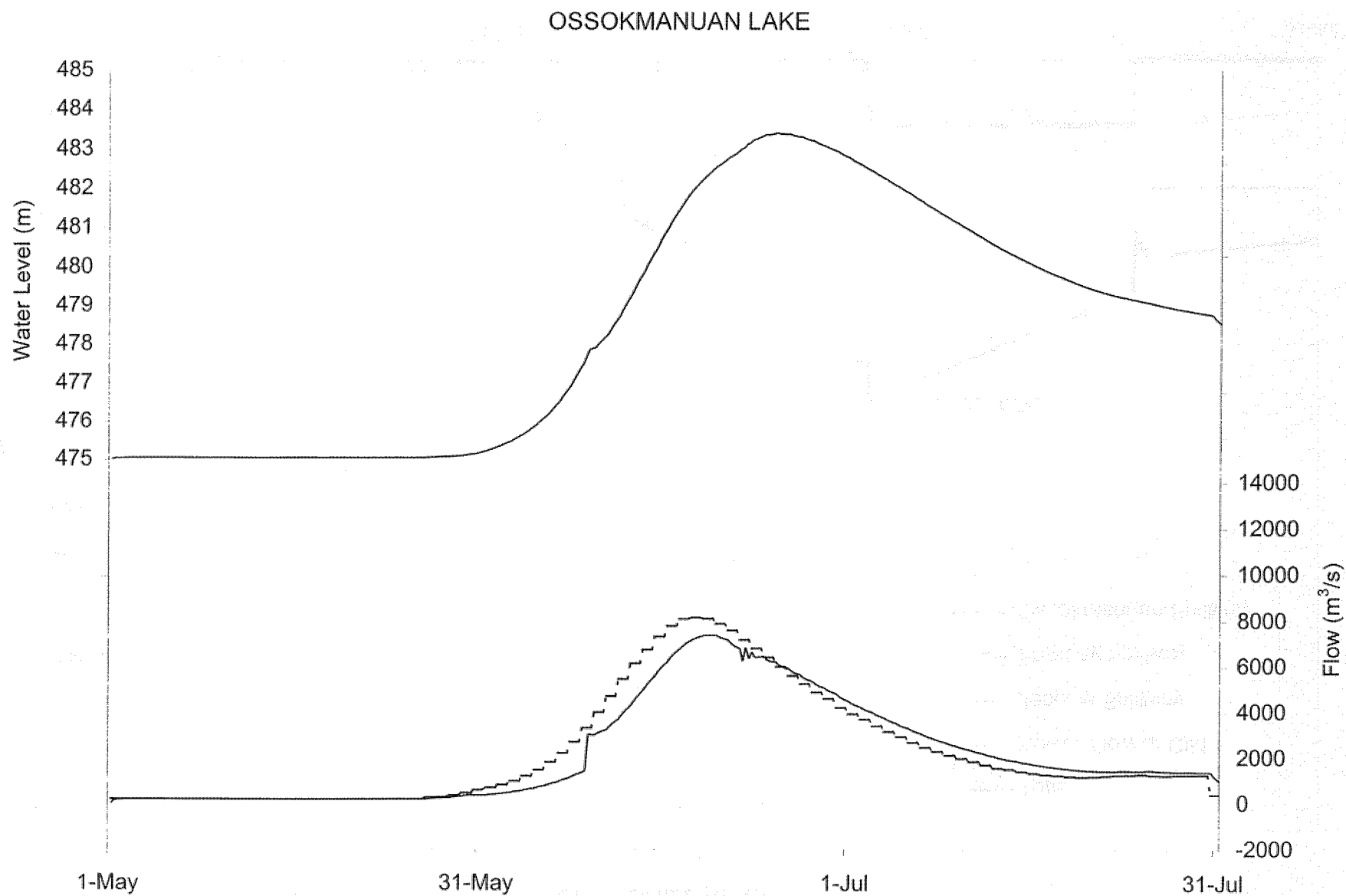
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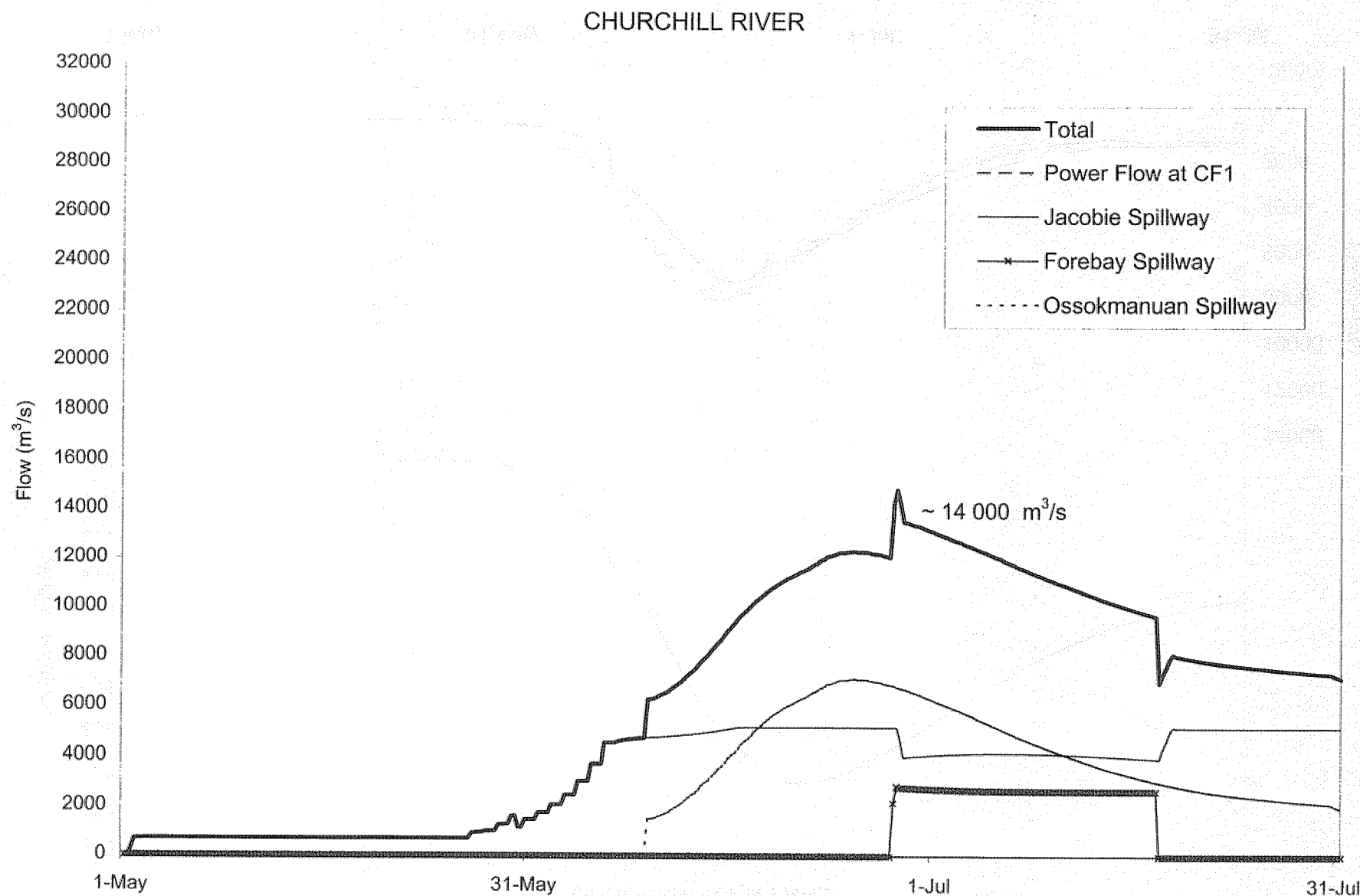


Duplication of 1989 PMF Base Case: Smallwood





Duplication of 1989 PMF Base Case: Ossok Lake



Upper Churchill System Routing Model

Revised PMF with 1989 Rules

Control Center

Churchill River Peak Discharge (m³/s) 9,807

Reservoir Conditions

	Reservoir				
	East Forebay	West Forebay	Smallwood	Gabbro	Ossok
Starting Level	448.50	451.71	470.60	475.03	475.03
Starting Storage	27122	10330	707386	-7935	-3244
Maximum Level	448.67	452.93	472.81	481.50	481.36
Final Level	448.67	451.71	472.74	476.95	476.87

▲ Change West Forebay Flood
Tolerance for Lobstick Release
▼ Indicator = 64

Reservoir Boundary Elevations

	Reservoir				
	East Forebay	West Forebay	Smallwood	Gabbro	Ossok
Low Supply	447.60	451.71	464.06	475.03	475.03
Target - PMF	448.50	451.71	469.68	475.03	475.03
Target - Other	447.60	451.71	472.26	475.03	475.03
Full Supply	448.50	452.93	472.74	479.15	479.15
Maximum Flood	448.67	452.93	473.23	480.62	480.40
Core	449.88		474.57	481.19	480.42
Crest	450.49	455.37	475.18	482.50	481.43

Power Flow

starting	600
maximum	2000

Elevation Limits for Operation of Control Structures

Channel	Minimum	Reservoir	Maximum	Reservoir	Minimum 2	Reservoir
1 Power Flow	447.60	East F	448.67	East F		
2 Forebay Spill	447.60	East F			473.00	Smallwood
3 Whitefish	451.71	West F	448.67	East F		
4 Jacobie Spill	451.71	West F				
5 Lobstick	470.60	Smallwood	454.91	West F	472.74	Smallwood
7 Gabbro	475.03	Gabbro	470.90	Smallwood		
9 Channel	475.03	Gabbro				
11 Ossok Spill	475.03	Ossok			479.15	Ossok

Storage Limits for Operation of Control Structures

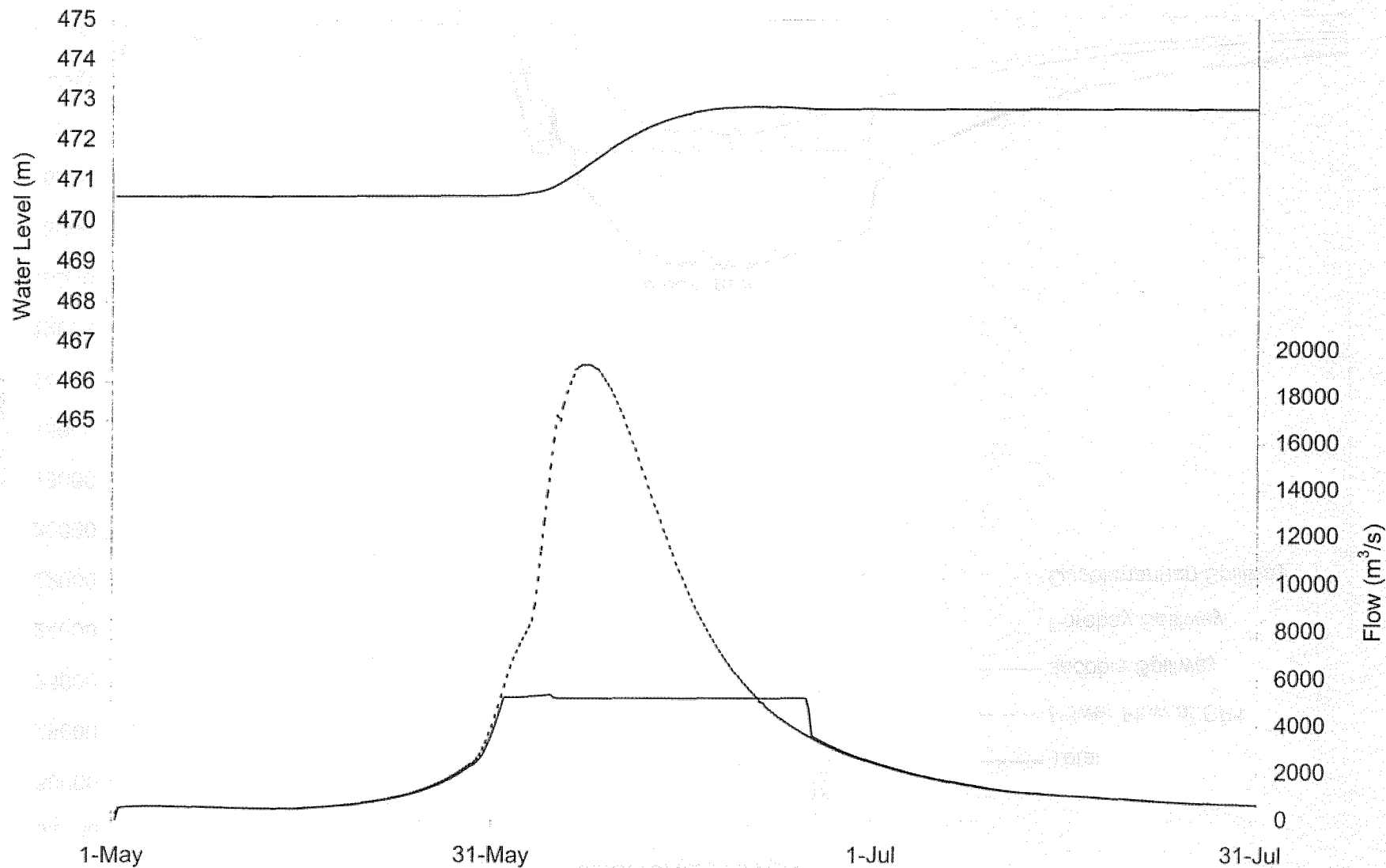
Channel	Minimum	Reservoir	Maximum	Reservoir	Minimum 2	Reservoir
1 Power Flow	21671	East F	28151	East F		
2 Forebay Spill	21671	East F			1329576	Smallwood
3 Whitefish	10330	West F	28151	East F		
4 Jacobie Spill	10330	West F				
5 Lobstick	707386	Smallwood	18769	West F	1262172	Smallwood
7 Gabbro	-7935	Gabbro	785160	Smallwood		
9 Channel	-7935	Gabbro				
11 Ossok Spill	-3244	Ossok			40731	Ossok

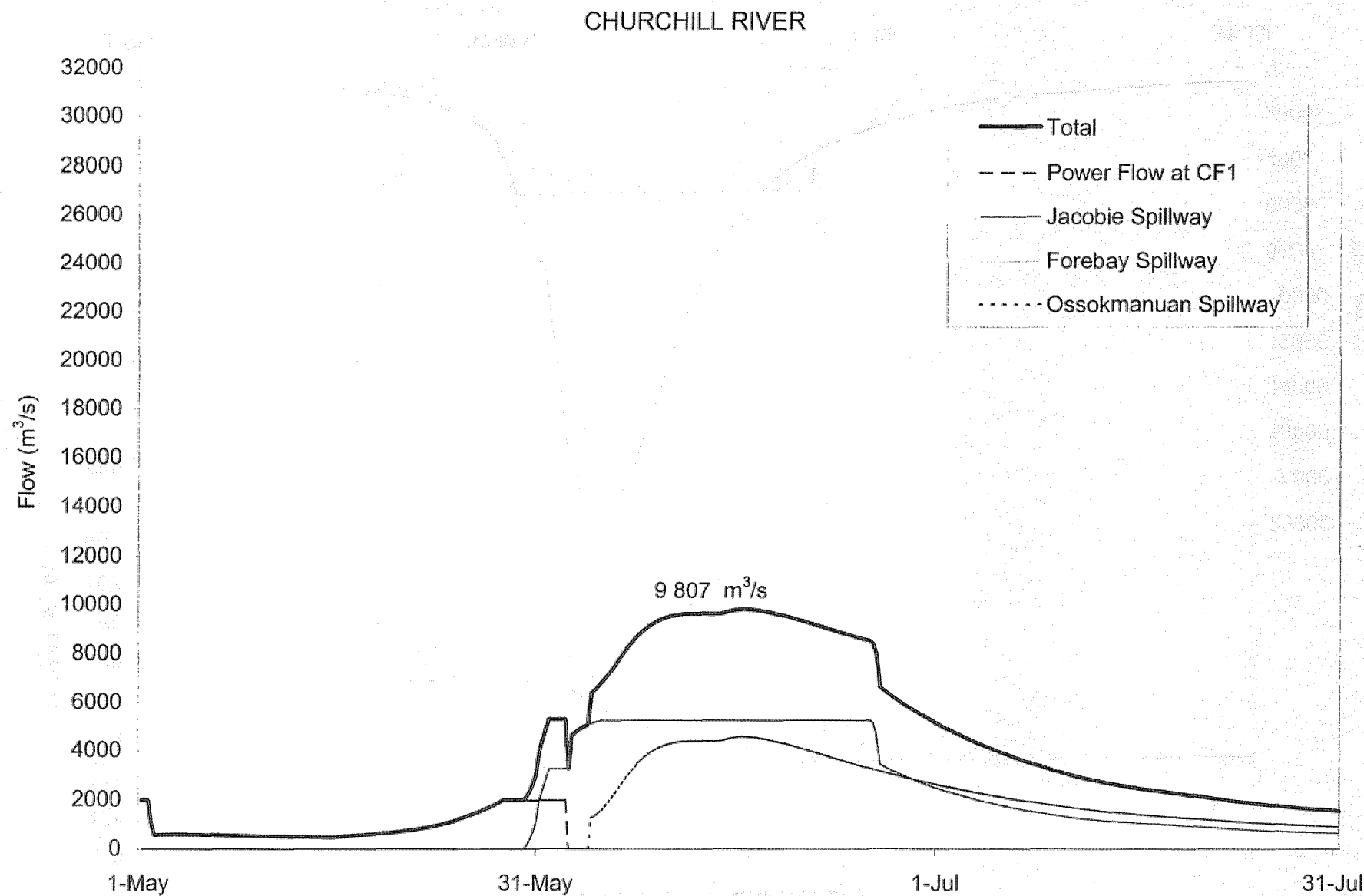
Control Structure Operation Dates

Channel	Date
1 Power Flow Shut Off	3-Jun
1 Power Flow Restored	1-Sep
2 Close Forebay Spill until	1-Apr
4 Close Jacobie Spill until	1-Apr
5 Lobstick End of Rule Curve	20-Jun
7 Close Gabbro Control	1-Sep
11 Do not open Ossok until	1-Apr
11 Do not open Ossok after	1-Sep

modified to trip to second Lobstick Rule without break

SMALLWOOD RESERVOIR





Revised PMF with 1989 Rules: Churchill River

Upper Churchill System Routing Model

Duplication of 1989 100-Year Event

Control Center

Churchill River Peak Discharge (m³/s) 7,394

Reservoir Conditions

	Reservoir				
	East Forebay	West Forebay	Smallwood	Gabbro	Ossok
Starting Level	447.60	451.71	472.26	475.03	475.03
Starting Storage	21671	10330	1137734	-7935	-3244
Maximum Level	448.26	451.71	472.74	479.14	479.07
Final Level	448.26	451.71	472.27	477.94	477.89

▲ Change West Forebay Flood
— Tolerance for Lobstick Release
▼ Indicator = 38

Reservoir Boundary Elevations

	Reservoir				
	East Forebay	West Forebay	Smallwood	Gabbro	Ossok
Low Supply	447.60	451.71	464.06	475.03	475.03
Target - PMF	448.50	451.71	469.68	475.03	475.03
Target - Other	447.60	451.71	472.26	475.03	475.03
Full Supply	448.50	452.93	472.74	479.15	479.15
Maximum Flood	448.67	452.93	473.23	480.62	480.40
Core	449.88		474.57	481.19	480.42
Crest	450.49	455.37	475.18	482.50	481.43

Power Flow

starting	600
maximum	2500

Elevation Limits for Operation of Control Structures

Channel	Minimum	Reservoir	Maximum	Reservoir	Minimum 2	Reservoir
1 Power Flow	447.60	East F	448.67	East F		
2 Forebay Spill	447.60	East F			473.00	Smallwood
3 Whitefish	451.71	West F	448.67	East F		
4 Jacobie Spill	451.71	West F				
5 Lobstick	472.26	Smallwood	453.61	West F	472.74	Smallwood
7 Gabbro	475.03	Gabbro	472.56	Smallwood		
9 Channel	475.03	Gabbro				
11 Ossok Spill	475.03	Ossok			479.15	Ossok

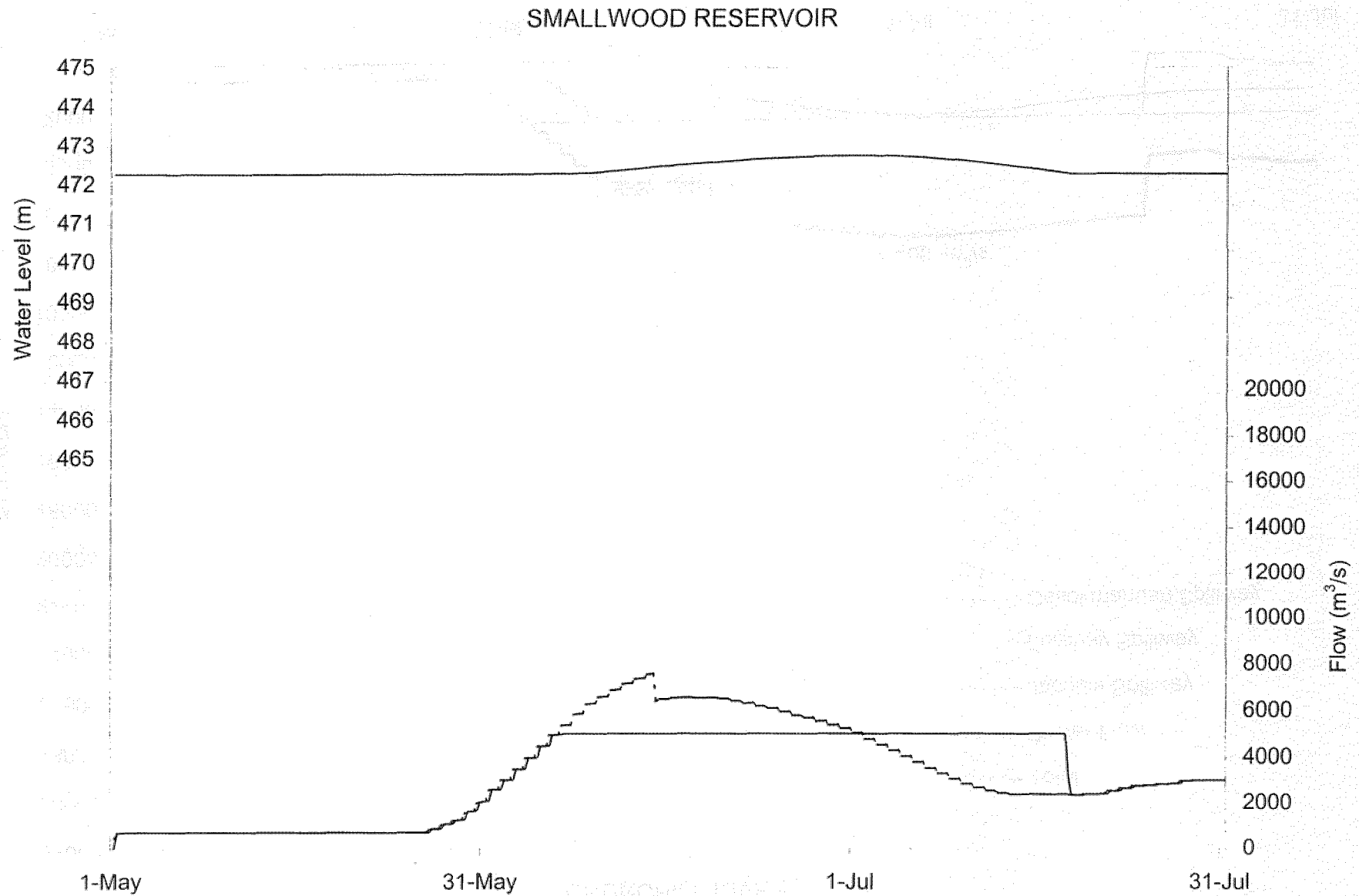
Storage Limits for Operation of Control Structures

Channel	Minimum	Reservoir	Maximum	Reservoir	Minimum 2	Reservoir
1 Power Flow	21671	East F	28151	East F		
2 Forebay Spill	21671	East F			1329576	Smallwood
3 Whitefish	10330	West F	28151	East F		
4 Jacobie Spill	10330	West F				
5 Lobstick	1137734	Smallwood	15341	West F	1262172	Smallwood
7 Gabbro	-7935	Gabbro	1215508	Smallwood		
9 Channel	-7935	Gabbro				
11 Ossok Spill	-3244	Ossok			40731	Ossok

Control Structure Operation Dates

Channel	Date
1 Power Flow Shut Off	1-Sep
1 Power Flow Restored	1-Sep
2 Close Forebay Spill until	1-Apr
4 Close Jacobie Spill until	1-Apr
5 Lobstick End of Rule Curve	1-Sep
7 Close Gabbro Control	15-Jun
11 Do not open Ossok until	1-Apr
11 Do not open Ossok after	1-Sep

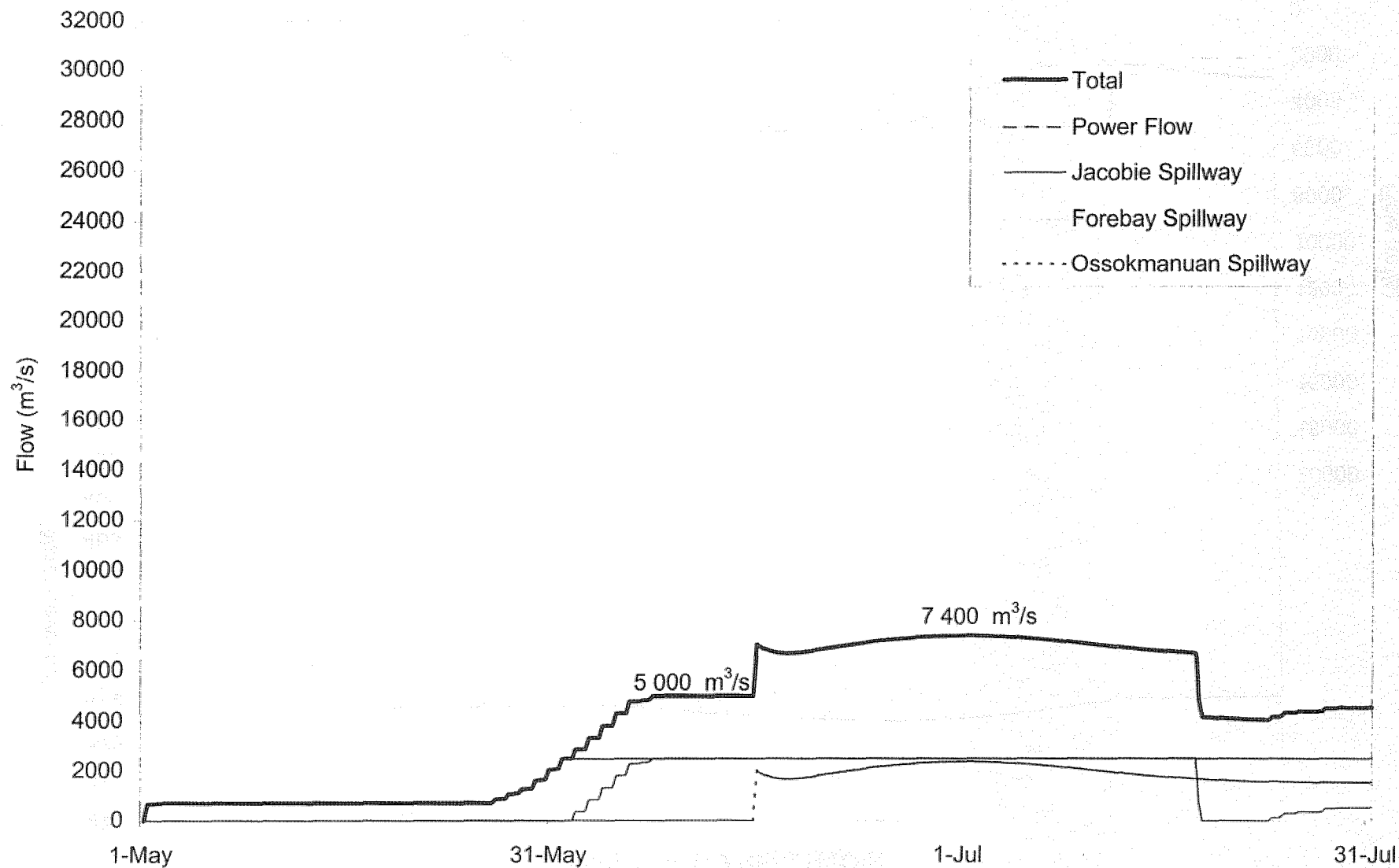
modified to make Lobstick release continuous



Duplication of 1989 100-Year Event: Smallwood

12/3/98 11:19 AM

CHURCHILL RIVER



Duplication of 1989 100-Year Event: Churchill River

12/3/98 11:19 AM

Elevation Limits for Operation of Control Structures

Channel	Minimum	Reservoir	Maximum	Reservoir	Minimum 2	Reservoir
1 Power Flow	447.60	East F	448.67	East F		
2 Forebay Spill	447.60	East F			473.00	Smallwood
3 Whitefish	451.71	West F	448.67	East F		
4 Jacobie Spill	451.71	West F				
5 Lobstick	472.26	Smallwood	453.86	West F	472.74	Smallwood
7 Gabbro	475.03	Gabbro	472.56	Smallwood		
9 Channel	475.03	Gabbro				
11 Ossok Spill	475.03	Ossok			479.15	Ossok

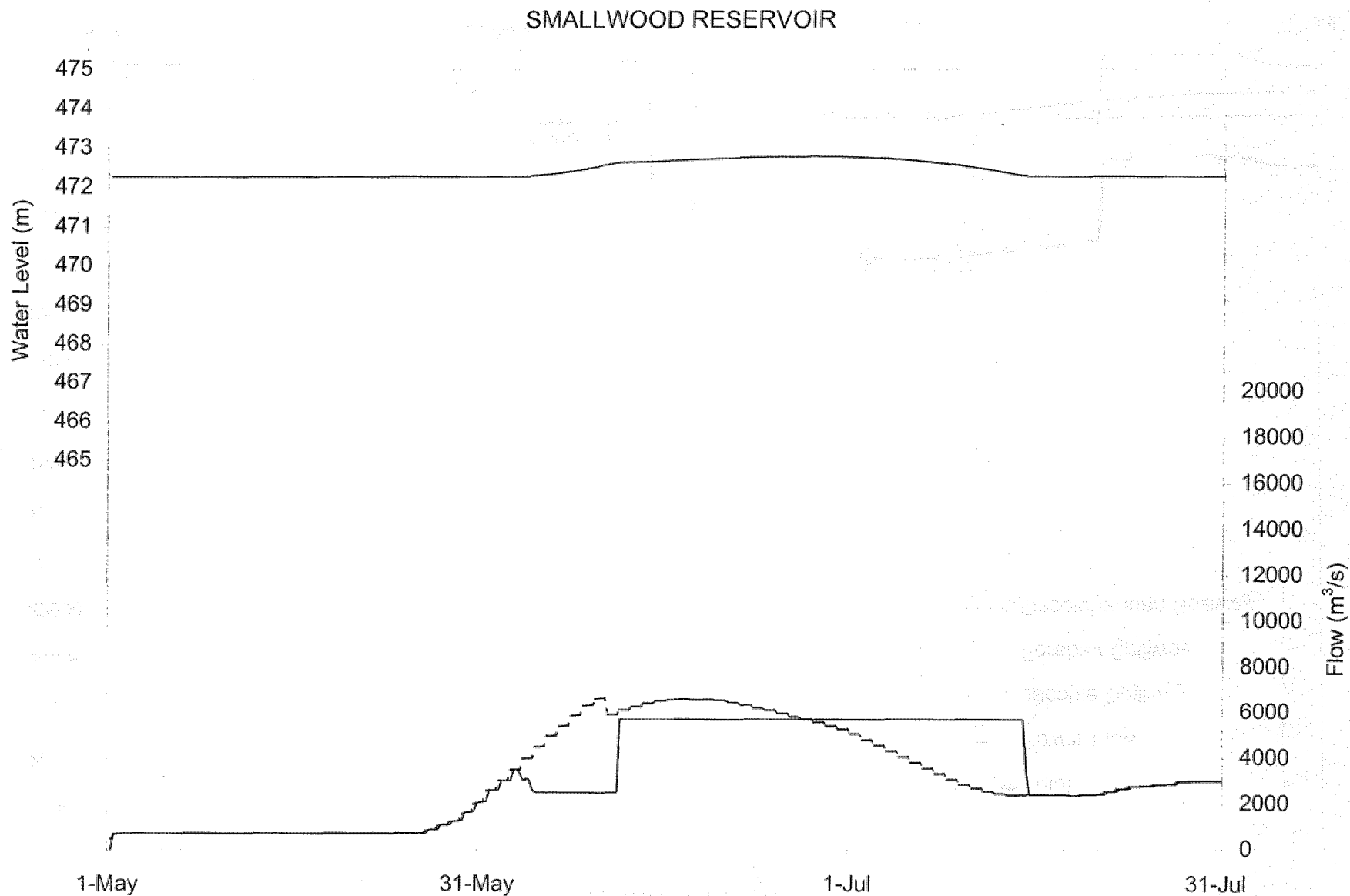
Storage Limits for Operation of Control Structures

Channel	Minimum	Reservoir	Maximum	Reservoir	Minimum 2	Reservoir
1 Power Flow	21671	East F	28151	East F		
2 Forebay Spill	21671	East F			1329576	Smallwood
3 Whitefish	10330	West F	28151	East F		
4 Jacobie Spill	10330	West F				
5 Lobstick	1137734	Smallwood	16000	West F	1262172	Smallwood
7 Gabbro	-7935	Gabbro	1215508	Smallwood		
9 Channel	-7935	Gabbro				
11 Ossok Spill	-3244	Ossok			40731	Ossok

Control Structure Operation Dates

Channel	Date
1 Power Flow Shut Off	1-Sep
1 Power Flow Restored	1-Sep
2 Close Forebay Spill until	1-Apr
4 Close Jacobie Spill until	12-Jun
5 Lobstick End of Rule Curve	1-Sep
7 Close Gabbro Control	15-Jun
11 Do not open Ossok until	1-Apr
11 Do not open Ossok after	1-Sep

modified to make Lobstick release continuous



CHURCHILL RIVER

