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Department of Water Affairs and Forestry

Directorate: National Water Resource Planning

The Assessment of Water Availability in the Berg Catchment (WMA 19) by means of Water Resource Related Models

Report No. 5 : Update of Catchment Hydrology
Volume 1 : Berg River

FINAL **May 2009**

Submitted by:
Ninham Shand (Pty) Ltd
in Association with
Umvoto Africa (Pty) Ltd

NINHAM SHAND
CONSULTING SERVICES

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DEPARTMENT OF
WATER AFFAIRS AND FORESTRY

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THE ASSESSMENT OF WATER AVAILABILITY IN THE BERG CATCHMENT (WMA 19) BY MEANS OF WATER RESOURCE RELATED MODELS

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APPROVAL

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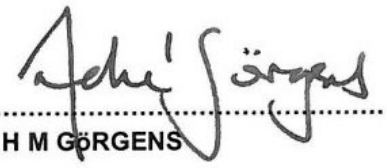

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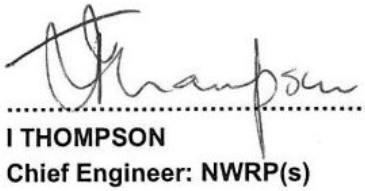

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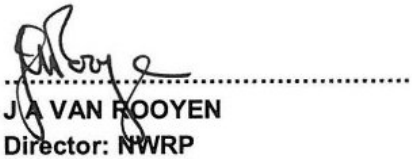

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REPORT No	REPORT TITLE	VOLUME No.	VOLUME TITLE
1	Final Summary Report		
2	Rainfall Data Preparation and MAP Surface		
3	The Assessment of Flow Gauging Stations		
4	Land Use and Water Requirements	Vol 1	Data in Support of Catchment Modelling
		Vol 2	Invasive Alien Plant Mapping
		Vol 3	Water Use and Water Requirements
5	Update of Catchment Hydrology	Vol 1	Berg River
		Vol 2	Upper Breede River
		Vol 3	Peripheral Rivers
6	Water Quality	Vol 1	A Literature Review of Water Quality Related Studies in the Berg WMA, 1994 - 2006
		Vol 2	Updating of the ACRU Salinity Model for the Berg River
		Vol 3	Update Monthly FLOSAL Model to WQT
7	(Report No Not Used)		
8	System Analysis Status Report		
9	Groundwater Model	Vol 1	Overview of Methodology and Results
		Vol 2	Data Availability and Evaluation
		Vol 3	Regional Conceptual Model
		Vol 4	Regional Water Balance Model
		Vol 5	Cape Flats Aquifer Model
		Vol 6	Langebaan Road and Elandsfontein Aquifer System Model
		Vol 7	TMG Aquifer, Piketberg Model
		Vol 8	TMG Aquifer, Witzenberg – Nuy Model
		Vol 9	Breede River Alluvium Aquifer Model
10	Berg and Mhlathuze Assessment Studies (Refer to Report No.1)		
11	Applicability of the Sami Groundwater Model to the Berg WAAS Area		

THE ASSESSMENT OF WATER AVAILABILITY IN THE BERG CATCHMENT (WMA 19) BY MEANS OF WATER RESOURCE RELATED MODELS

REPORT No. 5 : UPDATE OF CATCHMENT HYDROLOGY

Volume No. 1 : Berg River

EXECUTIVE SUMMARY

INTRODUCTION

The objective of the catchment hydrology task for the Berg WAAS is to present updated hydrology for subcatchments in the study area in order to support the determination of allocable water quantification, as well as to provide model-based assessment of water resource augmentation options in support of the Western Cape Reconciliation Strategy Study. Monthly simulated runoff sequences are produced which are used in the system yield analyses relating to present and future land-use development scenarios and scheme development options.

GENERAL APPROACH

The hydrology of the Western Cape System Analysis (WCSA) (DWAF, 1990) was evaluated and updated where necessary by re-configuring and re-calibrating the existing catchment model with current day land and water use representing the 2004 hydrological year. This report presents the tasks relating to the catchment modelling of the Berg River. The general approach followed in order to generate monthly flow sequences is outlined as follows:

- Capturing and processing spatial data for use in the Pitman model including rainfall, evaporation, irrigated areas and crop types, afforested areas and alien vegetation areas, water demands, abstractions and return flows, transfers and farm dam information.
- Subcatchment configuration informed by previous studies and availability of spatial data and observed flow gauge data.
- Calibration of the Pitman model in WRSM2000.
- Produce long term naturalised flow sequences.

RESULTS

A summary of the calibration results for the Berg River subcatchments is shown in Table 1 and the final Pitman parameters for each subcatchment are presented in Table 2. The calibrated flows are based on longer flow records, wherever possible than in previous studies and the naturalised flow sequences (1927-2004) for the Berg River subcatchments appear to be higher for the upper to middle reaches of the Berg and lower for the lower reaches compared to previous estimates (1928-1990).

Table 1: Summary of Berg River subcatchment calibration results

Flow gauge	MAP (mm)	Catchment area (km^2)	Patched observed MAR (Mm^3/a)	Calibration period	Naturalised MAR (Mm^3/a) 1927-2004	Naturalised runoff coefficient
G1H003	1114	46.2	22.1	1959-2004	24.8	48%
G1H004	2576	68.9	157.7	1980-2004	137.2	77%
G1H008	732	347.9	43.8	1967-2004	53	21%
G1H011	1100	26	13.7	1963-2004	16.1	56%
G1H013	559	797.5	72.4	1987-2004	67.9	15%
G1H019	1577	22.8	18.6	1967-2004	21.3	59%
G1H020	929	407.1	139.4	1967-2004	162.8	43%
G1H021	1200	18.6	15.1	1975-2004	17.7	79%
G1H028	1278	185.2	130.6	1971-2004	131	55%
G1H029	1138	36.2	18.9	1975-2004	21.4	52%
G1H035	404	674.2	31.6	1975-1997	32.8	12%
G1H036*	642	497.8	406.4	1979-2004	61.9	19%
G1H037	920	70	22.3	1978-1991	19.6	30%
G1H040	578	36	2.5	1979-2004	3.3	16%
G1H041	764	120.6	23.5	1979-2004	24.7	27%
G1H043	494	154.9	5.2	1979-2001	5.3	7%
G1R002	1373	85.3	77.5	1973-2004	83.4	71%

* Cumulative calibration

Table 2: Summary of Berg River Pitman parameters

FLOW GAUGE	POW	SL	ST	FT	GW	ZMIN	ZMAX	PI	TL	GL	R
G1H003	2	0	370	65	0	75	580	1.5	0.25	0	0
G1H004	2	0	100	55	0	30	170	1.5	0.25	0	0
G1H008	3	0	410	45	0	80	650	1.5	0	0	0
G1H011	3	0	130	70	0	35	250	1.5	0.5	0	0
G1H013	2	0	270	15	0	60	480	1.5	0	0	0
G1H019	2	0	205	65	0	0	420	1.5	0.25	0	0
G1H020	2	0	210	30	0	50	500	1.5	0	0	0
G1H021	2	0	100	65	0	0	175	1.5	0.99	0	0
G1H028	1	0	215	40	0	0	450	1.5	0.4	0	0
G1H029	2	0	180	40	0	0	340	1.5	0.25	0	0
G1H035	2	0	195	10	0	30	350	1.5	0	0	0
G1H036	2	0	315	25	0	50	650	1.5	0	0	0
G1H037	2	0	350	35	0	55	600	1.5	0	0	0
G1H040	2	0	235	7	0	30	650	1.5	0	0	0
G1H041	2	0	245	12	0	65	560	1.5	0	0	0
G1H043	3	0	270	5	0	100	600	1.5	0	0	0
G1R002	2	0	120	75	0	0	200	1.5	0.5	0	0

CONCLUSIONS AND RECOMMENDATIONS

The key objective of this task was to extend the naturalisation of streamflow to the 2004 hydrological year, which has been achieved. Rainfall data is one of the most important data requirements for

hydrological modelling. The rainfall surface was updated as a separate task in the Berg WAAS and it provides an improved estimation of catchment MAP in high-lying, mountainous areas of the Western Cape. There is however still some uncertainty surrounding estimations of MAP in these areas and therefore, it is important the rainfall gauging network in the high mountains be extended and improved in order to provide better estimates for the future, especially in light of the need to properly monitor the effects of climate change.

THE ASSESSMENT OF WATER AVAILABILITY IN THE BERG CATCHMENT (WMA 19) BY MEANS OF WATER RESOURCE RELATED MODELS

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LIST OF ACRONYMS

CCWR	Computing Centre for Water Research
CSIR	Council for Scientific and industrial Research
DT	Discharge Table
DWAF	Department of Water Affairs and Forestry
GIS	Geographical Information System
GRDM	Groundwater Resource Directed Measures
IAP	Invasive Alien Plant
MAP	Mean Annual Precipitation
MAR	Mean Annual Runoff
SD	Standard Deviation
SDFS	Skuifraam Dam Feasibility Study
SI	Seasonal Index
TMG	Table Mountain Group
VAFS	Voëlvlei Augmentation Feasibility Study
WAAS	Water Availability Assessment Study
WARMS	Water Use Authorisation and Registration Management System
WCRO	Western Cape Regional Office (DWAF)
WCSA	Western Cape System Analysis
WCWSS	Western Cape Water Supply System
WMA	Water Management Area
WRC	Water Research Commission
WRPM	Water Resources Planning Model
WRYM	Water Resources Yield Model

1. INTRODUCTION

This report documents the updated hydrological information for the Berg River catchment which forms part of the study entitled *The Assessment of Water Availability in the Berg River Catchment (WMA19) by means of Water Resources Related Models,* henceforth called the Berg WAAS, commissioned by the Department of Water Affairs and Forestry (DWAF). The WRSM2000 model (Pitman *et al*, 2006) was configured and calibrated for this purpose. This study has been commissioned to assist in the determination of allocable water quantification as a prerequisite for compulsory licensing, and to provide model-based assessment of water resource augmentation options in support of the Western Cape Reconciliation Strategy Study.

Previous monthly hydrological modelling studies of the Berg River include the *Western Cape Systems Analysis* (WCSA) (DWAF, 1993a), the *Skuifraam Dam Feasibility Study* (DWAF, 1997) and the *Voëlvlei Augmentation Scheme: Feasibility Study* (VAFS) (DWAF, 1999). More recently, the daily ACRU*Salinity* model for the Berg River was configured under a WRC project entitled "Improvements to the ACRU*Salinity* Model and Upgrading of the Berg River Water Quality Information System". The WRC study focused specifically on the effects of the dryland farming activities on the mobilisation of salts in the lower Berg River and specifically aimed to capture the daily response of the Berg River main stem and its tributaries.

In accordance with the terms of reference (DWAF, 2005), the aforementioned studies will be reviewed to acquire the datasets and relevant model configurations which will be used as basis for the development of the final network diagrams of the system and to redefine the catchments on a finer spatial scale where required. As with previous studies, particular attention will be given to the following issues:

- Growth in farm dam numbers over time,
- Winter runoff storage in farm dams with increasing capacity over time,
- Runoff from increasing farm dam subcatchment areas as a result of increasing numbers,
- River abstractions for the purpose of topping-up farm dams in winter,
- Simulation of low flows,
- Groundwater interaction with surface runoff.

A map of the calibration catchments in the Berg River is shown in Figure 1.1.

1.1 Aims and objectives

The overarching objective of this component of the study was to extend the naturalisation of streamflow forward to the 2004 hydrological year to capture the significant droughts of the past decade. Specific aims to meet this objective were as follows:

- To improve calibration of the WRSM2000 model at a number of gauging stations where the original calibration periods were relatively short and to update existing model calibrations at the rest of the gauging stations.
- To reflect improved quantification of the impacts of farm dams, winter abstractions and groundwater use on the historical streamflows.
- To improve the representation of groundwater contributions to streamflow in the monthly modelling process.

1.2 Report layout

This report will start with a brief description of the catchment which will be followed by the modelling strategy and procedure. Finally, the flow calibration results and naturalised flows will be presented.

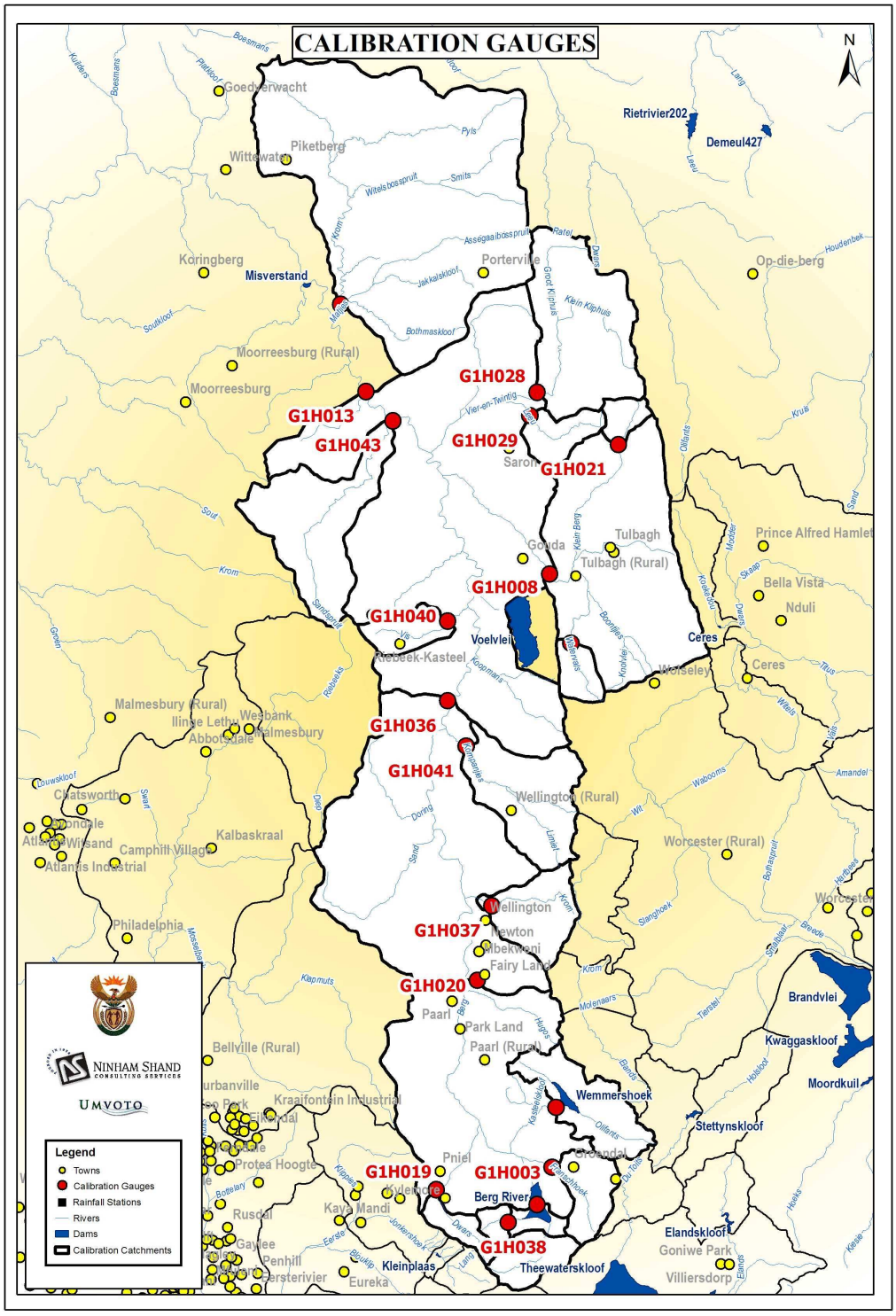


Figure 1.1: Catchment calibration gauges in the Berg River

2. CATCHMENT DESCRIPTION

2.1 Location

The Berg River is situated in the Western Cape and its catchment lies between latitude 23°45' and 33°50' south and longitude 18°15' and 18°55' east. The river has its headwaters in the Jonkershoek and Franschhoek mountains and flows in a north-westerly direction through Paarl and Wellington to Misverstand, continuing north through Porterville and Moorreesburg eventually discharging into the sea at Laaiplek on the West coast. The major tributaries are the Franschhoek, Wemmers, Krom, Kompagnies, Klein Berg, Vier-en-Twintig Rivieren, Matjies, Platkloof, Boesmans and Sout Rivers. Major dams located in the catchment are the recently constructed Berg River Dam (2007), Wemmershoek Dam, Voëlvlei Dam and Misverstand Dam.

2.2 Drainage, topography and land use

The main stem catchment is about 160 km long from the headwaters to the sea and its width varies from 1 to 5 km near its headwaters to between 30 to 40 km wide at the coast. The lower reaches of the river are extremely flat resulting in sea water intrusion nearly 100 km from the river mouth under high tide conditions (Bath, 1989).

Bath (1989) stated that the Berg River is a geologically old river system. This was based on the rapid fall in profile from the headwaters which then flattens out in the Paarl area, the degree of meandering of the main river channel and the existence of multiple channels separated by low lying islands in the lower reaches and the great width of the river valley.

The basin of the Berg River is bounded on the eastern side by a range of mountains (RL 1500 m) including the Franschhoek mountains, the Wemmershoek mountains, the Limietberg mountains, the Witzenberg mountains and the Groot Winterhoek mountains. On the western side north of Paarl and Wellington the basin flattens out to a hilly plain.

Downstream of Paarl and Wellington, sandstone formations give way to shales, thereafter tributaries on the eastern bank of the Berg River drain areas with Table Mountain Sandstone, while the western bank drains areas with the saline Malmesbury Shale as dominant geological formation (DWAF, 1993b).

Details of land use in the Berg River catchment is documented in a separate report entitled *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models: Report 4 (Land Use and Water Requirements): Volume 1 (Data in Support of Catchment Modelling)* (DWAF, 2007d). This report presents historical and present day land use data in the Berg WAAS surface water area. Monthly records of localised water use and return flows as well as inter-basin transfers and diversions are also presented along with spatial data in the form of GIS coverages of all present day land use.

2.3 Climate

The Berg River catchment lies in the winter rainfall area of the south-western Cape and about 80% of the total annual rainfall can be expected during the months of April to September which is associated with cold fronts moving in from the northwest.

Rainfall in the mountains is estimated at about 2600 mm per year (DWAF, 1993). The snow that falls on the peaks and upper slopes of the mountains during intermittent cold spells in the winter also contributes to the streamflows. In the adjoining valleys, rainfall varies from 900 to 1200 mm annually, but drops to between 400 and 500 mm in the hilly plain through which the river flows most of its length, and to even less when it approaches the sea. The tributaries are perennial on the eastern side and non-perennial on the western side.

The inaccessibility of mountainous areas, however, contributes to the uncertainty in the estimation of the rainfall in those higher lying areas and as a result, an updated rainfall surface was prepared for these areas. The Computing Centre for Water Research (CCWR) rainfall surface used in previous studies was updated to better account for the topographic effects of the mountainous regions on rainfall. Anomalies which were observed in the original surface generated by the CCWR were considered serious enough to potentially have a significant impact on the modelled streamflow. The specific reasons for the occurrence of these anomalies and the techniques used to accommodate them are explained in the report entitled *Rainfall Data Preparation and MAP Surface* (DWAF, 2007b).

The updated MAP surface for the Berg WAAS area is shown in Figure 2.1.

As may be expected for a semi-arid region, the evaporation rates are significant during the summer months. Typically the monthly evaporation ranges from 40-50 mm during winter to 230-250 mm during summer.

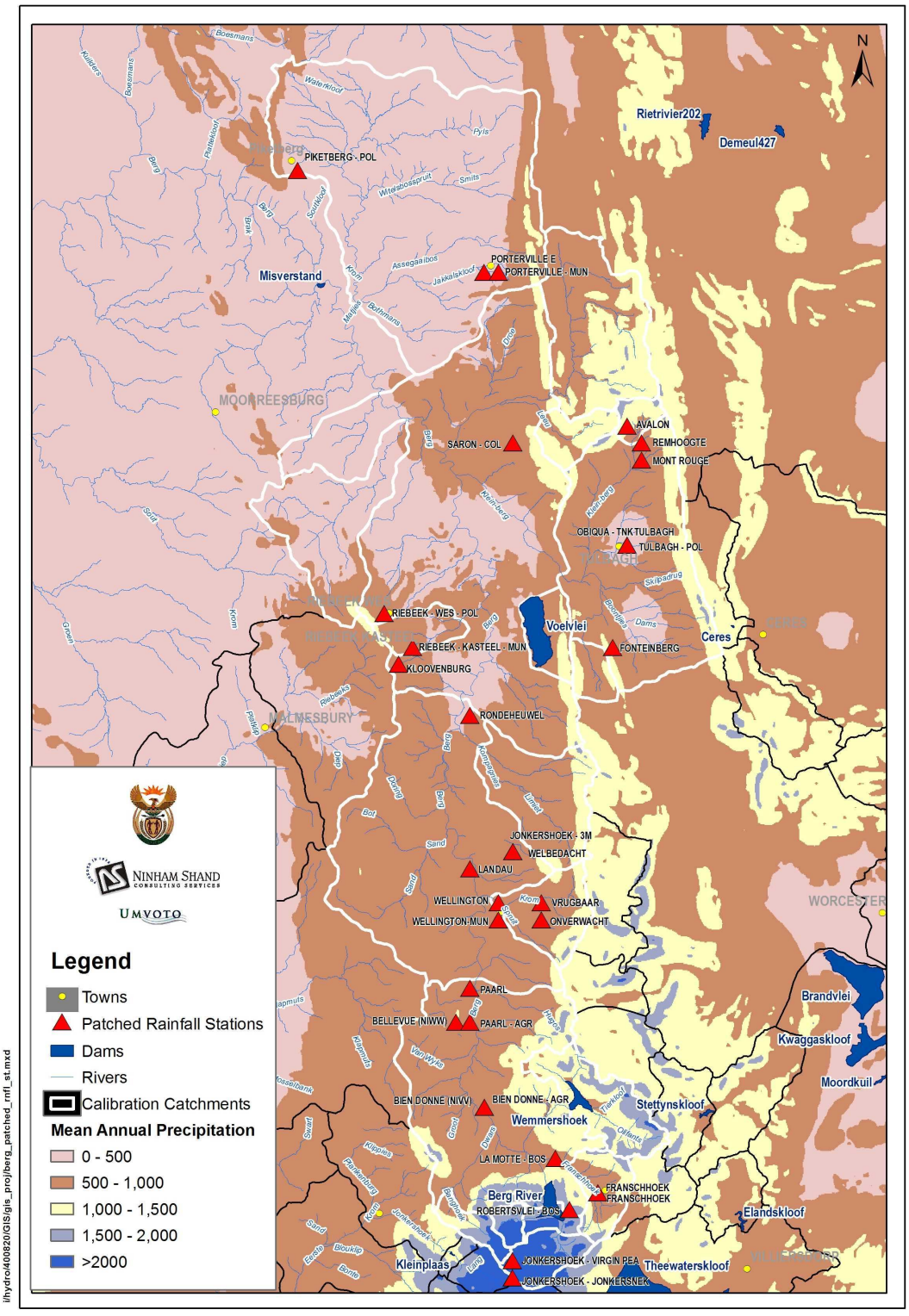


Figure 2.1: Updated rainfall surface produced for the Berg River catchment

3. MODELLING STRATEGY

The approach to modelling the streamflow in the Berg River catchment was to:

i) Select appropriate streamflow gauging stations based on pre-determined quality criteria and then to calibrate the monthly rainfall-runoff model such that a representative streamflow time series is simulated at these gauges when compared to the observed streamflow. Suitably defined objective functions are used to quantify the goodness-of-fit between the simulated and observed records

ii) Prepare long-term flow sequences for the unimpacted natural state.

3.1 Requirements for modelling developed catchments

To ensure realistic simulation of streamflow within a developed catchment such as the Berg, several development-related aspects need to be quantified beforehand. These aspects typically include:

- The volume of rainfall which could potentially be intercepted and the volume of soil water which is directly evaporated or which is lost through transpiration by natural or cultivated vegetation.
- The volume of water abstracted from the river or reservoirs to meet the irrigation or urban demands
- The volume of water captured by storages such as farm dams or large reservoirs.
- The volume of supplementary water used to fill up farm dams during winter.
- The volumes of water transferred during inter basin-transfers.

All the aspects mentioned above were quantified before the modelling exercise and are summarised in the report entitled *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models: Report 4 Land Use and Water Requirements: Volume 1 Data in Support of Catchment Modelling* (DWAF, 2007d).

For this study the recently-updated Water Resource Simulation Model (WRSM2000) (Pitman *et al*, 2006) was used. The model (previous version called WRSM90) has had several enhancements including the incorporation of the Council for Scientific and Industrial Research (CSIR) algorithms for the streamflow reduction effects of alien vegetation, inclusion of the CSIR and Smoothed Gush/Pitman algorithms for the streamflow reduction effects of afforestation, incorporation of the WQT methodology for the irrigation modules, and the introduction of an additional surface water-groundwater interaction module and accompanying interface (Sami and Hughes methodology).

WRSM2000 operates on the network principle which allows water to be transferred from one module to the next depending on the user-specified configuration for the system. The modules currently available in WRSM2000 are the:

- runoff module (RU) (for surface water and groundwater routines)
- channel reach module (CR)
- reservoir module (RV)
- irrigation block module (RR)
- mine module (MM).

3.2 Modelling dynamic time varying catchments

The calibration process of the rainfall-runoff model at any particular flow gauging station could span a significant number of years during which the development in the catchment upstream of the gauge may have changed. To account for this change in development (e.g. farm dams, irrigation, afforested or alien vegetation areas), a geographical information system (GIS) was used to extract information at various time slices from aerial photographs. This information was then used to represent the dynamic nature of development within the catchment which could be used for the hydrological modelling process. The WRSM2000 model used in this study allows for the input of time-varying data (time slices) for the different land use classes resulting in the production of more representative simulated streamflows.

3.3 Modelling incremental subcatchments

Incremental subcatchments are defined as catchments which are downstream of one or more flow gauging stations. By way of example, gauging station G1H036 measures the total flow generated in the catchment upstream of this gauge. Runoff from incremental subcatchment G1H036 (G1H036inc), however, would be obtained by subtracting all the upstream observed inflows from the observed flows at gauging station G1H036. In the example the upstream observed flows to be subtracted from the observed flows at G1H036 would be G1H020, G1H037 and G1H041, resulting in an incremental observed flow record at G1H036.

Cumulative calibration of the flows at gauging station G1H036 could also be undertaken. This would involve accounting for all the upstream inflows (i.e. G1H020, G1H037 and G1H041) and comparing the cumulative runoff measured at G1H036. In the example the observed flows generated upstream of G1H020 may be significantly more than flow generated between gauging station G1H020 and G1H036 with the result that the flow-related Pitman parameters may become insensitive to adjustments of their values in this part of the catchment. Thus, the final parameters may not be representative of the incremental catchment.

With the implementation of the incremental calibration strategy the upstream inflows are subtracted from the flows at the gauging station of interest (G1H036 in the example) and negative flows may occur in the incremental observed record. This may be as a result of abstractions (irrigation or other), unaccounted for seepage or inaccuracies in the measured flows (DWAF, 1993). These negative flows are set to zero when preparing the final incremental observed record. If the number of zero values is significant, the incremental observed record may become unusable and the incremental calibration case would have to be abandoned for this subcatchment. This restriction is, however, more applicable to the daily modelling rather than the monthly scenario.

3.4 Representation of groundwater contributions to streamflow

The Berg WAAS team conducted a pilot investigation into the applicability of the explicit groundwater module in the WRSM2000 model for Western Cape catchments (DWAF, 2007a). Our conclusion was that it would be preferable to account for groundwater contributions to streamflow in an explicit empirical fashion in the WRSM2000 model and not to implement the Sami or Hughes methodology. This approach is described in Section 4.8.2.

4. MODELLING PROCEDURE

4.1 Evaluation of flow records

An evaluation of flow records within the Berg WAAS area was undertaken as a separate task and the reader is referred to *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models. Report No. 3: The Assessment of Flow Gauging Stations* (DWAF, 2007c). The evaluation focused particularly on the gauges that were used for flow calibration during previous studies and those which have been opened subsequent to the last study. During this process the historical background to the gauge together with the availability of data was presented. Based on this information it was possible to quantify the number of days within each month when the discharge table was exceeded and the number of days when there were missing data. A recommendation was then made on whether the data measured at the gauging station was suitable for use in calibration of the model. The final flow gauges used for calibration in the Berg catchment are shown in Table 4.1.

Observed flow records were obtained from the DWAF website (www.dwaf.gov.za\Hydrology) and flow records for each calibration gauge were patched using the PatchS methodology shown in Figure 4.1. For each flow gauge, the observed daily record was analysed for missing data and for a data gap of three days or more, the data was flagged as missing. For data gaps of less than three days, values were patched manually using linear interpolation. The daily record was then aggregated into a monthly record and checked against the monthly exceedence estimates provided by DWAF (E. Holemans, Pers Com., 2006). The observed values that were flagged as exceeded were replaced with the DWAF estimate and their flags removed. The resultant manually patched file was used as input to the PatchS routine. Two or three representative flow gauges were grouped together for patching each other as well as their associated patched rainfall files which were used to generate catchment rainfall. The patched flow records for each calibration catchment are included in Appendix C.

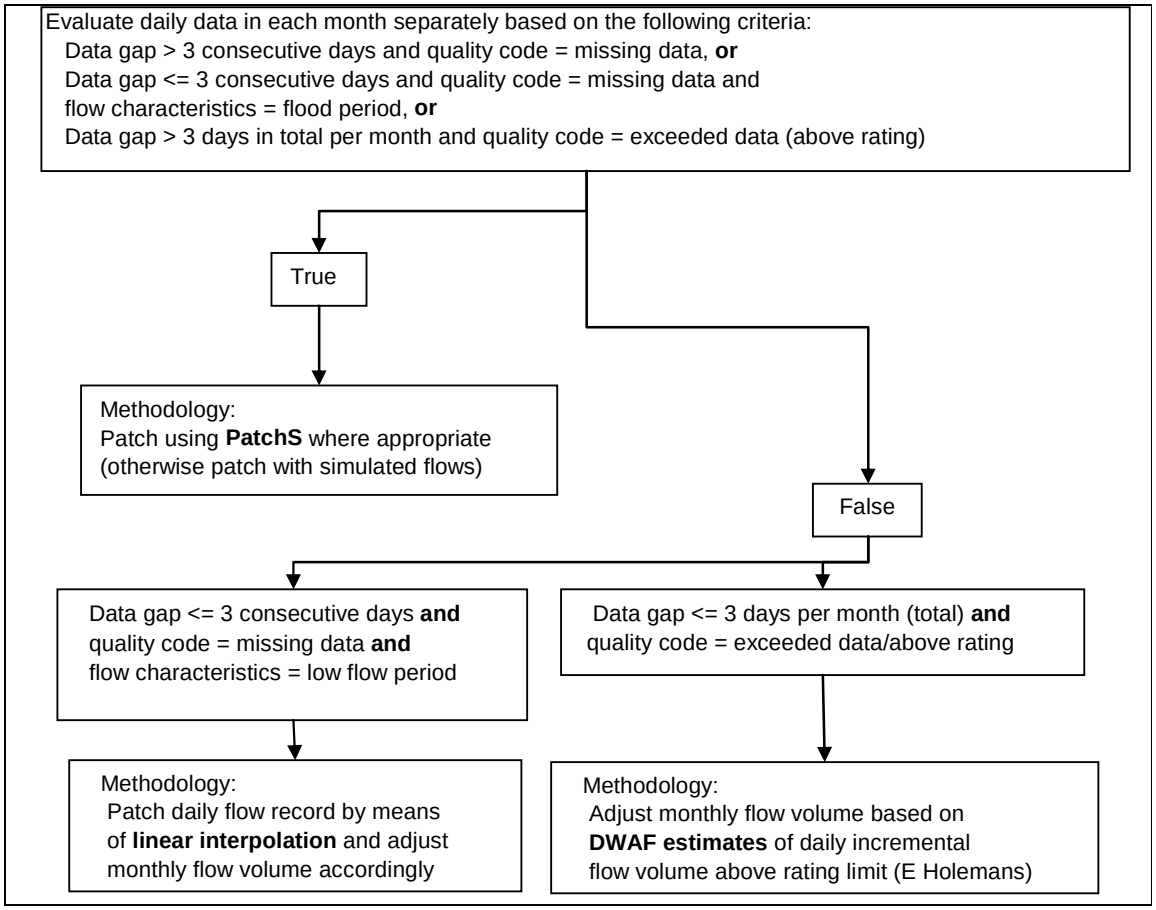


Figure 4.1: PatchS methodology

Table 4.1: List of final calibration gauges in the Berg River catchment

STATION	RIVER	PLACE OR DESCRIPTION	LATITUDE	LONGITUDE	CATCHMENT AREA (km^2)	DATE OPENED	DATE RECORDER INSTALLED	DATE CLOSED	RECORD PERIOD HYDROLOGICAL YEARS	STATION INSPECTED DURING WAAS
G1H003	Franschhoek	Le Mouillage	33 53' 26"	19 04' 44"	46	01/04/49	16/03/59	-	1949 - 2005	Yes
G1H004	Berg	Bergriviershoek	33 55' 36"	19 03' 41"	70	19/03/49	18/03/59	-	1949 - 2005	Yes
G1H008	Klein Berg	Nieuwkloof	33 18' 41"	19 04' 31"	395	01/05/54	15/05/62	-	1954 - 2004	Yes
G1H011	Watervals	Watervalsberge	33 22' 44"	19 06' 00"	27	30/04/64	29/04/64	-	1964 - 2004	
G1H013	Berg	Drieheuwels	33 07' 57"	18 51' 45"	2 934	13/05/64	12/05/64	-	1964 - 2004	Yes
G1H019	Banhoek	Jonkershoek	33 54' 44"	18 56' 36"	25	23/04/68	23/04/68	-	1968 - 2005	
G1H020	Berg	Daljosafat	33 42' 29"	18 59' 29"	609	01/03/66	01/03/66	-	1966 - 2004	Yes
G1H021	Klein Berg	Mountain View	33 11' 05"	19 09' 19"	19	18/03/68	18/03/68	-	1968 - 2004	
G1H028	Vier-en-Twintig	Driebosch	33 08' 02"	19 03' 39"	183	06/05/72	06/05/72	-	1972 - 2004	
G1H028 (G1H002)	Vier-en-Twintig	Driebosch	33 08' 02"	19 03' 39"	187	24/04/47	01/05/51	30/09/70	1951 - 1969	
G1H029	Leeu	De Hoek Estates	33 09' 24"	19 03' 08"	36	31/10/72	31/10/72	-	1973 - 2004	
G1H035	Matjies	Matjiesfontein	33 02' 52"	18 49' 54"	676	17/07/75	17/07/76	24/11/03	1975 - 2002	
G1H036	Berg	Vleesbank	33 26' 06"	18 57' 25"	1 312	03/03/78	03/03/78	-	1978 - 2004	Yes
G1H037	Krom	Wellington	33 37' 39"	18 59' 29"	69	10/05/78	10/05/78	25/05/92	1978 - 1991	
G1H040	Vis	La Fontaine	33 22' 21"	18 55' 30"	39	16/08/78	16/08/78	-	1979 - 2004	
G1H041	Kompanjies	De Eikeboomen	33 28' 45"	18 58' 41"	121	30/08/79	30/08/79	-	1979 - 2004	
G1H043	Sandspruit	Vrisgewaagd	33 09' 41"	18 53' 35"	152	06/05/80	06/05/80	-	1980 - 2004	
G1R002	Wemmers	Wemmershoek Dam	33 49' 56"	19 05' 05"	86	15/09/69	N/A	-	None (CCT Dam)	

4.2 Evaluation of rainfall records

The generation of representative streamflow data requires reliable monthly rainfall records. In this study the Water Resources Information Management System (WR-IMS) (developed by the DWAF) which contains data for 12 748 rainfall stations in Southern Africa was used as the interface for selection of the appropriate rainfall stations. The ClassR and PatchR utilities which allow for the identification of outliers and appropriate groupings of source rainfall gauges in order to patch the missing records of selected rainfall gauges are also included as part of the interface. For a full description of the rainfall station selection, evaluation and patching processes, the reader is referred to *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models. Report No. 2: Rainfall Data Preparation and MAP Surface* (DWAF, 2007b).

Catchment rainfall files were generated for each calibration catchment using patched rainfall station files, based on the groupings of rainfall stations used in the WCSA (DWAF, 1993) and updated where necessary. These groupings are presented in Section 5 for each calibration catchment and the catchment rainfall files are included in Appendix B.

4.3 Evaporation

S-pan evaporation values from the WR90 study were used in this project.

4.4 Land use data and water demand sequences

For a full description of the land use survey undertaken the reader is referred to the report entitled *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models: Report 4 (Land Use and Water Requirements): Volume 1 (Data in Support of Catchment Modelling)* (DWAF, 2007d). This report presents historical and present day land use data in the Berg WAAS surface water area. Monthly records of localised water use and return flows as well as inter-basin transfers and diversions are also presented along with spatial data in the form of GIS coverages of all present-day land use.

4.4.1 Irrigation demands

A total area of approximately 483 km^2 in the Berg River catchment is irrigated, comprising 89% vineyards for wine production and table grapes, 7% orchards (apples, apricots, nectarines, peaches, pears, plums), and the remaining 4% is pastures, lucerne and vegetables. Dryland agriculture makes up for the remaining cultivated area in the Berg River catchment. In the WRSM2000 model, the WQT methodology is used to estimate the irrigation demands in the Berg River catchment allowing for the calculation of return flows which takes into account rainfall on irrigation areas.

4.4.2 Forestry demands

Most areas of commercial forestry in the Berg River catchment have reduced since the decommissioning of commercial plantations in the late 1990s. There is approximately 84 km^2 of commercial forestry in the catchment which is concentrated in the Upper Berg catchment and the Klein Berg catchment. There are no significant areas of indigenous forest in the Berg River catchment. In the WRSM2000 model, forestry is modelled as a Streamflow Reduction Activity using the Smoothed Gush/Pitman algorithms.

4.4.3 Alien vegetation demands

The present day extent of invasive alien plants (IAPs) in the Berg River catchment was updated based on the 2004 1:10 000 aerial photography supplied by DWAF. Species, density, age and size of IAPs were estimated as well as whether they were located in riparian or upland areas. There is approximately 28 km^2 (condensed area which is equivalent to 100% density) IAPs in the Berg River catchment which is located primarily in the riparian areas. In the WRSM2000 model, IAPs are also modelled as a Streamflow Reduction Activity using the CSIR methodology.

4.4.4 Urban demands and other users

The bulk of the urban water demand in the Berg River catchment is supplied by the Western Cape Water Supply System (WCWSS) which is not modelled at the subcatchment scale. Local municipal and irrigation abstractions, and return flows were obtained from local sources including municipalities, irrigation boards and water users associations (WUAs). Municipal abstractions in the Berg River catchment are included for Paarl, Saron, Robertsvlei and Tulbagh. Irrigation abstractions made by irrigation boards are included for De Hoek Estates, the Perdeberg Irrigation Board and the Twenty Four Rivers Canal. Return flows from WWTW and irrigation schemes are included for Paarl, Wellington, Tulbagh and De Hoek Estates.

4.5 Farm dam data

Information on farm dams was obtained by digitising the farm dam areas from the 2004 1:10 000 aerial photography supplied by DWAF and then verifying it against the most recent 1:50 000 topographical maps. The area-capacity relationship was based on the power curve regression shown below:

$$Area = A \times Capacity^{B}$$

During the WCSA study, an extensive evaluation was undertaken to determine the values of the A and B coefficients for the dummy dams and these coefficients have been accepted for the purposes of this study. Based on the aforementioned procedure, a total farm dam volume of 240 Mm^3 was estimated for the Berg River catchment.

4.6 Winter filling of farm dams

Irrigation in the Berg River is normally dependent on farm dams and it is unlikely that irrigators would not fill their farm dams with direct abstractions from nearby rivers during winter. Based on this assumption, a method for calculating the probable winter transfer volumes was implemented for both the historical simulation as well as for the present-day simulation. This method was based on the one used in the WCSA and involved the following steps:

- Preliminary hydrological sub-system simulation and calibration without consideration of winter filling of farm dams.
- Analysis of simulated farm dam volume trajectories in each calibration catchment over the winter months (May to September) and the subsequent calculation of volumes required to fill the farm dams to their full supply capacities.
- Preparation of river flow abstraction time series for farm dam filling, based on the volume required to fill the dam from previous step.
- Abstraction made from river channel once all other demands are satisfied. Limted by available water in the river channel.
- Final calibration of the Pitman model parameters considering the effects of the winter abstractions to fill farm dams.

4.7 Subcatchment configuration in the WRSM2000 model

Each of the 17 calibration catchments in the Berg catchment was configured in the WRSM2000 model. Each subcatchment has the same basic structure consisting of modules linked together to form a network, comprising *inter alia* a runoff-producing module, channels, farm dams and irrigation modules. Irrigation areas and farm dam areas are lumped together to make up one representative irrigation and reservoir module respectively in each network. Afforestation and alien vegetation areas are included in the runoff module as a streamflow reduction activity. Rainfall and evaporation inputs are included in each module and values for the Pitman calibration parameters are input to the runoff module.

4.8 Calibration of the Pitman model

During the calibration process the main aim is to produce monthly simulated flow records which are representative of the observed flow records. Quantification of this goodness-of-fit is then based on the calculation of a set of pre-defined Objective Functions for the simulated record for comparison with those calculated for the observed flow record. For this study the objective functions are as defined in Table 4.2.

Table 4.2: Objective functions used for Pitman calibrations

Objective Function	Limit of acceptability
Mean annual runoff (MAR)	< 4%
Standard deviation (SD) of annual flows	< 6%
Mean log annual runoff	< 4%
Standard deviation of logs of annual flows	<6%
Time series	As similar as possible
Seasonal distribution	As similar as possible
Storage vs. yield	As similar as possible

4.8.1 Definition of Pitman parameters

Table 4.3 lists a brief description of the Pitman parameters that are available for calibration as well as the relative effects that the adjustment of the parameter would have on the simulated runoff.

4.8.2 Pitman calibration process

The procedure used for calibrating the simulated flows in the Pitman model was as follows:

i) Pitman parameters from either the WCSA or the VAFS were used as the starting Pitman parameter set and the simulated runoff was then compared to the observed flows based on the goodness-of-fit criteria listed in Table 4.2.

ii) Once a preliminary calibration was obtained, the irrigation areas in each calibration catchment were reduced by a percentage based on the proportion of the demand satisfied by groundwater in that catchment. Groundwater use in each catchment is provided by the WARMS database and described in DWAF (2007d).

iii) Following the adjustment for groundwater use in the catchment, a defined inflow representing the groundwater baseflow component was added to the catchment flows. This inflow was obtained from the GRDM on a quaternary catchment scale as an annual average value. This annual value is input to the model in 12 equal portions. These GRDM inflows were adjusted proportionally for calibration catchment areas.

iv) The final addition to the calibration networks was the input of volumes required to fill the farm dams in winter as described in Section 4.6.

v) The Pitman parameters were then adjusted slightly in order to obtain the final calibration that is presented in Section 5.

The effect of this approach is that the Pitman parameters are devoid of the influence of the long-term groundwater contributions from the large regional aquifers, such as the Table Mountain Group (TMG).

Table 4.3: Description of Pitman parameters and predicted effects of parameter adjustments on simulated flows

Pitman Parameters		Effect on simulated flow of increasing parameter		
Name	**Description**	**MAR**	**Standard Deviation (SD)**	**Seasonal Index (SI)**
Zmin	Minimum absorption rate (mm/month)	Down	Up*	Up*
Zmax	Maximum absorption rate (mm/month)	Down	Down*	Down*
POW	Power of the runoff vs. soil moisture capacity	Down	Up	Up
TL	Time lag of Runoff (months)	None	None	Down
ST	Maximum soil moisture capacity (mm)	Down	Down	Down
FT	Runoff rate from soil when soil moisture is at full capacity (mm/month)	Up	Down	Down
R	Controls rate at which evaporation reduces as soil moisture is depleted (Coefficient in the evaporation-soil moisture equation)	Up		Down
GW	Maximum groundwater runoff (mm/month)	None	Down	Down
GL	Lag of subsurface flow in the lower zone (months)	None	Down	Down
SL	Soil moisture state below which no runoff occurs (mm)	Down	Up	Up
PI	Interception storage (mm)	Down	Up	Up

*Effect uncertain when Zmin and Zmax are used in conjunction with a non-zero value of FT

4.9 Naturalised runoff sequences

A subcatchment configuration in which the Pitman parameters have been calibrated enables the production of naturalised flows from the catchment at the calibration gauge for the period 1927 – 2004, assuming all demands on the system are ignored. Naturalised flows for each calibration subcatchment in the Berg catchment are included in Appendix D.

The observed flow record is naturalised by adding back the simulated demands and abstractions that were met in the simulation for the period of observed flow record. These include:

- Irrigation demand met by farm dams,
- Evaporation from farm dams,
- Irrigation demands met from run-of-river abstractions,
- Abstraction (urban and other specified flows),
- Afforestation and IAP streamflow reductions,
- Appropriate adjustments for inter-basin transfers.

5. CALIBRATION RESULTS AND DISCUSSION

5.1 G1H003: Franschhoek River at La Provence

5.1.1 Subcatchment data

For a detailed assessment of land and water use in subcatchment G1H003, the reader is referred to a separate report entitled *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models: Report 4 (Land Use and Water Requirements): Volume 1 (Data in Support of Catchment Modelling)* (DWAF, 2007d). Table 5.1 presents a summary of the catchment data for the subcatchment G1H003 and detailed information is summarised in Table 5.2. Figure 5.1 shows detailed maps of the catchment.

Table 5.1: Summary of information for G1H003

G1H003	
Subcatchment area from GIS (km^2)	46.2
Above farm dams	16.8
Below farm dams	29.3
Forestry area (km^2)	3.3
Alien vegetation condensed area (km^2)	1.6
Irrigation Area (km^2)	14.1
From farm dams	7.8
From river	6.4
Farm dams: Area (km^2) / Volume (Mm^3)	0.34 / 0.97
Subcatchment MAP (mm)	1114
Total GW contribution from baseflow (Mm^3/a)	1.95
Calibration period (Hydrological years)	1959 - 2004
Observed MAR for calibration period Mm^3/a	20.7
Patched observed MAR for calibration period Mm^3/a	22.1
Simulated MAR for calibration period Mm^3/a	22.1
Naturalised MAR (1927-2004) (Mm^3)	22.9
Naturalised MAR including GW baseflow (1927-2004) (Mm^3)	24.8
Runoff coefficient	48.2%

Table 5.2: Detailed catchment information for G1H003

APPENDIX	CONTENTS	FORMAT
A1	Hydrological information for model calibration	Table
B1	Catchment Rainfall File	Monthly time series
C1	Patched observed flow record (G1H003)	Monthly time series
D1	Naturalised flow sequence	Monthly time series

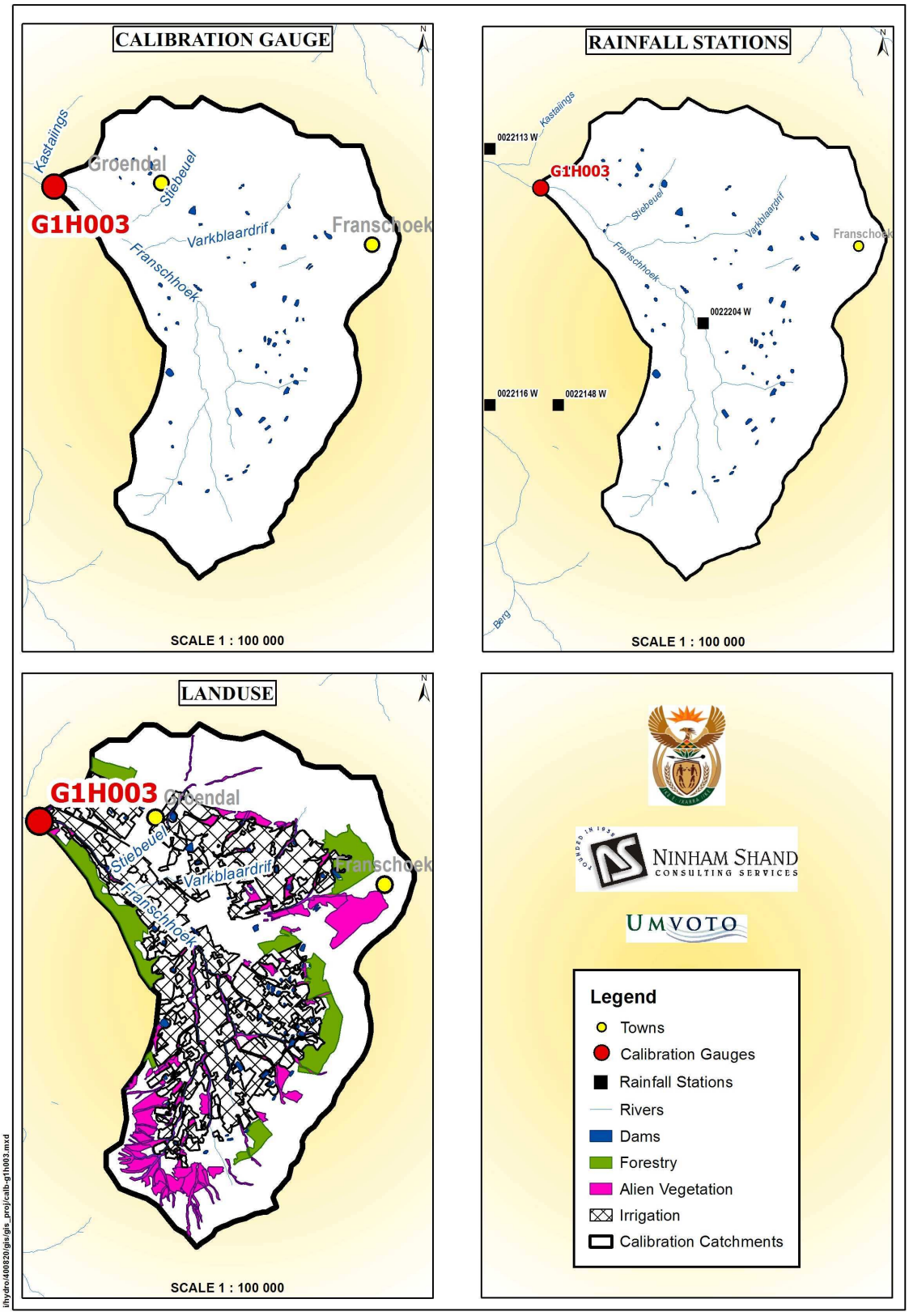


Figure 5.1: G1H003 Subcatchment hydrology information

5.1.2 Model configuration

Figure 5.2 shows the model configuration for subcatchment G1H003. There are no imports into or exports from this catchment. The winter filling of farm dams was modelled although the volumes required to fill the farm dams were very small. The total groundwater contribution to baseflow in the GRDM in this catchment is estimated to be 1.95 Mm^3/a and was added to the system according to the same percentage split of catchment runoff, respectively, to farm dams and to the river.

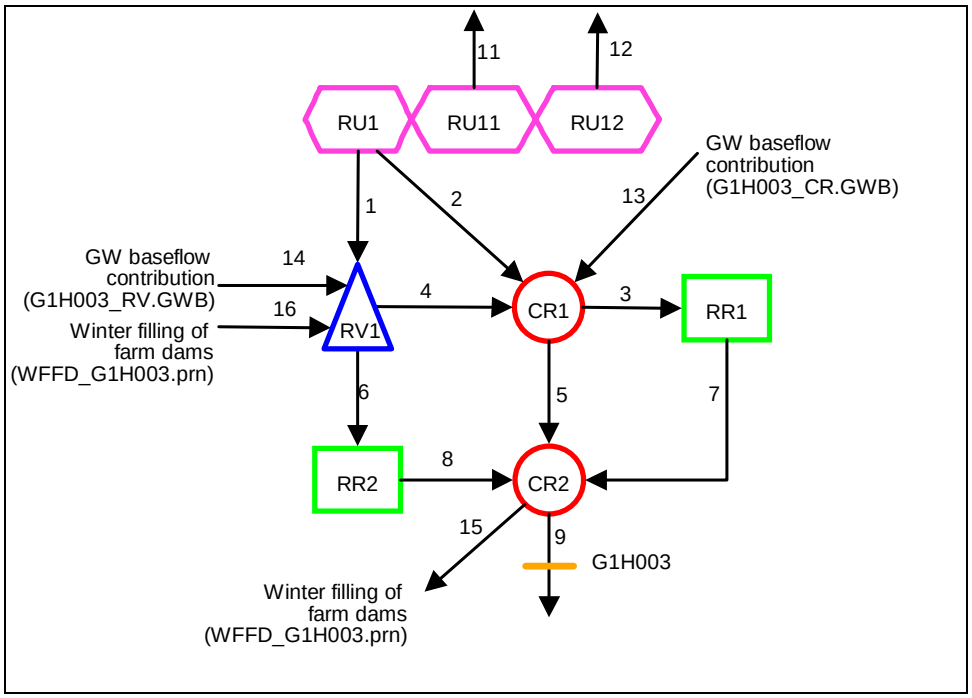


Figure 5.2: G1H003 Subcatchment Configuration

5.1.3 Evaluation and preparation of flow sequences

Detailed information for the flow gauge at G1H003 is presented in *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models. Report No. 3: The Assessment of Flow Gauging Stations* (DWAF, 2007c). The observed flows at G1H003 were simulated for the period 1959-2004. The patched observed flow record for G1H003 is shown in Appendix C1.

5.1.4 Calibration (1959 - 2004)

Details of the rainfall stations used to generate catchment rainfall for G1H003 are shown in Table 5.3. The updated MAP for this catchment is estimated to be 1114 mm compared to 1005 mm in the WCSA (DWAF, 1993).

Table 5.3: Rainfall stations for calibration at G1H003

RAINFALL STATION NUMBER	MAP	PERIOD OF RECORD	RECORD LENGTH
022113w	835	1927-2003	76
022116w	1842	1927-1960	33
022148w	1995	1961-2004	43
022204w	880	1941-1969	28

The WCSA (DWAF, 1993) Pitman parameters were used during initial model calibration. These parameters were then improved until an acceptable fit between the observed and simulated stream flow data was obtained. The final Pitman parameters for G1H003 are shown in Table 5.4 and Table 5.5 displays the patched observed and simulated statistics for G1H003. Graphs showing monthly, annual and mean monthly flows as well as a cumulative frequency plot for each calibration are also included in Figure 5.3.

Table 5.4: G1H003 Final Pitman Parameters

POW	SL	ST	FT	GW	ZMIN	ZMAX	PI	TL	GL	R
2	0	370	65	0	75	580	1.5	0.25	0	0

Table 5.5: G1H003 Calibration Results (Statistical Indices)

	OBSERVED	SIMULATED	DIFFERENCE (%)
MAR (Mm^3)	22.13	22.14	0.0%
Mean (Log)	1.32	1.32	0.0%
Std Dev	8.24	8.83	7.2%
Std Dev (Log)	0.16	0.16	0.0%
Seasonal Index	41.8	44.48	6.4%

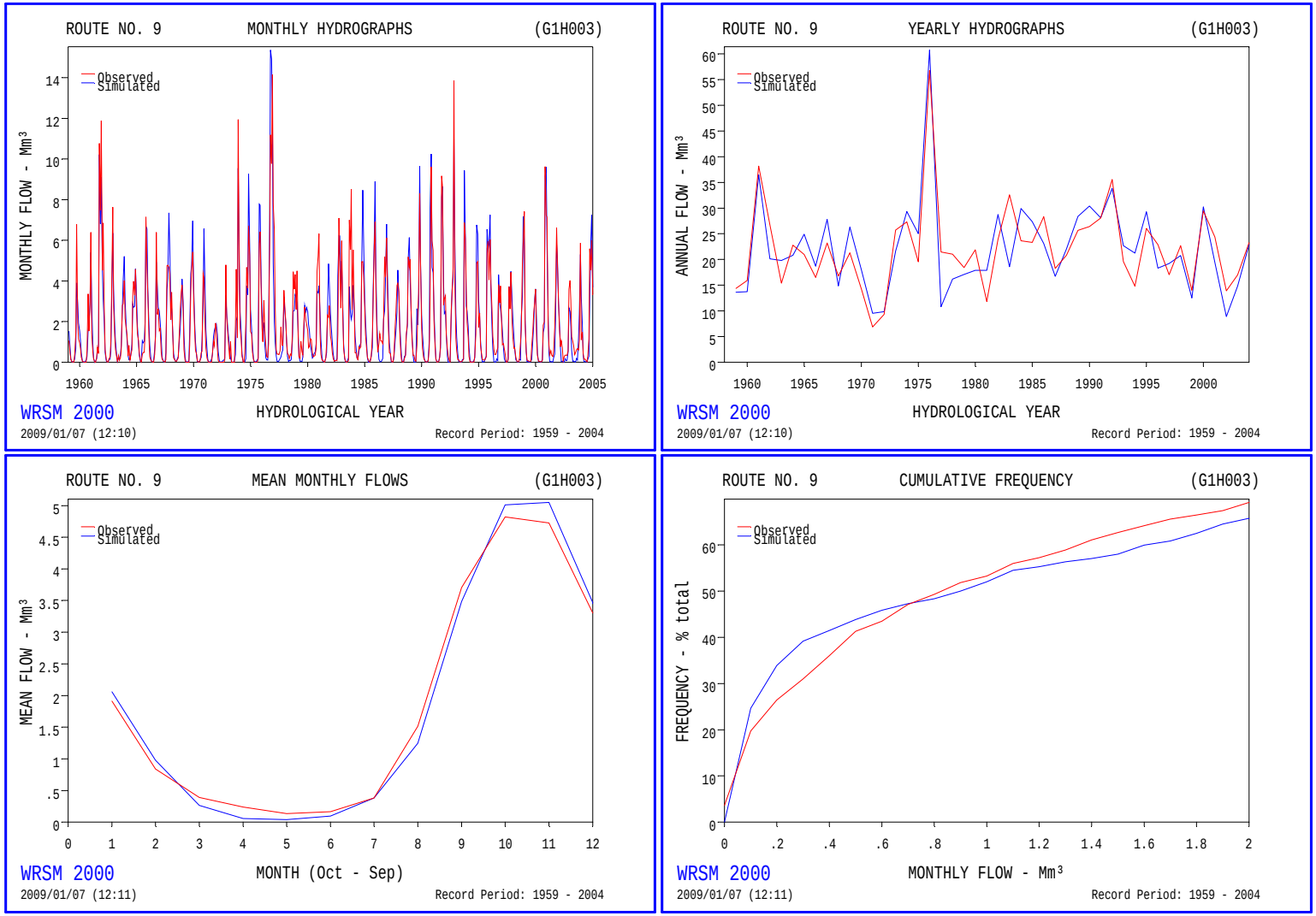


Figure 5.3: G1H003 Calibration Results (Graphical Comparison)

5.2 G1H004 Berg River at Driefontein

5.2.1 Subcatchment data

Land use in the Berg catchment has been documented in a separate report entitled *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models: Report 4 (Land Use and Water Requirements): Volume 1 (Data in Support of Catchment Modelling)* (DWAF, 2007d). Table 5.6 presents a summary of the catchment data for the subcatchment G1H004 and detailed information is summarised in Table 5.7. Figure 5.4 shows detailed maps of the catchment.

Table 5.6: Summary of information for G1H004

G1H004	HIGH MAP	LOW MAP	G1H038	TOTAL AREA
Subcatchment area from GIS (km^2)	39.5	16.3	13.2	68.9
Forestry area (km^2)	4.2	5.1	0.3	9.6
Alien vegetation condensed area (km^2)	0.8	0.5	0.0	1.3
Irrigation area (km^2)	0.0	0.2	0.0	0.2
Farm dams: Area (km^2) / Volume (Mm^3)	-	-	-	-
Subcatchment MAP (mm)	2726	2287	2482	2576
Total GW contribution to baseflow (Mm^3/a)	2.4		0.6	3
Calibration period (Hydrological years)	1980-2004			
Observed MAR for calibration period (Mm^3/a)	147.3			
Patched observed MAR for calibration period (Mm^3/a)	157.7			
Simulated MAR for calibration period (Mm^3/a)	157.7			
Naturalised MAR (1927-2004) (Mm^3)	134.21			
Naturalised MAR including GW baseflow (1927-2004) (Mm^3)	137.21			
Runoff coefficient	77.3%			

Table 5.7: Detailed catchment information for G1H004

APPENDIX	CONTENTS	FORMAT
A2	Hydrological information for model calibration	Table
B2	Catchment rainfall file	Monthly time series
C2	Patched observed flow record (G1H004)	Monthly time series
D2	Naturalised flow sequence	Monthly time series

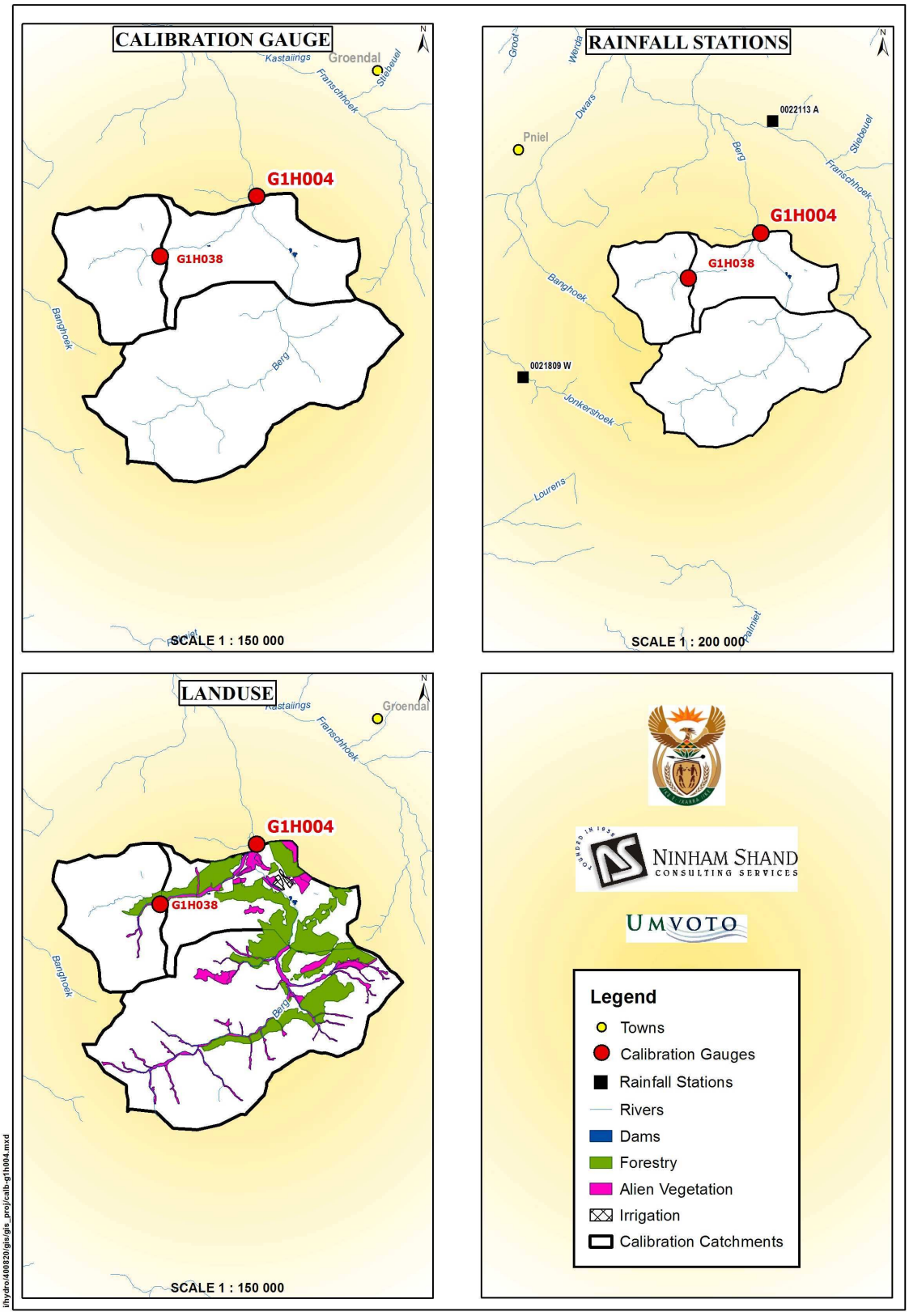


Figure 5.4: G1H004 Subcatchment hydrology information

5.2.2 Model configuration

The subcatchment configuration for G1H004 is shown in Figure 5.5. The upper Berg River catchment was sub-divided into a high and a low MAP area. Additionally, the Wolwekloof catchment (G1H038) was incorporated into the calibration of G1H004 as part of the high MAP catchment because of the poor accuracy rating associated with the flow gauge at G1H038 and the transfer from this catchment to Theewaterskloof at G1H061. It was assumed that there are no diversions into the Jonkershoek tunnel during the summer months (October to March) and the flows into the tunnel during the winter months were estimated based on the recorded stage levels at gauge G1H038. The abstraction to Robertsvlei was exported from the Wolwekloof catchment. The transfer from Theewaterskloof to the Berg River is imported at G1H044. There are no farm dams in this subcatchment; therefore no winter filling was required. The total groundwater contribution to baseflow in the GRDM in this catchment is estimated to be 2.36 Mm^3/a upstream of G1H004 and 0.56 Mm^3/a upstream of G1H038.

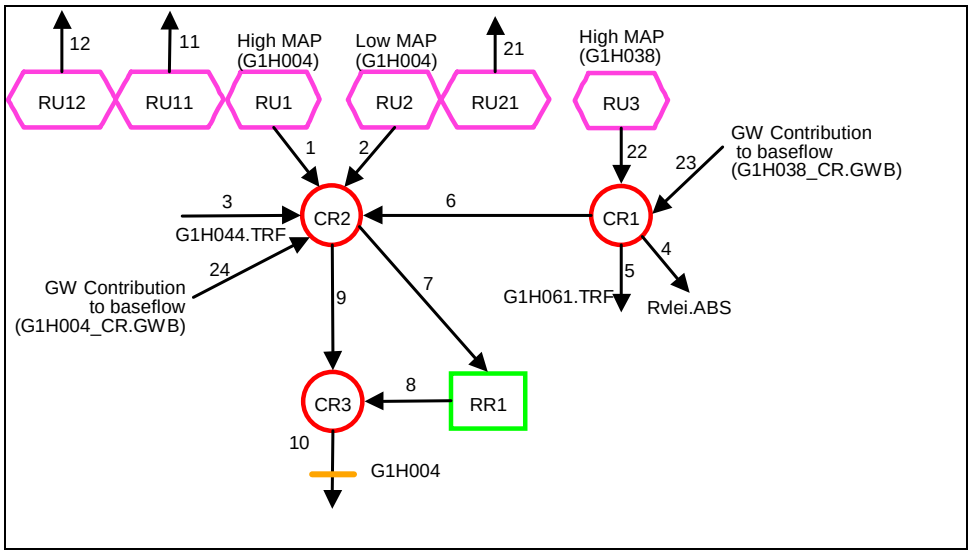


Figure 5.5: G1H004 Subcatchment Configuration

5.2.3 Evaluation and preparation of flow sequences

A detailed assessment of the flow gauges in the Berg catchment was made and is documented in *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models. Report No. 3: The Assessment of Flow Gauging Stations* (DWAF, 2007c). The patched observed flows at G1H004 were simulated for the period 1980-2004. The patched observed flow record for G1H004 is shown in Appendix C2.

5.2.4 Calibration (1980 - 2004)

Details of the rainfall stations used to generate catchment rainfall for G1H004 are shown in Table 5.8. In previous studies, the CCWR MAP was found to be too low (DWAF, 1993) and MAP values from the DWAF isohyetal map (DWAF, 1966) were used to calibrate the catchment. The catchment rainfall file is included in Appendix B2. In the current study, the MAP surface was updated and therefore the new values were used to calibrate flows at G1H004 (High MAP = 2274; Low MAP = 1944). However, the attempted calibration with these MAP values also resulted in underestimation of flows (simulated MAR too low by approximately 20%) and using unrealistic Pitman parameters (ST=100, FT=99, ZMAX=280). Therefore, in order to obtain an acceptable calibration, the DWAF MAP values were again used to calibrate G1H004.

Table 5.8: Rainfall stations for calibration at G1H004

RAINFALL STATION NUMBER	MAP	PERIOD OF RECORD	RECORD LENGTH
90200004	2116	1936-1986	50
021809w	1463	1936-2004	68
022113w	835	1927-2203	76

The WCSA (DWAF, 1993) Pitman parameters were used during initial model calibration. These parameters were then improved until an acceptable fit between the observed and simulated stream flow data was obtained. The final Pitman parameters are shown in Table 5.9 and Table 5.10 displays the patched observed and simulated statistics for G1H004. Graphs showing monthly, annual and mean monthly flows as well as a cumulative frequency plot for each calibration are also included in Figure 5.6.

Table 5.9: G1H004 Final Pitman Parameters

POW	SL	ST	FT	GW	ZMIN	ZMAX	PI	TL	GL	R
2	0	100	55	0	30	170	1.5	0.25	0	0

Table 5.10: G1H004 Calibration Results (Statistical Indices)

	OBSERVED	SIMULATED	DIFFERENCE (%)
MAR (Mm^3)	157.7	157.72	0.0%
Mean (Log)	2.18	2.19	0.5%
Std Dev	41.10	27.12	-34.0%
Std Dev (Log)	0.11	0.07	-36.4%
Seasonal Index	23.21	20.83	-10.3%

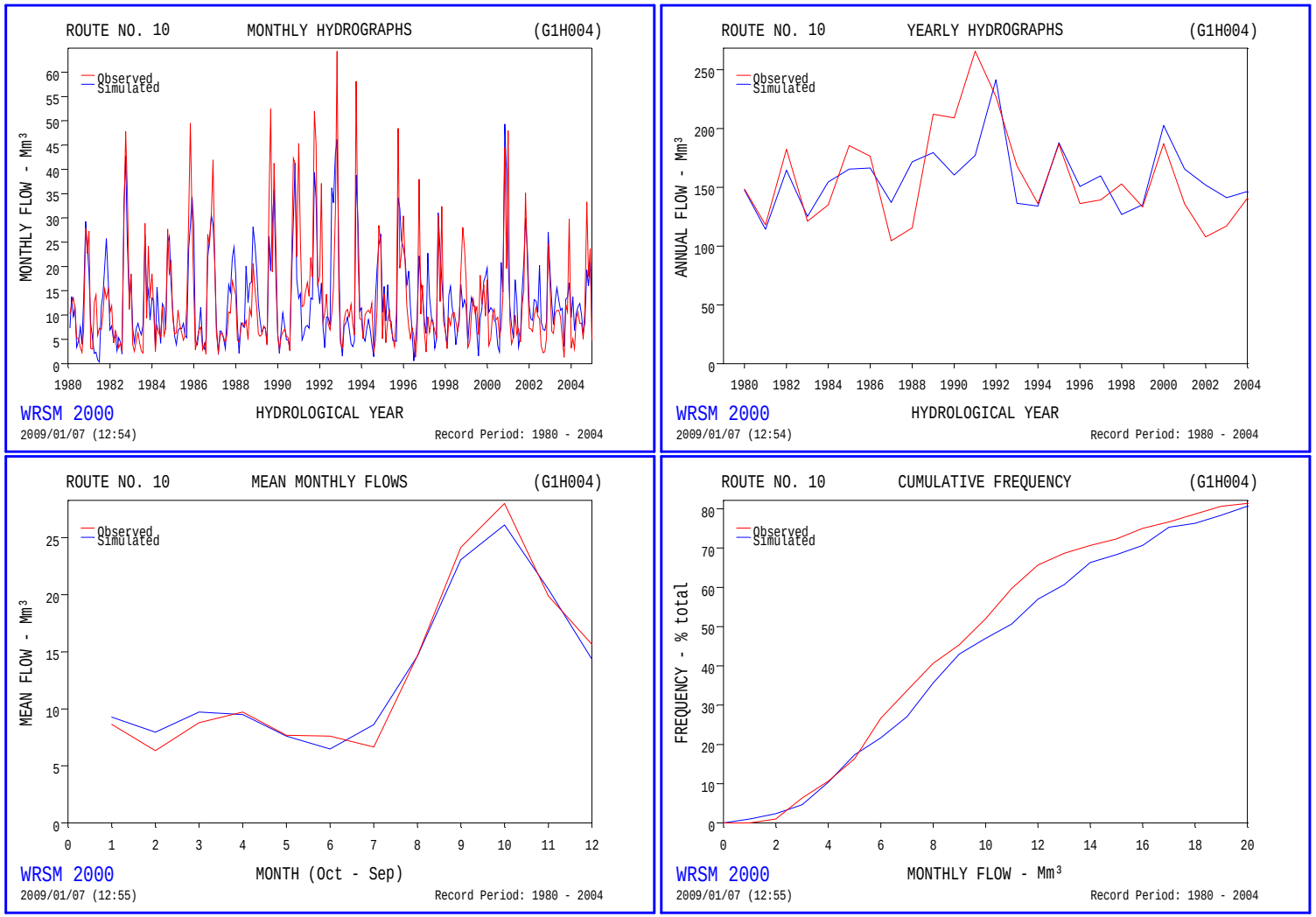


Figure 5.6: G1H004 Calibration Results (Graphical Comparison)

5.3 G1H008: Klein Berg River at Nieuwkloof

5.3.1 Subcatchment data

Land use in the Berg catchment has been documented in a separate report *entitled The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models: Report 4 (Land Use and Water Requirements): Volume 1 (Data in Support of Catchment Modelling)* (DWAF, 2007d). Table 5.11 presents a summary of the catchment data for the subcatchment G1H008 and detailed information is summarised in Table 5.12. Figure 5.7 shows detailed maps of the catchment.

Table 5.11: Summary of information for G1H008

G1H008	
Subcatchment area from GIS (km^2)	347.9
Above farm dams	181.7
Below farm dams	166.2
Forestry area (km^2)	18.3
Alien vegetation condensed area (km^2)	3.7
Irrigation Area (km^2)	44.9
From farm dams	41.7
from river	3.1
Farm dams: Area (km^2) / Volume (Mm^3)	4.92 / 14.81
Subcatchment MAP (mm)	732
Total GW contribution to baseflow (Mm^3/a)	4.7
Calibration period (Hydrological years)	1967 - 2004
Observed MAR for calibration period (Mm^3/a)	41.7
Patched observed MAR for calibration period (Mm^3/a)	43.8
Simulated MAR for calibration period Mm^3/a	43.5
Naturalised MAR (1927-2004) (Mm^3)	48.3
Naturalised MAR including GW baseflow (1927-2004) (Mm^3)	53.0
Runoff coefficient	20.8%

Table 5.12: Detailed catchment information for G1H008

APPENDIX	CONTENTS	FORMAT
A3	Hydrological information for model calibration	Table
B3	Catchment Rainfall File	Monthly time series
C3,C4	Patched observed flow record (G1H008)	Monthly time series
D3	Naturalised flow sequence	Monthly time series

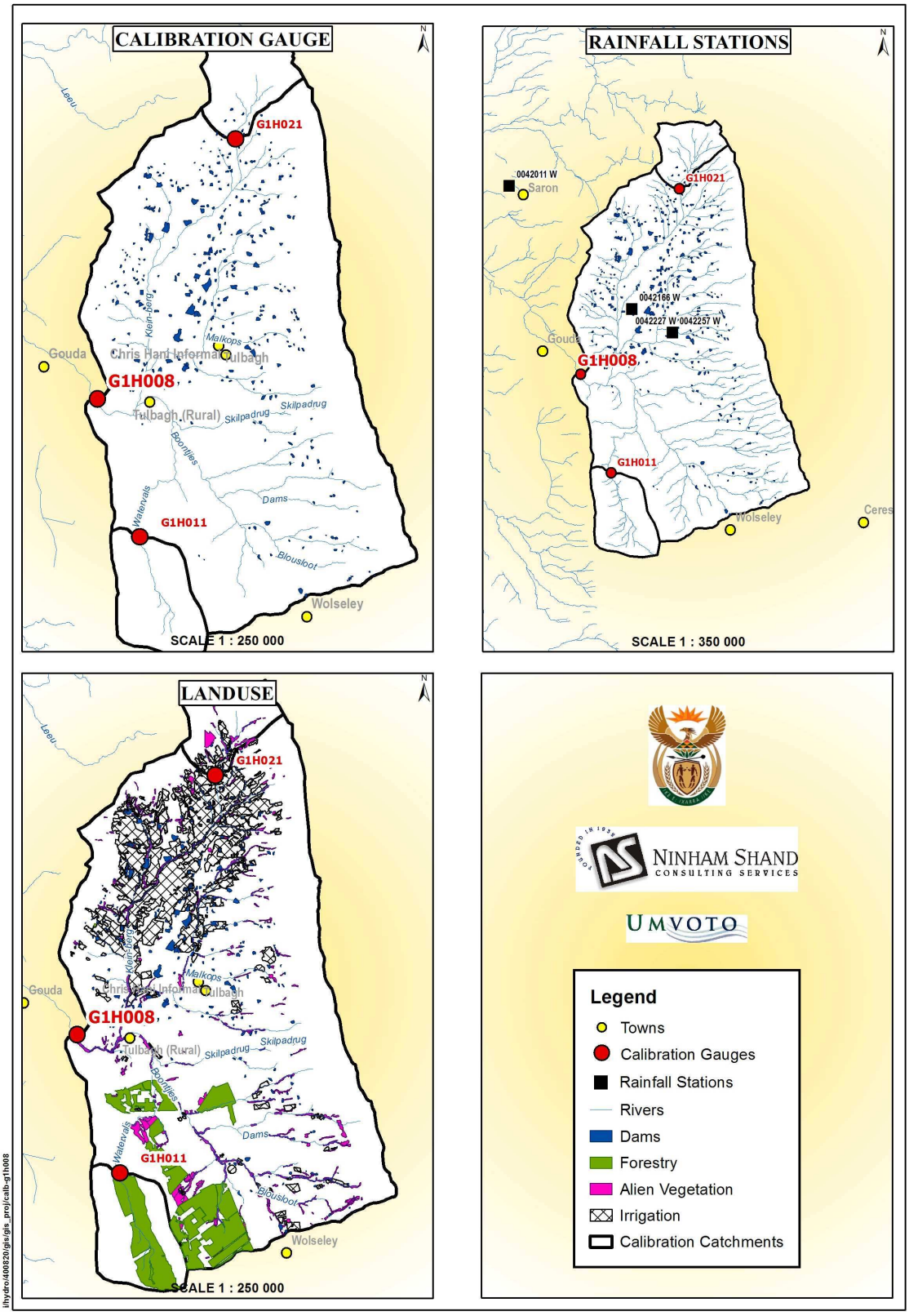


Figure 5.7: G1H008 Subcatchment hydrology information

5.3.2 Model configuration

Figure 5.8 shows the model configuration for subcatchment G1H008. This catchment is modelled incrementally and lies downstream of the following flow gauges which have been calibrated and are presented in the preceding and following sections: G1H011 and G1H021. There is an import from the Breede River catchment to the Klein Berg River. The total groundwater contribution to baseflow in the GRDM in this catchment is estimated to be 4.7 Mm^3/a. Winter filling of farm dams is taken into consideration.

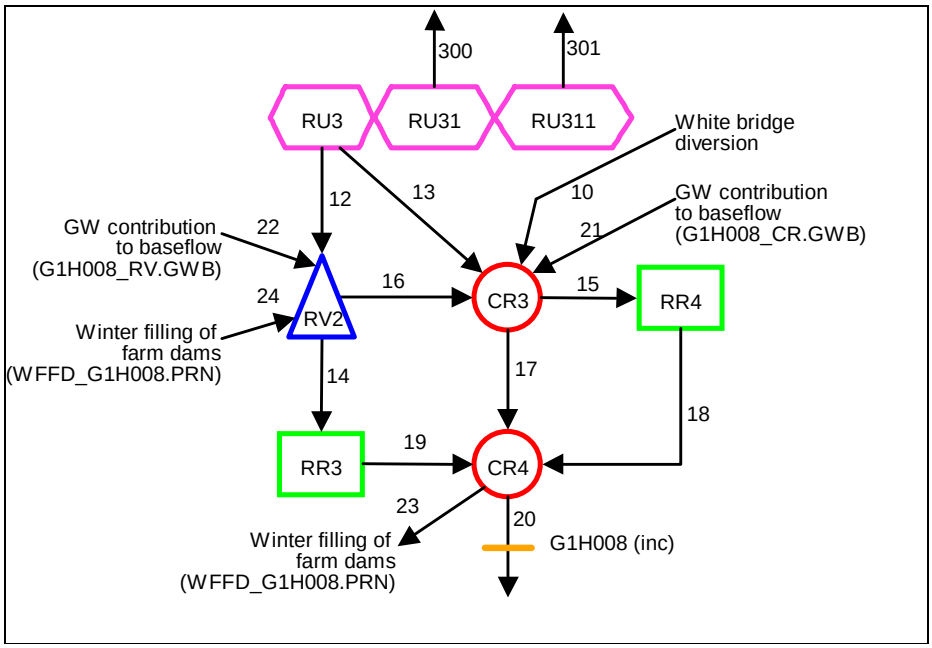


Figure 5.8: G1H008 Subcatchment Configuration

5.3.3 Evaluation and preparation of flow sequences

A detailed assessment of the flow gauges in the Berg catchment was made and is documented in *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models. Report No. 3: The Assessment of Flow Gauging Stations* (DWAF, 2007c). The incremental patched observed flows at G1H008 were simulated for the period 1967-2004 and are included in Appendix C3.

5.3.4 Calibration (1967 - 2004)

Details of the rainfall stations used to generate catchment rainfall for G1H008 are shown in Table 5.13. The updated MAP for this catchment is estimated to be 732 mm compared to 624 mm in the WCSA (DWAF, 1993). The updated MAP is higher than the MAP used in the WCSA and produces an acceptable calibration in this catchment.

Table 5.13: Rainfall stations for calibration at G1H008

RAINFALL STATION NUMBER	MAP	PERIOD OF RECORD	RECORD LENGTH
042011w	444	1964-1978	14
042166w	537	1927-1950	23
042227w	474	1927-2004	77
042257w	474	1961-2004	43

The WCSA (DWAF, 1993) Pitman parameters were used during initial model calibration. These parameters were then improved until an acceptable fit between the observed and simulated stream flow data was obtained. The final Pitman parameters are shown in Table 5.14 and Table 5.15 displays the patched observed and simulated statistics for G1H008. Graphs showing monthly, annual and mean monthly flows as well as a cumulative frequency plot for each calibration are also included in Figure 5.9.

Table 5.14: G1H008 Final Pitman Parameters

POW	SL	ST	FT	GW	ZMIN	ZMAX	PI	TL	GL	R
3	0	410	45	0	80	650	1.5	0	0	0

Table 5.15: G1H008 Calibration Results (Statistical Indices)

	OBSERVED	SIMULATED	DIFFERENCE (%)
MAR (Mm3)	43.78	43.5	-0.6%
Mean (Log)	1.60	1.54	-3.8%
Std Dev	28.50	28.76	0.9%
Std Dev (Log)	0.30	0.31	3.3%
Seasonal Index	44.70	44.26	-1.0%

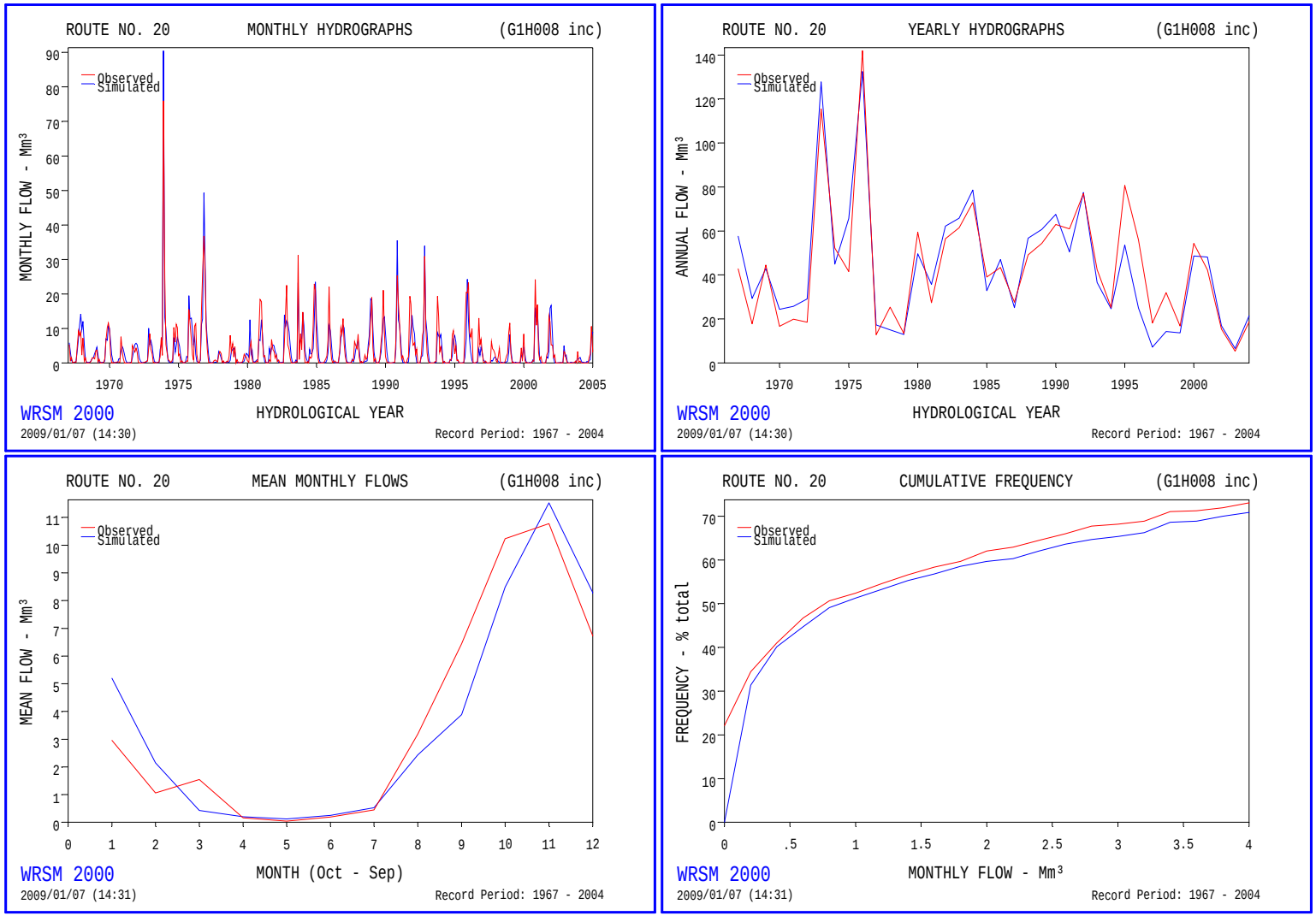


Figure 5.9: G1H008 Calibration Results (Graphical Comparison)

5.4 G1H011: Watervals River at Watervalsberge

5.4.1 Subcatchment data

Land use in the Berg catchment has been documented in a separate report entitled *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models: Report 4 (Land Use and Water Requirements): Volume 1 (Data in Support of Catchment Modelling)* (DWAF, 2007d). Table 5.16 presents a summary of the catchment data for the subcatchment G1H011 and detailed information is summarised in Table 5.17. Figure 5.10 shows detailed maps of the catchment.

Table 5.16: Summary of information for G1H011

G1H011	
Subcatchment area from GIS (km^2)	26.0
Above farm dams	0.0
Below farm dams	26.0
Forestry area (km^2)	8.7
Alien vegetation condensed area (km^2)	0.0
Irrigation Area (km^2)	0.0
Farm dams: Area (km^2) / Volume (Mm^3/a)	0.0 / 0.0
Subcatchment MAP (mm)	1100
Total GW contribution to baseflow	0.4
Calibration period (Hydrological years)	1963 - 2004
Observed MAR for calibration period (Mm^3/a)	13.2
Patched observed MAR for calibration period (Mm^3/a)	13.7
Simulated MAR for calibration period (Mm^3/a)	13.8
Naturalised MAR (1927-2004) (Mm^3)	15.8
Naturalised MAR including GW baseflow (1927-2004) (Mm^3)	16.1
Runoff coefficient	56.3%

Table 5.17: Detailed catchment information for G1H011

APPENDIX	CONTENTS	FORMAT
A4	Hydrological information for model calibration	Table
B4	Catchment Rainfall File	Monthly time series
C5	Patched observed flow record (G1H011)	Monthly time series
D4	Naturalised flow sequence	Monthly time series

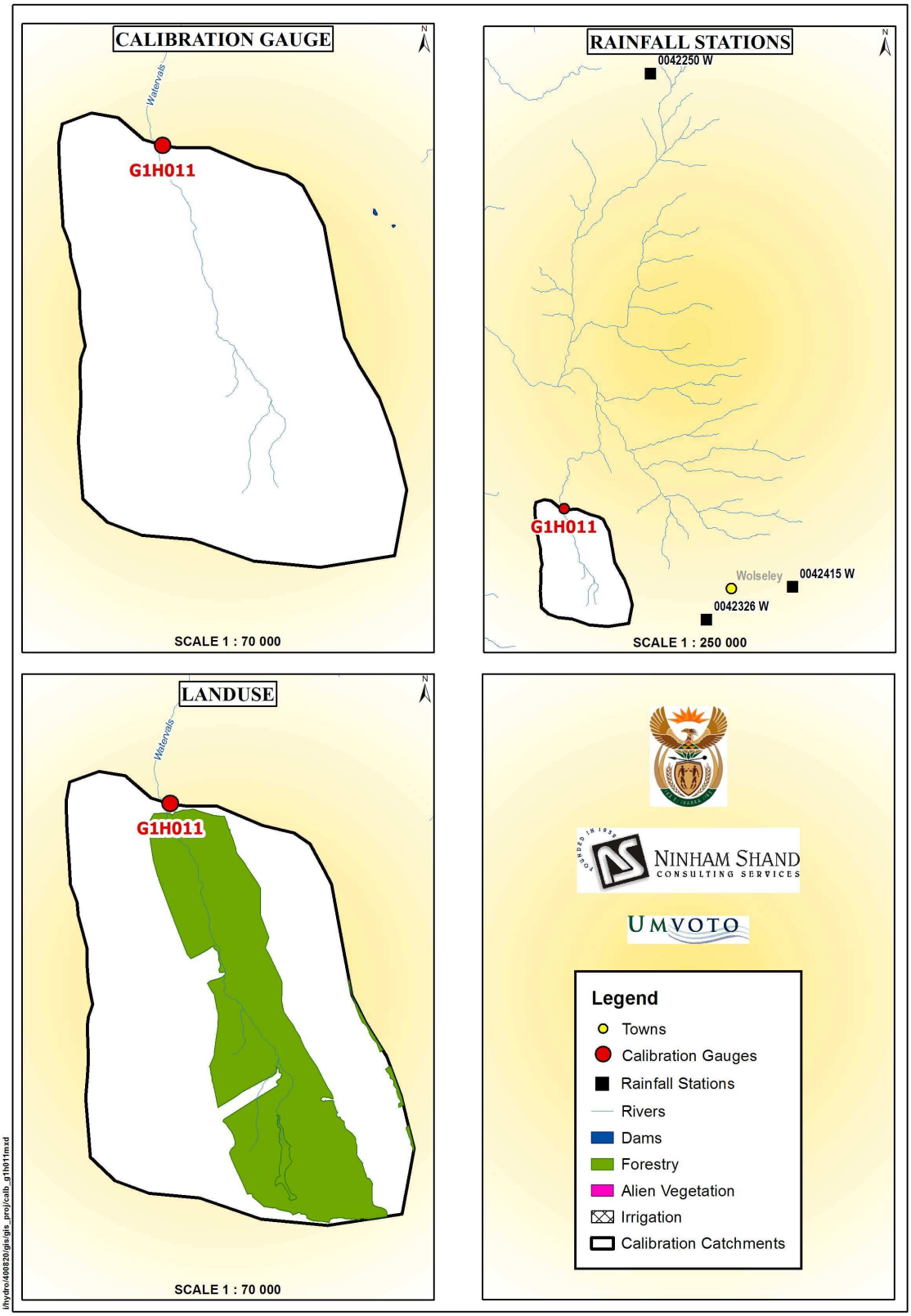


Figure 5.10: G1H011 Subcatchment hydrology information

5.4.2 Model configuration

Figure 5.11 shows the model configuration for subcatchment G1H011. There are no imports into or exports from the catchment. The total groundwater contribution to baseflow in the GRDM in this catchment is estimated to be 0.4 Mm^3/a. The only major land use in this subcatchment is afforestation. In the WCSA, subcatchment G1H011 was modelled as part of the incremental subcatchment G1H008 because of its small area and discrepancies relating to MAP. Subcatchment G1H011 is modelled separately in the current study because there is better information related to rainfall in the catchment, and there is a relatively good flow record at the flow gauge.

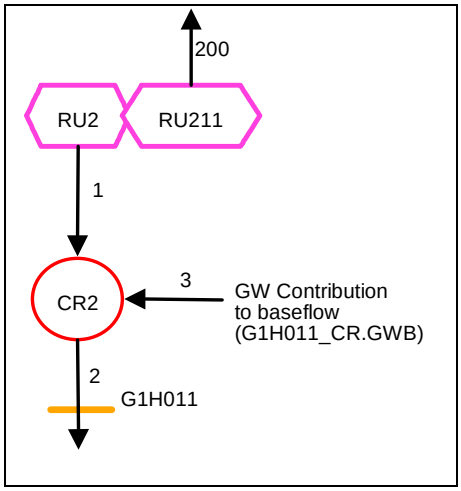


Figure 5.11: G1H011 Subcatchment Configuration

5.4.3 Evaluation and preparation of flow sequences

A detailed assessment of the flow gauges in the Berg catchment was made and is documented in *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models. Report No. 3: The Assessment of Flow Gauging Stations* (DWAF, 2007c). The patched observed flows at G1H011 were simulated for the period 1963-2004. The patched observed flow record for G1H011 is shown in Appendix C4.

5.4.4 Calibration (1963 - 2004)

Details of the rainfall stations used to generate catchment rainfall for G1H011 are shown in Table 5.18. The updated MAP for this catchment is estimated to be 879 mm compared to 624 mm that was used for the combined catchment with G1H008 in the WCSA (DWAF, 1993). The updated MAP is higher than the MAP used in the WCSA, but simulated flows still underestimate observed flows therefore the MAP value was increased to 1100 mm and an acceptable calibration was obtained.

Table 5.18: Rainfall stations for calibration at G1H011

RAINFALL STATION NUMBER	MAP	PERIOD OF RECORD	RECORD LENGTH
042250w	1127	1984-2004	20
042326w	645	1927-2004	77
042415w	616	1927-1960	33

The WCSA (DWAF, 1993) Pitman parameters for subcatchment G1H008 were used during initial model calibration. These parameters were then improved until an acceptable fit between the observed and simulated stream flow data was obtained. The final Pitman parameters are

shown in Table 5.19 and Table 5.20 displays the patched observed and simulated statistics for G1H011. Graphs showing monthly, annual and mean monthly flows as well as a cumulative frequency plot for each calibration are also included in Figure 5.12.

Table 5.19: G1H011 Final Pitman Parameters

POW	SL	ST	FT	GW	ZMIN	ZMAX	PI	TL	GL	R
3	0	130	70	0	35	250	1.5	0.5	0	0

Table 5.20: G1H011 Calibration Results (Statistical Indices)

	OBSERVED	SIMULATED	DIFFERENCE (%)
MAR (Mm3)	13.71	13.75	0.3%
Mean (Log)	1.12	1.11	-0.9%
Std Dev	4.22	5.35	26.8%
Std Dev (Log)	0.14	0.17	21.4%
Seasonal Index	40.3	39.54	-1.9%

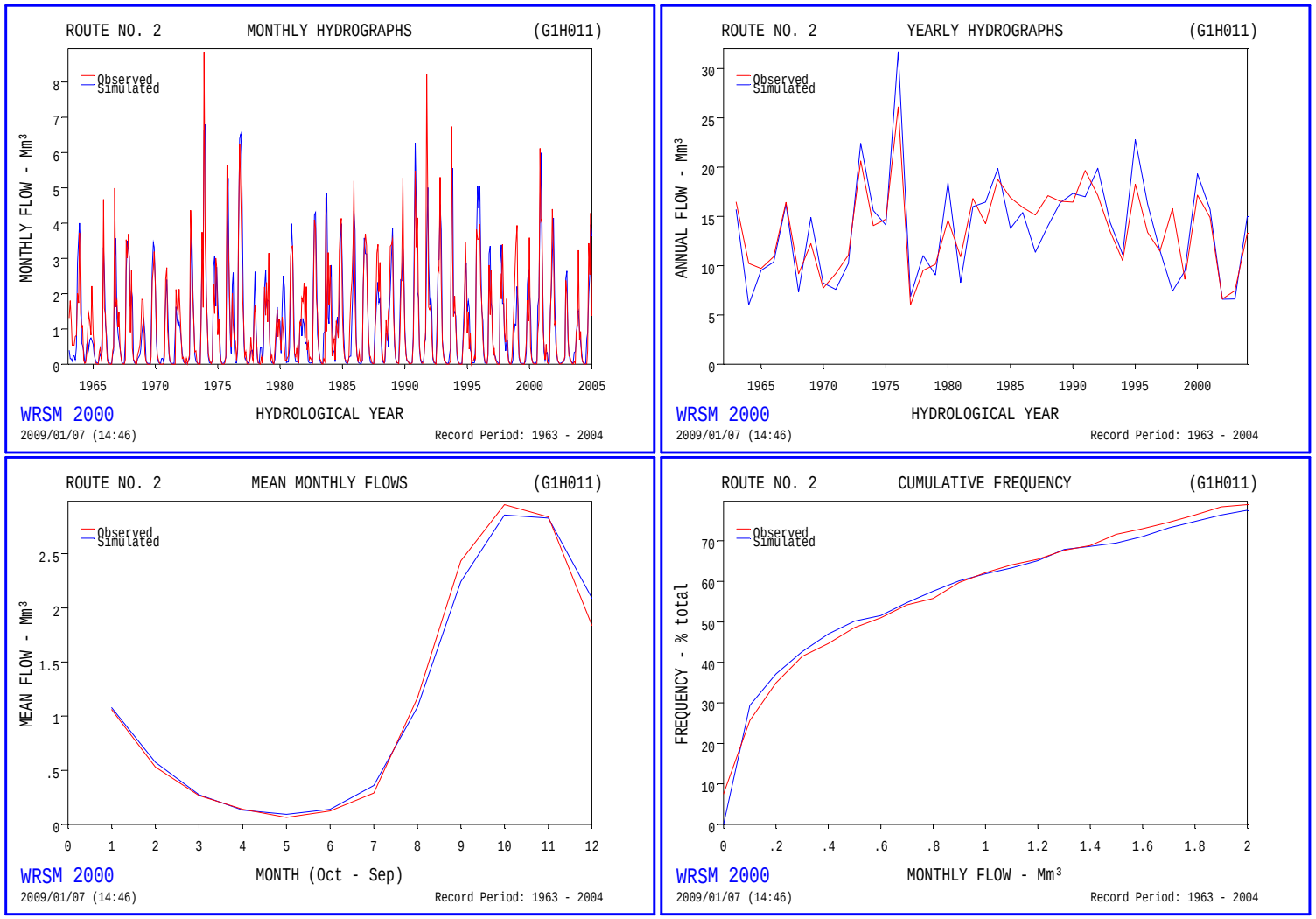


Figure 5.12: G1H011 Calibration Results (Graphical Comparison)

5.5 G1H013: Berg River at Drieheuwels

5.5.1 Subcatchment data

Land use in the Berg catchment has been documented in a separate report entitled *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models: Report 4 (Land Use and Water Requirements): Volume 1 (Data in Support of Catchment Modelling)* (DWAF, 2007d). Table 5.21 presents a summary of the catchment data for the subcatchment G1H013 and detailed information in summarised in Table 5.22. Figure 5.13 shows detailed maps of the catchment.

Table 5.21: Summary of information for G1H013

G1H013	
Subcatchment area from GIS (km^2)	797.5
Above farm dams	180.7
Below farm dams	616.8
Forestry area (km^2)	1.8
Alien vegetation condensed area (km^2)	3.8
Irrigation Area (km^2)	60.0
From farm dams	37.8
From river	22.2
Farm dams: Area (km^2) / Volume (Mm^3/a)	5.29/ 16.09
Subcatchment MAP (mm)	559
Total GW contribution to baseflow	5.7
Calibration period (Hydrological years)	1987 - 2004
Observed MAR for calibration period (Mm^3/a)	69.1
Patched observed MAR for calibration period (Mm^3/a)	72.4
Simulated MAR for calibration period (Mm^3/a)	72.4
Naturalised MAR (1927-2004) (Mm^3)	62.2
Naturalised MAR including GW baseflow (1927-2004) (Mm^3)	67.9
Runoff coefficient	15.2%

Table 5.22: Detailed catchment information for G1H013

APPENDIX	CONTENTS	FORMAT
A5	Hydrological information for model calibration	Table
B5	Catchment Rainfall File	Monthly time series
C6,C7	Patched observed flow record (G1H013)	Monthly time series
D5	Naturalised flow sequence	Monthly time series

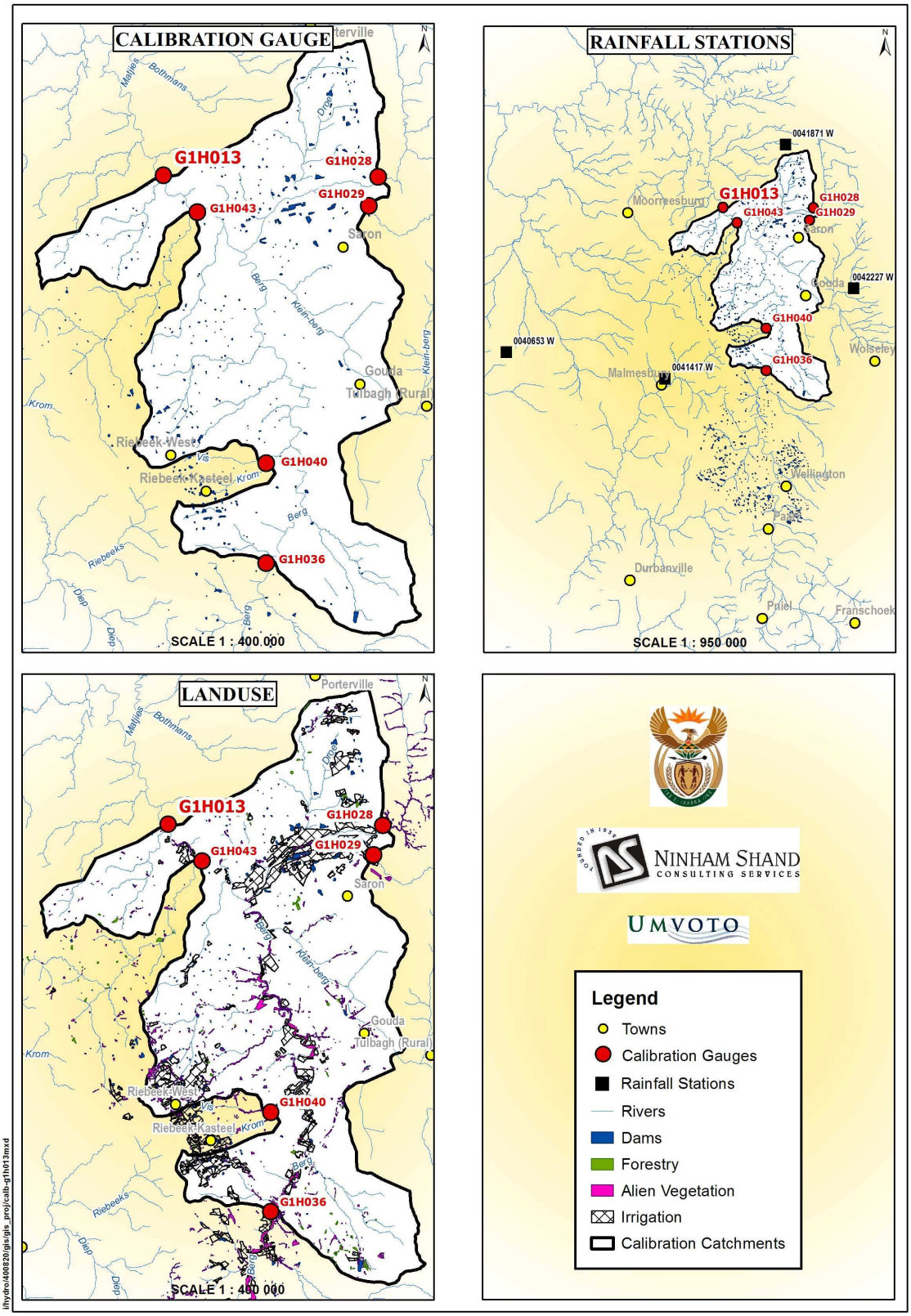


Figure 5.13: G1H013 Subcatchment hydrology information

5.5.2 Model configuration

Figure 5.14 shows the model configuration for subcatchment G1H013. This catchment is modelled incrementally and lies downstream of the following flow gauges which have been calibrated and are presented in the preceding sections: G1H036, G1H040, G1H043, G1H029, G1H028, G1H008 and G1H065. There is an import from the Twenty-Four Rivers Irrigation Board for irrigation use in the catchment. The total groundwater contribution to baseflow in the GRDM in this catchment is estimated to be 5.7 Mm^3/a. Winter filling of farm dams is taken into consideration.

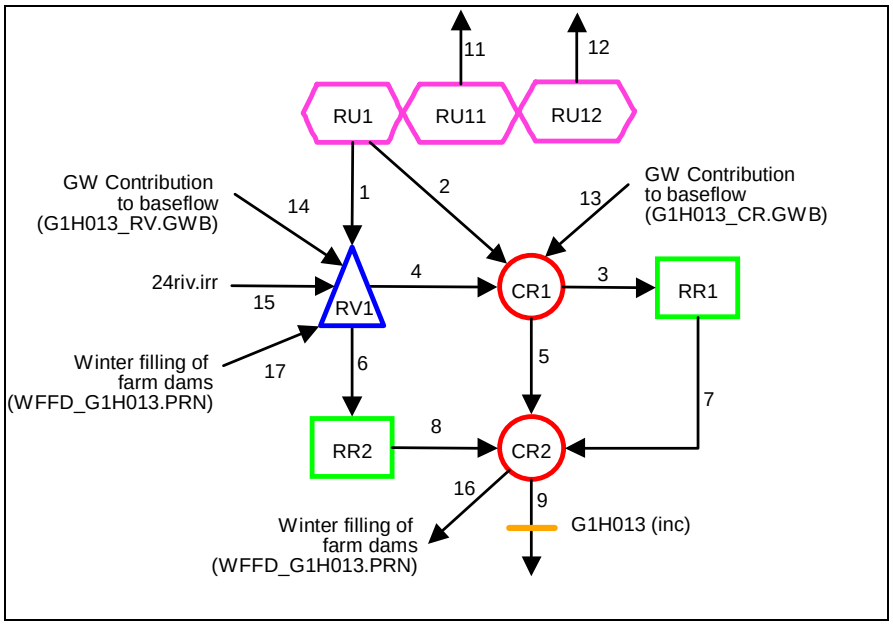


Figure 5.14: G1H013 Subcatchment Configuration

5.5.3 Evaluation and preparation of flow sequences

A detailed assessment of the flow gauges in the Berg catchment was made and is documented in *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models. Report No. 3: The Assessment of Flow Gauging Stations* (DWAF, 2007c). The incremental patched observed flows at G1H013 were simulated for the period 1987-2004 and are included in Appendix C5.

5.5.4 Calibration (1987 - 2004)

Details of the rainfall stations used to generate catchment rainfall for G1H013 are shown in Table 5.23. The updated MAP for this catchment is estimated to be 559 mm compared to 498 mm in the WCSA (DWAF, 1993). The updated MAP is higher than the MAP used in the WCSA and produces an acceptable calibration in this catchment.

Table 5.23: Rainfall stations for calibration at G1H013

RAINFALL STATION NUMBER	MAP	PERIOD OF RECORD	RECORD LENGTH
040653w	482	1927-2004	77
041417w	463	1927-2000	73
041871w	496	1958-2004	46
042227w	474	1927-2004	77

The WCSA (DWAF, 1993) Pitman parameters were used during initial model calibration. These parameters were then improved until an acceptable fit between the observed and simulated stream flow data was obtained. The final Pitman parameters are shown in Table 5.24 and Table 5.25 displays the patched observed and simulated statistics for G1H013. Graphs showing monthly, annual and mean monthly flows as well as a cumulative frequency plot for each calibration are also included in Figure 5.15.

Table 5.24: G1H013 Final Pitman Parameters

POW	SL	ST	FT	GW	ZMIN	ZMAX	PI	TL	GL	R
2	0	270	15	0	60	480	1.5	0	0	0

Table 5.25: G1H013 Calibration Results (Statistical Indices)

	OBSERVED	SIMULATED	DIFFERENCE (%)
MAR (Mm3)	72.40	72.42	0.0%
Mean (Log)	1.80	1.82	1.1%
Std Dev	36.62	32.43	-11.4%
Std Dev (Log)	0.25	0.20	-20.0%
Seasonal Index	48.87	46.96	-3.9%

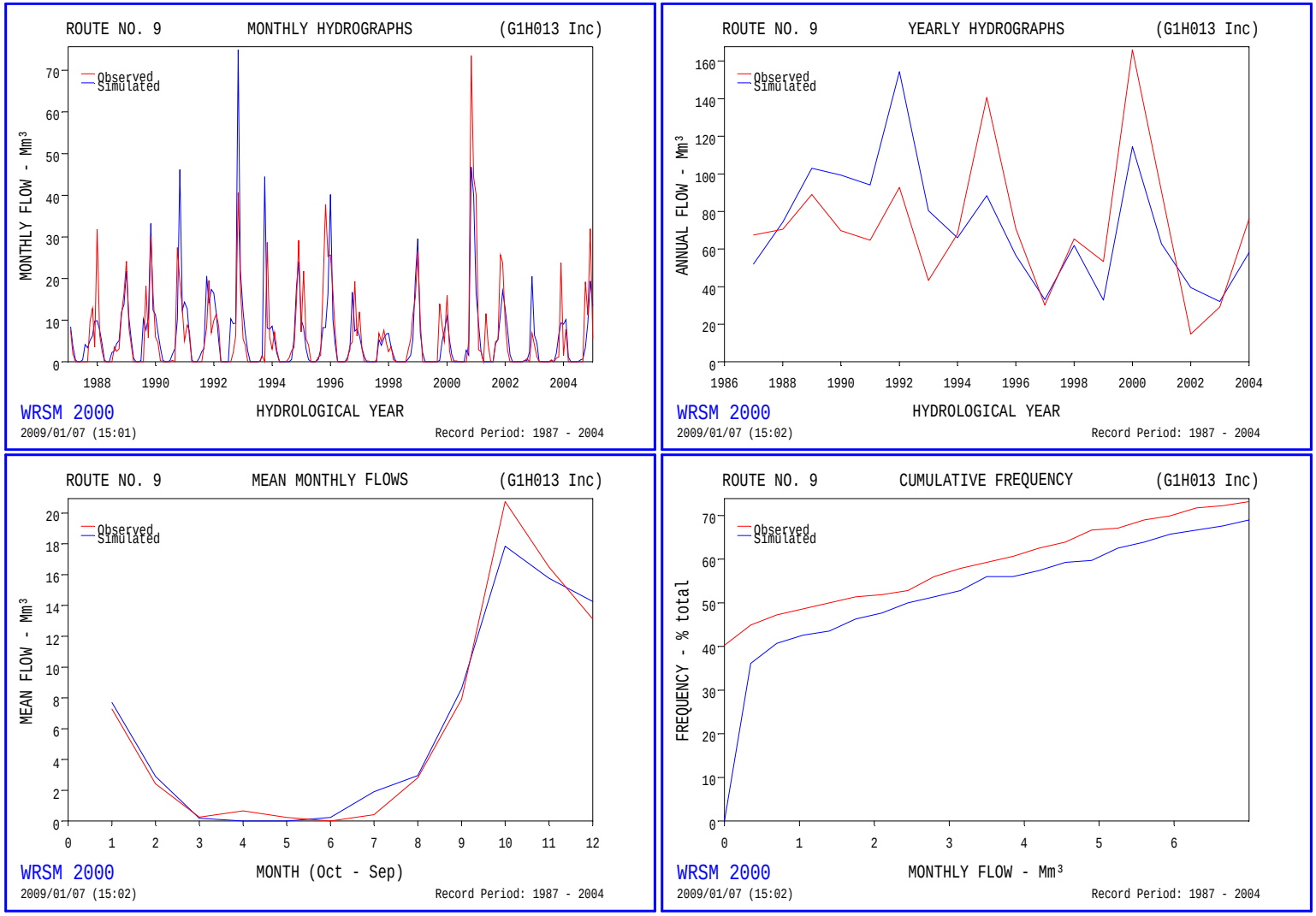


Figure 5.15: G1H013 Calibration Results (Graphical Comparison)

5.6 G1H019: Banhoek River at the Sanctuary

5.6.1 Subcatchment data

For a detailed assessment of land and water use in subcatchment G1H019, the reader is referred to a separate report entitled *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models: Report 4 (Land Use and Water Requirements): Volume 1 (Data in Support of Catchment Modelling)* (DWAF, 2007d). Table 5.26 presents a summary of the catchment data for the subcatchment G1H019 and detailed information are summarised in Table 5.27. Figure 5.16 shows detailed maps of the catchment.

Table 5.26: Summary of information for G1H019

G1H019	
Subcatchment area from GIS (km^2)	22.8
Above farm dams	3.0
Below farm dams	19.8
Forestry area (km^2)	0.0
Alien vegetation condensed area (km^2)	1.0
Irrigation Area (km^2)	2.0
From farm dams	1.1
From river	0.9
Farm dam: Area (km^2) / Volume (Mm^3)	0.08 / 0.28
Subcatchment MAP (mm)	1577
Total GW contribution to baseflow	0.2
Calibration period (Hydrological years)	1967 - 2004
Observed MAR for calibration periodMm^3/a	17.7
Patched observed MAR for calibration periodMm^3/a	18.6
Simulated MAR for calibration period Mm^3/a	18.6
Naturalised MAR (1927-2004) (Mm^3)	21.2
Naturalised MAR including GW baseflow (1927-2004) (Mm^3)	21.3
Runoff coefficient	59.4%

Table 5.27: Detailed catchment information for G1H019

APPENDIX	CONTENTS	FORMAT
A6	Hydrological information for model calibration	Table
B6	Catchment Rainfall File	Monthly time series
C8	Patched observed flow record (G1H019)	Monthly time series
D6	Naturalised flow sequence	Monthly time series

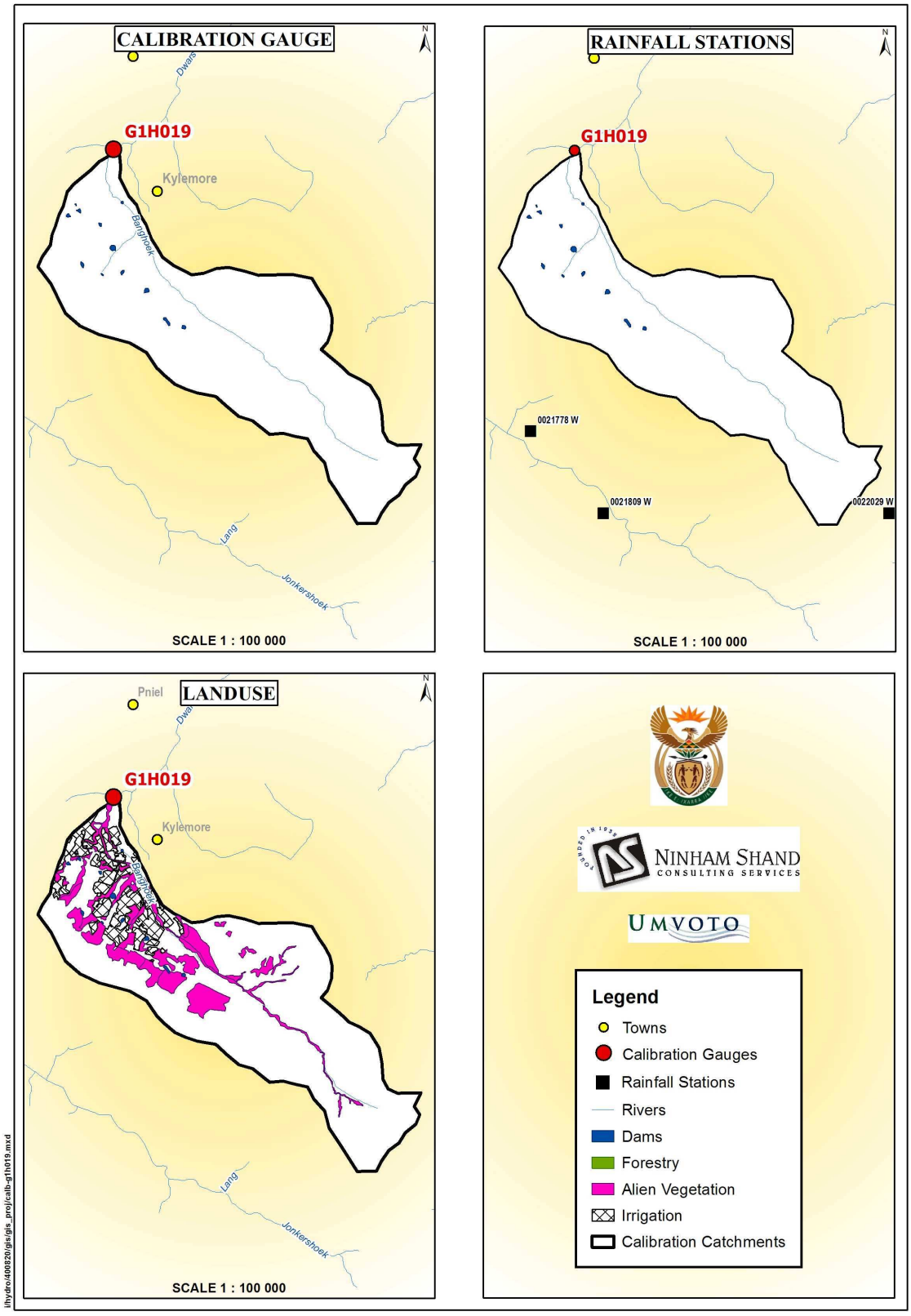


Figure 5.16: G1H019 Subcatchment hydrology information

5.6.2 Model configuration

Figure 5.17 shows the model configuration for subcatchment G1H019. The tunnel diversions at G1H063 were modelled as well as the winter filling of farm dams although the volumes required to fill the farm dams was very small. The total groundwater contribution to baseflow in the GRDM in this catchment is estimated to be 0.16 Mm^3/a and was added to the system according to the same percentage split of catchment runoff, respectively, to farm dams and to the river.

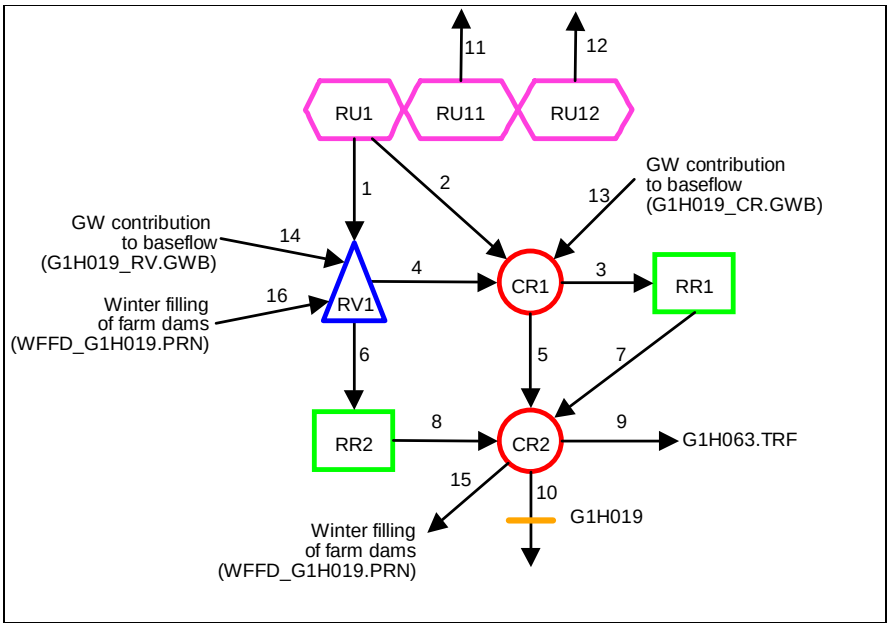


Figure 5.17: G1H019 Subcatchment Configuration

5.6.3 Evaluation and preparation of flow sequences

A detailed assessment of the flow gauges in the Berg catchment was made and is documented in *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models. Report No. 3: The Assessment of Flow Gauging Stations* (DWAF, 2007c). The observed flows at G1H019 were simulated for the period 1967-2004. The patched observed flow record for G1H019 is shown in Appendix C6.

5.6.4 Calibration (1967 - 2004)

Details of the rainfall stations used to generate catchment rainfall for G1H019 are shown in Table 5.28. The updated MAP for this catchment is estimated to be 1577 mm compared to 1804 mm in the WCSA (DWAF, 1993) and the Skuifraam Feasibility Study (1997). Despite using a lower MAP in the current study, an acceptable calibration was obtained.

Table 5.28: Rainfall stations for calibration at G1H019

RAINFALL STATION NUMBER	MAP	PERIOD OF RECORD	RECORD LENGTH
90200004	2116	1936-1986	50
021778w	1076	1927-2004	77
021809w	1463	1936-2004	68
022029w	2060	1944-2004	60

The WCSA (DWAF, 1993) Pitman parameters were used during initial model calibration. These parameters were then improved until an acceptable fit between the observed and simulated stream flow data was obtained. The final Pitman parameters are shown in Table 5.29 and Table 5.30 displays the patched observed and simulated statistics for G1H019. Graphs showing monthly, annual and mean monthly flows as well as a cumulative frequency plot for each calibration are also included in Figure 5.18.

Table 5.29: G1H019 Final Pitman Parameters

POW	SL	ST	FT	GW	ZMIN	ZMAX	PI	TL	GL	R
2	0	205	65	0	0	420	1.5	0.25	0	0

Table 5.30: G1H019 Calibration Results (Statistical Indices)

	OBSERVED	SIMULATED	DIFFERENCE (%)
MAR (Mm3)	18.58	18.58	0.0%
Mean (Log)	1.23	1.24	0.8%
Std Dev	7.27	6.71	-7.7%
Std Dev (Log)	0.19	0.16	-15.8%
Seasonal Index	33.64	38.14	13.4%

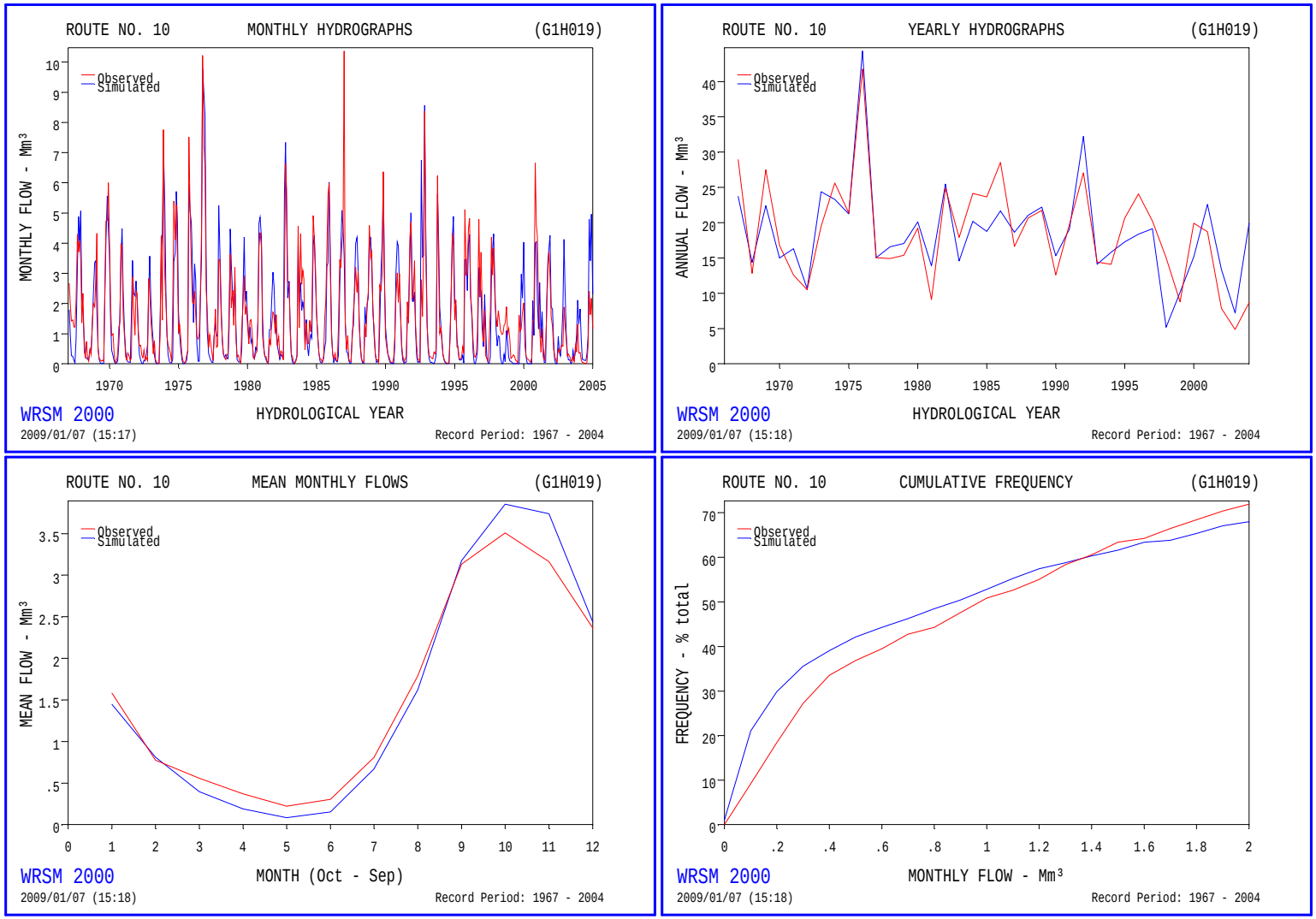


Figure 5.18: G1H019 Calibration Results (Graphical Comparison)

5.7 G1H020: Berg River at Dal Josafat

5.7.1 Subcatchment data

Land use in the Berg catchment has been documented in a separate report entitled *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models: Report 4 (Land Use and Water Requirements): Volume 1 (Data in Support of Catchment Modelling)* (DWAF, 2007d). Table 5.31 presents a summary of the catchment data for the subcatchment G1H020 and detailed information are summarised in Table 5.32. Figure 5.19 shows detailed maps of the catchment.

Table 5.31: Summary of information for G1H020

G1H020	G1H020	G1H014	G1H018
Subcatchment area from GIS (km^2)	400.0	3.1	4.0
Above farm dams	160.8	0.0	0.0
Below farm dams	239.2	3.1	4.0
Forestry area (km^2)	25.9	0.0	0.0
Alien vegetation condensed area (km^2)	10.0	0.0	0.0
Irrigation Area (km^2)	109.0	0.0	0.0
From farm dams	52.3	0.0	0.0
From river	56.7	0.0	0.0
Farm dams: Area (km^2) / Volume (Mm^3)	3.9 / 19.7	0.0 / 0.0	0.0 / 0.0
Subcatchment MAP (mm)	923	1147	1342
Total GW contribution to baseflow (Mm^3/a)	6.1		
Calibration period (Hydrological years)	1967 - 2004		
Observed MAR for calibration period (Mm^3/a)	136.8		
Patched observed MAR for calibration period (Mm^3/a)	139.4		
Simulated MAR for calibration period Mm^3/a	139.5		
Naturalised MAR (1927-2004) (Mm^3)	156.7		
Naturalised MAR including GW baseflow (1927-2004) (Mm^3)	162.8		
Runoff coefficient	43.0%		

Table 5.32: Detailed catchment information for G1H020

APPENDIX	CONTENTS	FORMAT
A7	Hydrological information for model calibration	Table
B7	Catchment Rainfall File	Monthly time series
C9, C10	Patched observed flow record (G1H020)	Monthly time series
D7	Naturalised flow sequence	Monthly time series

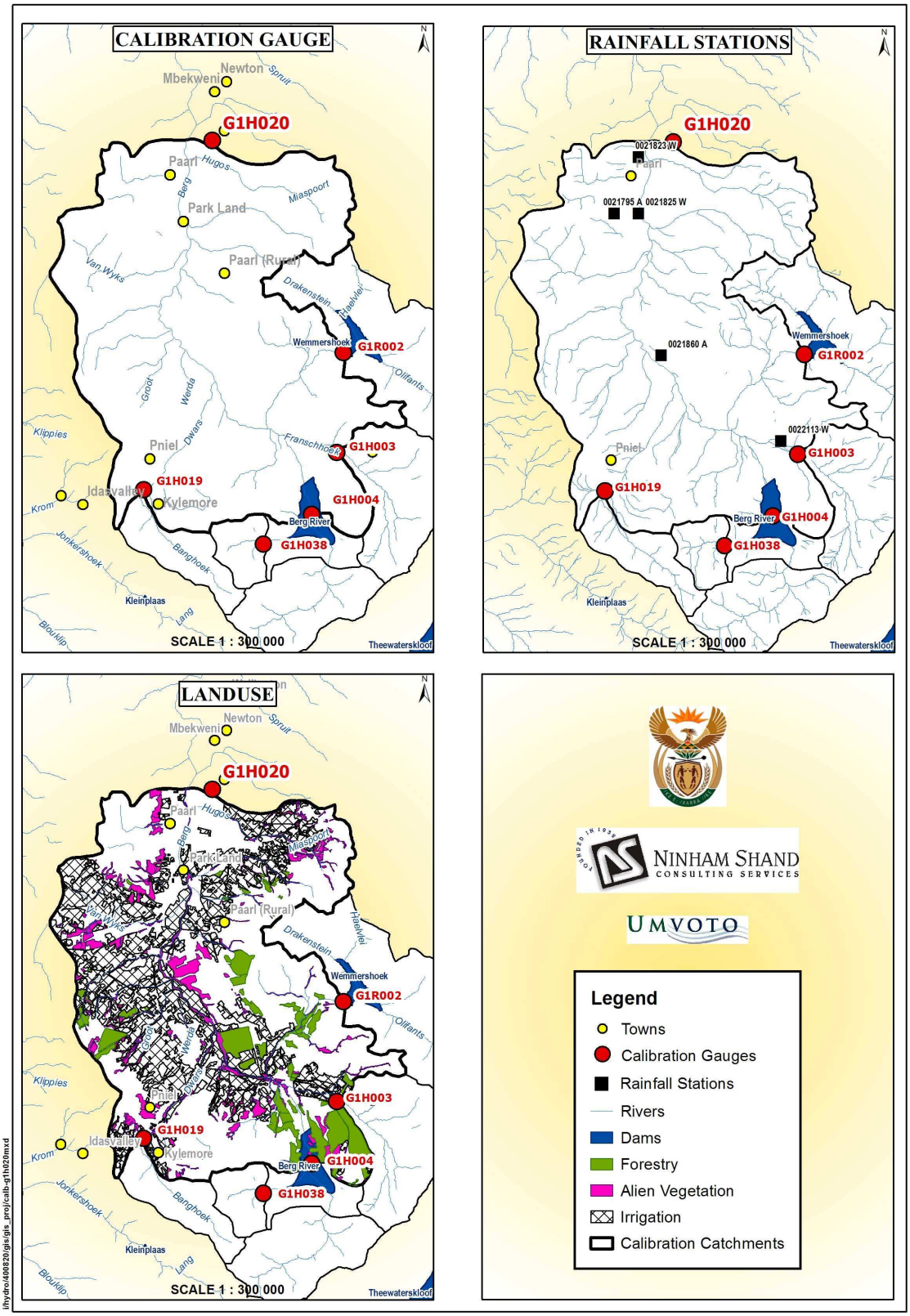


Figure 5.19: G1H020 Subcatchment hydrology information

5.7.2 Model configuration

Figure 5.20 shows the model configuration for subcatchment G1H020. This catchment is modelled incrementally and lies downstream of the following flow gauges which have been calibrated and are presented in the preceding sections: G1H003, G1H004, G1H019 and G1R002. There are two small catchments gauges by G1H014 and G1H018 that lie in a higher MAP area of the catchment and as such, they are modelled as High MAP runoff modules. There is an abstraction by Paarl Municipality. The total groundwater contribution to baseflow in the GRDM in this catchment is estimated to be 6.4 Mm^3/a and was added to the system according to the same percentage split of catchment runoff, respectively, to farm dams and to the river. Winter filling of farm dams was taken into consideration.

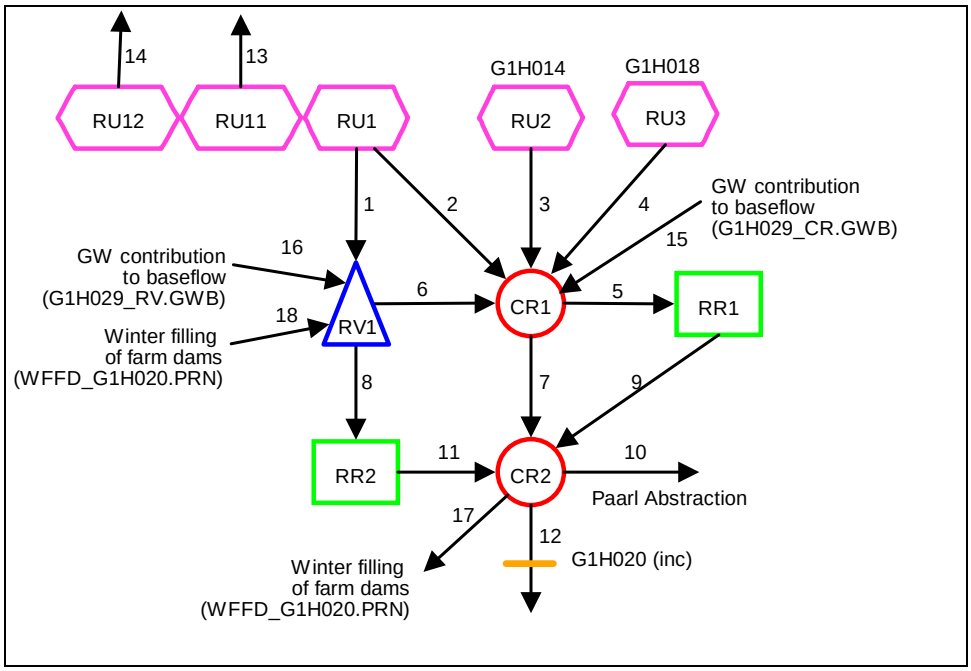


Figure 5.20: G1H020 Subcatchment Configuration

5.7.3 Evaluation and preparation of flow sequences

A detailed assessment of the flow gauges in the Berg catchment was made and is documented in *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models. Report No. 3: The Assessment of Flow Gauging Stations* (DWAF, 2007c). The incremental observed flows at G1H020 were simulated for the period 1967-2004. The patched incremental observed flow record for G1H020 is shown in Appendix C7.

5.7.4 Calibration (1967 - 2004)

Details of the rainfall stations used to generate catchment rainfall for G1H020 are shown in Table 5.33. The updated MAP for this catchment is estimated to be 923 mm compared to 978 mm in the WCSA (DWAF, 1993) and 979 mm the Skuifraam Feasibility Study (1997). The updated MAP is slightly lower than the MAP used in the WCSA and produces an acceptable calibration in this catchment. G1H014 and G1H018 are modelled as High MAP subcatchments with an MAP of 1149 mm and 1323 mm respectively (DWAF, 1993).

Table 5.33: Rainfall stations for calibration at G1H020

RAINFALL STATION NUMBER	MAP	PERIOD OF RECORD	RECORD LENGTH
021795a	944	1941-1987	46
021823w	895	1927-2004	77
021825w	915	1959-1997	38
021860a	812	1940-1987	47
022113w	835	1927-2003	76

The WCSA (DWAF, 1993) Pitman parameters were used during initial model calibration. These parameters were then improved until an acceptable fit between the observed and simulated stream flow data was obtained. The final Pitman parameters are shown in Table 5.34 and Table 5.35 displays the patched observed and simulated statistics for G1H020. Graphs showing monthly, annual and mean monthly flows as well as a cumulative frequency plot for each calibration are also included in Figure 5.21.

Table 5.34: G1H020 Final Pitman Parameters

POW	SL	ST	FT	GW	ZMIN	ZMAX	PI	TL	GL	R
2	0	210	30	0	50	500	1.5	0	0	0

Table 5.35: G1H020 Calibration Results (Statistical Indices)

	OBSERVED	SIMULATED	DIFFERENCE (%)
MAR (Mm^3)	139.42	139.46	0.0%
Mean (Log)	2.06	2.09	1.5%
Std Dev	77.01	67.00	-13.0%
Std Dev (Log)	0.29	0.23	-20.7%
Seasonal Index	50.32	54.53	8.4%

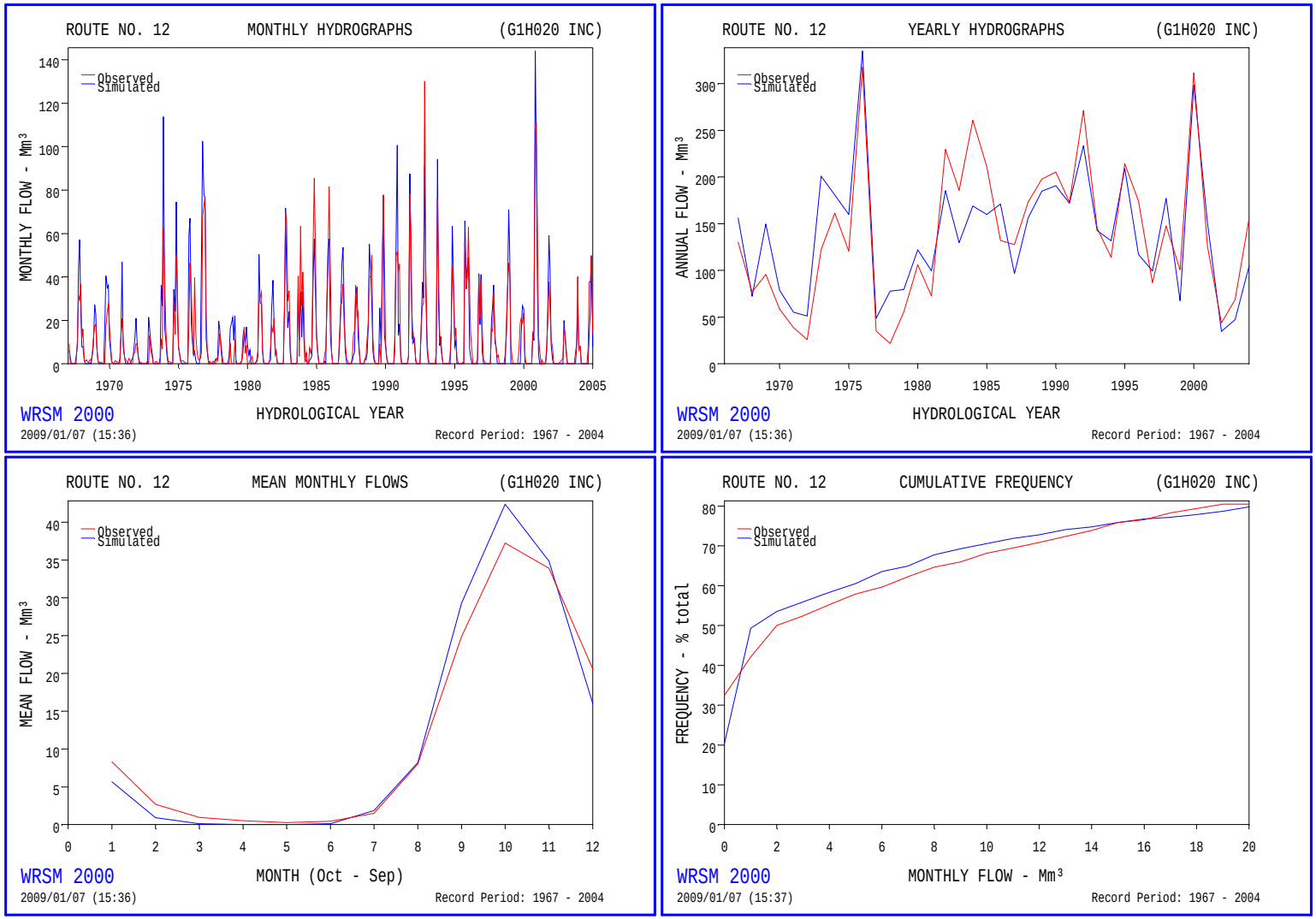


Figure 5.21: G1H020 Calibration Results (Graphical Comparison)

5.8 G1H021: Klein Berg River at Mountain View

5.8.1 Subcatchment data

Land use in the Berg catchment has been documented in a separate report *entitled The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models: Report 4 (Land Use and Water Requirements): Volume 1 (Data in Support of Catchment Modelling)* (DWAF, 2007d). Table 5.36 presents a summary of the catchment data for the subcatchment G1H021 and detailed information are summarised in Table 5.37. Figure 5.22 shows detailed maps of the catchment.

Table 5.36: Summary of information for G1H021

G1H021	
Subcatchment area from GIS (km^2)	18.6
Above farm dams	2.3
Below farm dams	16.3
Forestry area (km^2)	0.0
Alien vegetation condensed area (km^2)	0.2
Irrigation Area (km^2)	1.6
From farm dams	1.5
From river	0.1
Farm dams: Area (km^2) / Volume (Mm^3)	0.05 / 0.23
Subcatchment MAP (mm)	1200
Total GW contribution to baseflow (Mm^3/a)	0.3
Calibration period (Hydrological years)	1975 - 2004
Observed MAR for calibration period (Mm^3/a)	15.1
Patched observed MAR for calibration period (Mm^3/a)	15.1
Simulated MAR for calibration period Mm^3/a	15.0
Naturalised MAR (1927-2004) (Mm^3)	17.4
Naturalised MAR including GW baseflow (1927-2004) (Mm^3)	17.7
Runoff coefficient	79%

Table 5.37: Detailed catchment information for G1H021

APPENDIX	CONTENTS	FORMAT
A8	Hydrological information for model calibration	Table
B3	Catchment Rainfall File	Monthly time series
C11	Patched observed flow record (G1H021)	Monthly time series
D8	Naturalised flow sequence	Monthly time series

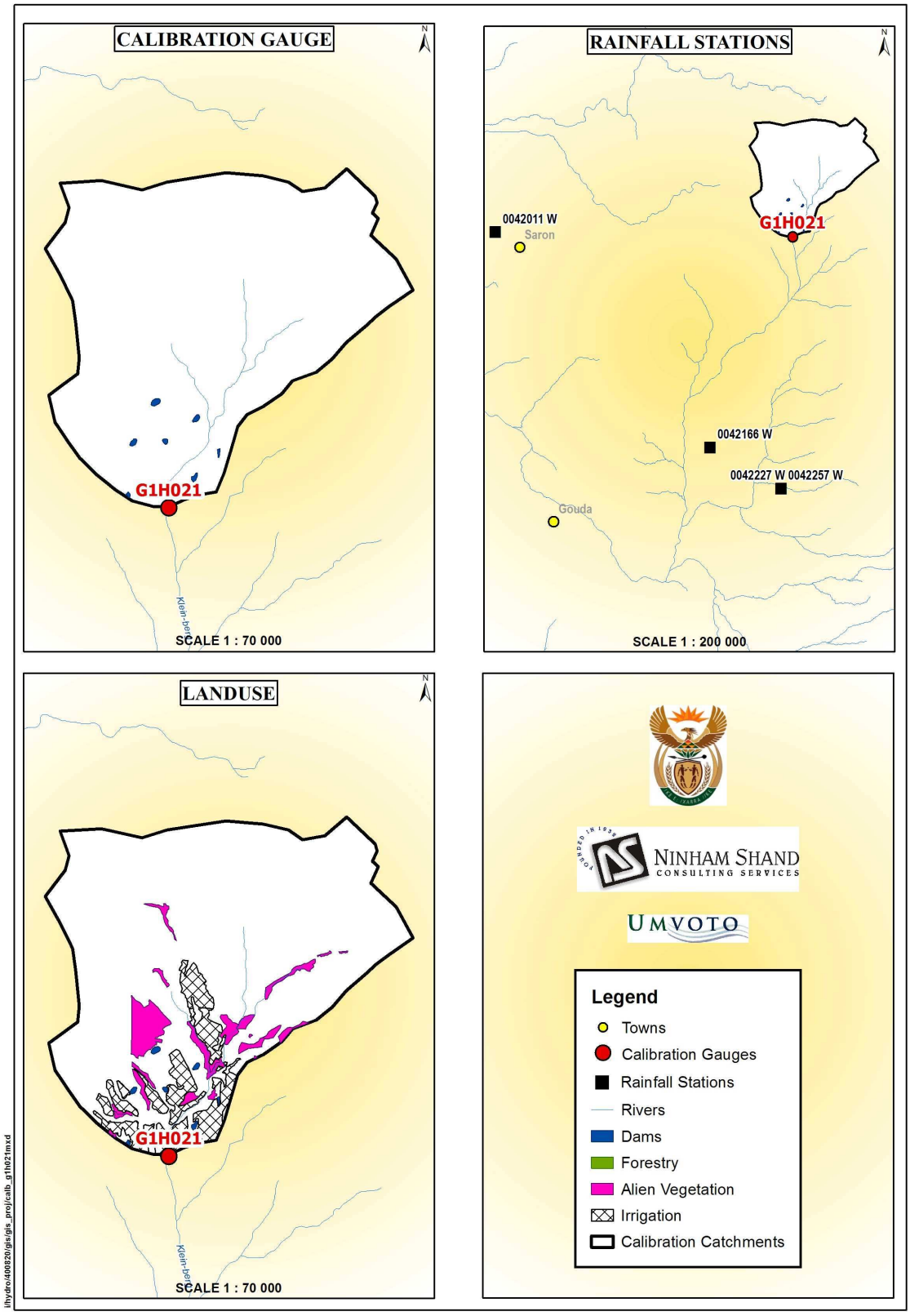


Figure 5.22: G1H021 Subcatchment hydrology information

5.8.2 Model configuration

Figure 5.23 shows the model configuration for subcatchment G1H021. There are no imports into or exports from the catchment. The total groundwater contribution to baseflow in the GRDM in this catchment is estimated to be 0.3 Mm^3/a and was added to the system according to the same percentage split of catchment runoff, respectively, to farm dams and to the river. Winter filling of farm dams was taken into consideration.

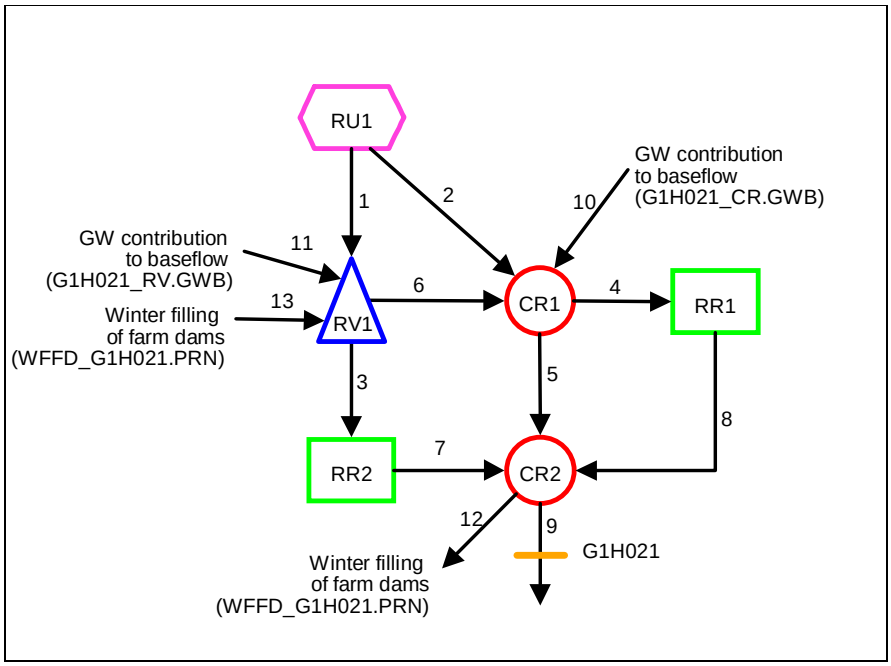


Figure 5.23: G1H021 Subcatchment Configuration

5.8.3 Evaluation and preparation of flow sequences

A detailed assessment of the flow gauges in the Berg catchment was made and is documented in *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models. Report No. 3: The Assessment of Flow Gauging Stations* (DWAF, 2007c). The patched observed flows at G1H021 were simulated for the period 1975-2004. The patched observed flow record for G1H021 is shown in Appendix C8.

5.8.4 Calibration (1975 - 2004)

Details of the rainfall stations used to generate catchment rainfall for G1H021 are shown in Table 5.38. The updated MAP for this catchment is estimated to be 1200 mm compared to 1134 mm in the WCSA (DWAF, 1993). The updated MAP is slightly higher than the MAP used in the WCSA and results in an acceptable calibration in this catchment. In the WCSA, subcatchment G1H021 was modelled as part of subcatchment G1H008 because there were only four years of reliable data available on which to calibrate. There are now an additional 16 years of data on which to calibrate and subcatchment G1H021 is modelled on its own and forms part of the incremental flows to G1H008 downstream.

Table 5.38: Rainfall stations for calibration at G1H021

RAINFALL STATION NUMBER	MAP	PERIOD OF RECORD	RECORD LENGTH
042011w	444	1964-1978	14
042166w	537	1927-1950	23
042227w	474	1927-2004	77
042257w	474	1961-2004	43

The WCSA (DWAF, 1993) Pitman parameters for subcatchment G1H008 were used during the initial model calibration. These parameters were then improved until an acceptable fit between the observed and simulated stream flow data was obtained. The final Pitman parameters are shown in Table 5.39 and Table 5.40 displays the patched observed and simulated statistics for G1H021. Graphs showing monthly, annual and mean monthly flows as well as a cumulative frequency plot for each calibration are also included in Figure 5.24.

Table 5.39: G1H021 Final Pitman Parameters

POW	SL	ST	FT	GW	ZMIN	ZMAX	PI	TL	GL	R
2	0	100	65	0	0	175	1.5	0.99	0	0

Table 5.40: G1H021 Calibration Results (Statistical Indices)

	OBSERVED	SIMULATED	DIFFERENCE (%)
MAR (Mm3)	15.07	14.95	-0.8%
Mean (Log)	1.15	1.15	0.0%
Std Dev	5.77	4.52	-21.7%
Std Dev (Log)	0.17	0.14	-17.6%
Seasonal Index	31.56	30.60	-3.0%

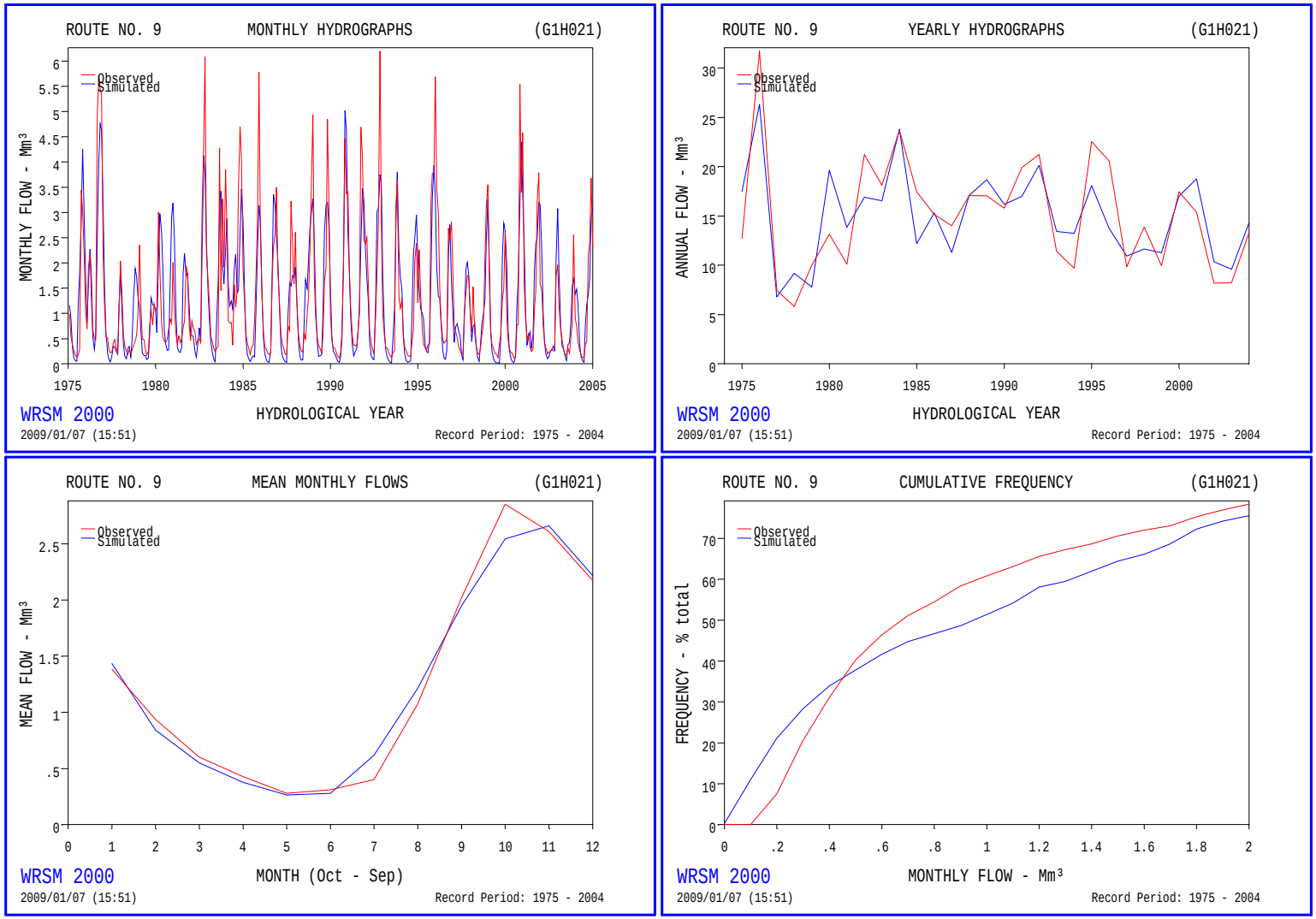


Figure 5.24: G1H021 Calibration Results (Graphical Comparison)

5.9 G1H002/G1H028: Twenty Four Rivers at Driebosch

5.9.1 Subcatchment data

Land use in the Berg catchment has been documented in a separate report entitled *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models: Report 4 (Land Use and Water Requirements): Volume 1 (Data in Support of Catchment Modelling)* (DWAF, 2007d). Table 5.41 presents a summary of the catchment data for the subcatchment G1H028 and detailed information are summarised in Table 5.42. Figure 5.25 shows detailed maps of the catchment.

Table 5.41: Summary of information for G1H028

G1H028 + G1H058	
Subcatchment area from GIS (km^2)	185.2
Above farm dams	0.0
Below farm dams	185.2
Forestry area (km^2)	0.0
Alien vegetation condensed area (km^2)	0.9
Irrigation Area (km^2)	0.2
From farm dams	0.0
From river	0.2
Farm dams: Area (km^2) / Volume (Mm^3)	0.0 / 0.0
Subcatchment MAP (mm)	1278
Total GW contribution to baseflow	2.7
Calibration period (Hydrological years)	1971 - 2004
Observed MAR for calibration periodMm^3/a	125.5
Patched observed MAR for calibration periodMm^3/a	130.6
Simulated MAR for calibration period Mm^3/a	130.6
Naturalised MAR (1927-2004) (Mm^3)	128.3
Naturalised MAR including GW baseflow (1927-2004) (Mm^3)	131.0
Runoff coefficient	55.3%

Table 5.42: Detailed catchment information for G1H028

APPENDIX	CONTENTS	FORMAT
A9	Hydrological information for model calibration	Table
B8	Catchment Rainfall File	Monthly time series
C12	Patched observed flow record (G1H028)	Monthly time series
D9	Naturalised flow sequence	Monthly time series

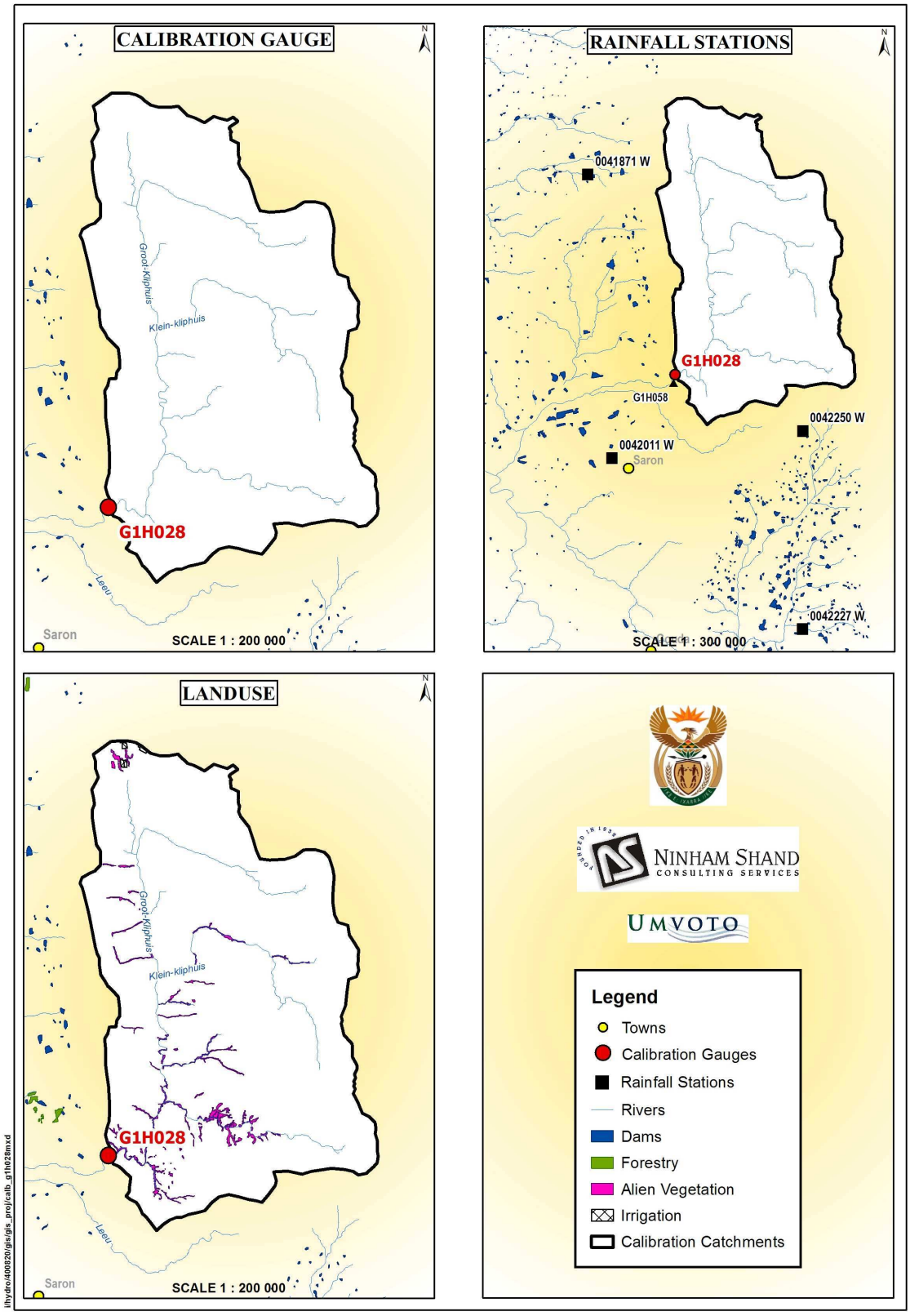


Figure 5.25: G1H028 Subcatchment hydrology information

5.9.2 Model configuration

Figure 5.47 shows the model configuration for subcatchment G1H028. There is a diversion canal from the Twenty Four Rivers catchment to Voëlvlei which diverts flow upstream of the flow gauging station at G1H028 and is measured at G1H058. This gauge however, has a low accuracy rating (DWAF, 1993). In order to patch the observed flows from this catchment, it was necessary to add back the diverted flow record, despite the known inaccuracies. This composite record was then patched using two other gauges from hydrologically similar catchments. Due to the poor accuracy rating associated with the diversion record, the monthly flows at G1H058 were estimated from the inflow record to Voëlvlei which is measured at G1H067. This is the combined volume of flows diverted from the Twenty Four Rivers catchment and the Leeu catchment less the abstraction made from the canal to the Twenty Four Rivers Irrigation Board, i.e. G1H067 – G1H059 – Twenty Four Rivers IB abstraction (estimated). The resultant record was subtracted from the combined patched record in order to calculate the incremental flows at downstream gauge G1H013. The total groundwater contribution to baseflow in the GRDM in this catchment is estimated to be 2.7 Mm^3/a.

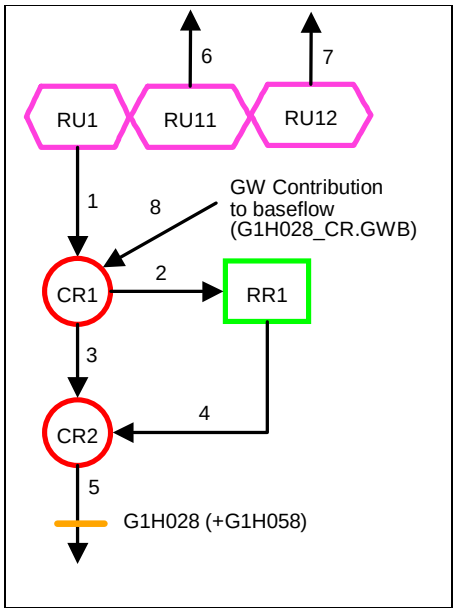


Figure 5.26: G1H028 Subcatchment Configuration

5.9.3 Evaluation and preparation of flow sequences

A detailed assessment of the flow gauges in the Berg catchment was made and is documented in *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models. Report No. 3: The Assessment of Flow Gauging Stations* (DWAF, 2007c). The patched observed flows at G1H028 were simulated for the period 1971-2004 and are included in Appendix C9.

5.9.4 Calibration (1971 - 2004)

Details of the rainfall stations used to generate catchment rainfall for G1H028 are shown in Table 5.43. The updated MAP for this catchment is estimated to be 998 mm compared to 1285 mm in the WCSA (DWAF, 1993). The updated MAP is lower than the MAP used in the WCSA, but produces an acceptable calibration in this catchment.

Table 5.43: Rainfall stations for calibration at G1H028

RAINFALL STATION NUMBER	MAP	PERIOD OF RECORD	RECORD LENGTH
041871w	496	1958-2004	46
042011w	444	1964-1978	14
042227w	474	1927-2004	77
042250w	1127	1984-2004	20

The WCSA (DWAF, 1993) Pitman parameters were used during initial model calibration. These parameters were then improved until an acceptable fit between the observed and simulated stream flow data was obtained. The final Pitman parameters are shown in Table 5.44 and Table 5.45 displays the patched observed and simulated statistics for G1H028. Graphs showing monthly, annual and mean monthly flows as well as a cumulative frequency plot for each calibration are also included in Figure 5.27.

Table 5.44: G1H028 Final Pitman Parameters

POW	SL	ST	FT	GW	ZMIN	ZMAX	PI	TL	GL	R
1	0	215	40	0	0	450	1.5	0.4	0	0

Table 5.45: G1H028 Calibration Results (Statistical Indices)

	OBSERVED	SIMULATED	DIFFERENCE (%)
MAR (Mm3)	130.55	130.61	0.0%
Mean (Log)	2.09	2.09	0.0%
Std Dev	42.91	42.25	-1.5%
Std Dev (Log)	0.14	0.14	0.0%
Seasonal Index	32.55	33.91	4.2%

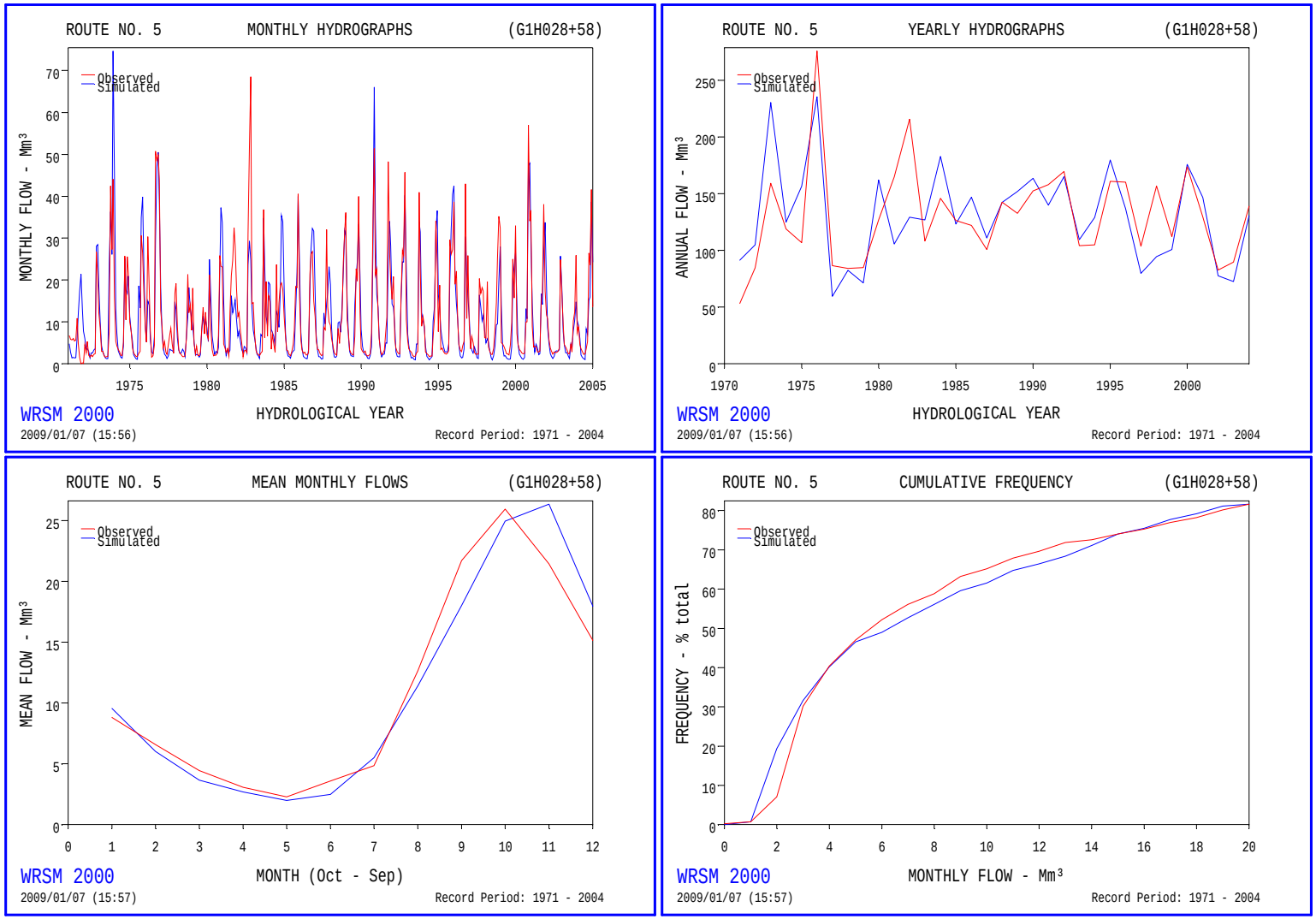


Figure 5.27: G1H028 Calibration Results (Graphical Comparison)

5.10 G1H029: Leeu River at De Hoek Estates

5.10.1 Subcatchment data

Land use in the Berg catchment has been documented in a separate report entitled *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models: Report 4 (Land Use and Water Requirements): Volume 1 (Data in Support of Catchment Modelling)* (DWAF, 2007d). Table 5.6 presents a summary of the catchment data for the subcatchment G1H029 and detailed information are summarised in Table 5.47. Figure 5.28 shows detailed maps of the catchment.

Table 5.46: Summary of information for G1H029

G1H029	
Subcatchment area from GIS (km^2)	36.2
Above farm dams	0.0
Below farm dams	36.2
Forestry area (km^2)	0.0
Alien vegetation condensed area (km^2)	0.1
Irrigation Area (km^2)	0.3
From farm dams	0.0
From river	0.3
Farm dams: Area (km^2) / Volume (Mm^3)	0.01 / 0.02
Subcatchment MAP (mm)	1138
Total GW contribution to baseflow	0.2
Calibration period (Hydrological years)	1975 - 2004
Observed MAR for calibration periodMm^3/a	17.8
Patched observed MAR for calibration periodMm^3/a	18.9
Simulated MAR for calibration period Mm^3/a	18.9
Naturalised MAR (1927-2004) (Mm^3)	21.2
Naturalised MAR including GW baseflow (1927-2004) (Mm^3)	21.4
Runoff coefficient	52.0%

Table 5.47: Detailed catchment information for G1H029

APPENDIX	CONTENTS	FORMAT
A10	Hydrological information for model calibration	Table
B9	Catchment Rainfall File	Monthly time series
C13	Patched observed flow record (G1H029)	Monthly time series
D10	Naturalised flow sequence	Monthly time series

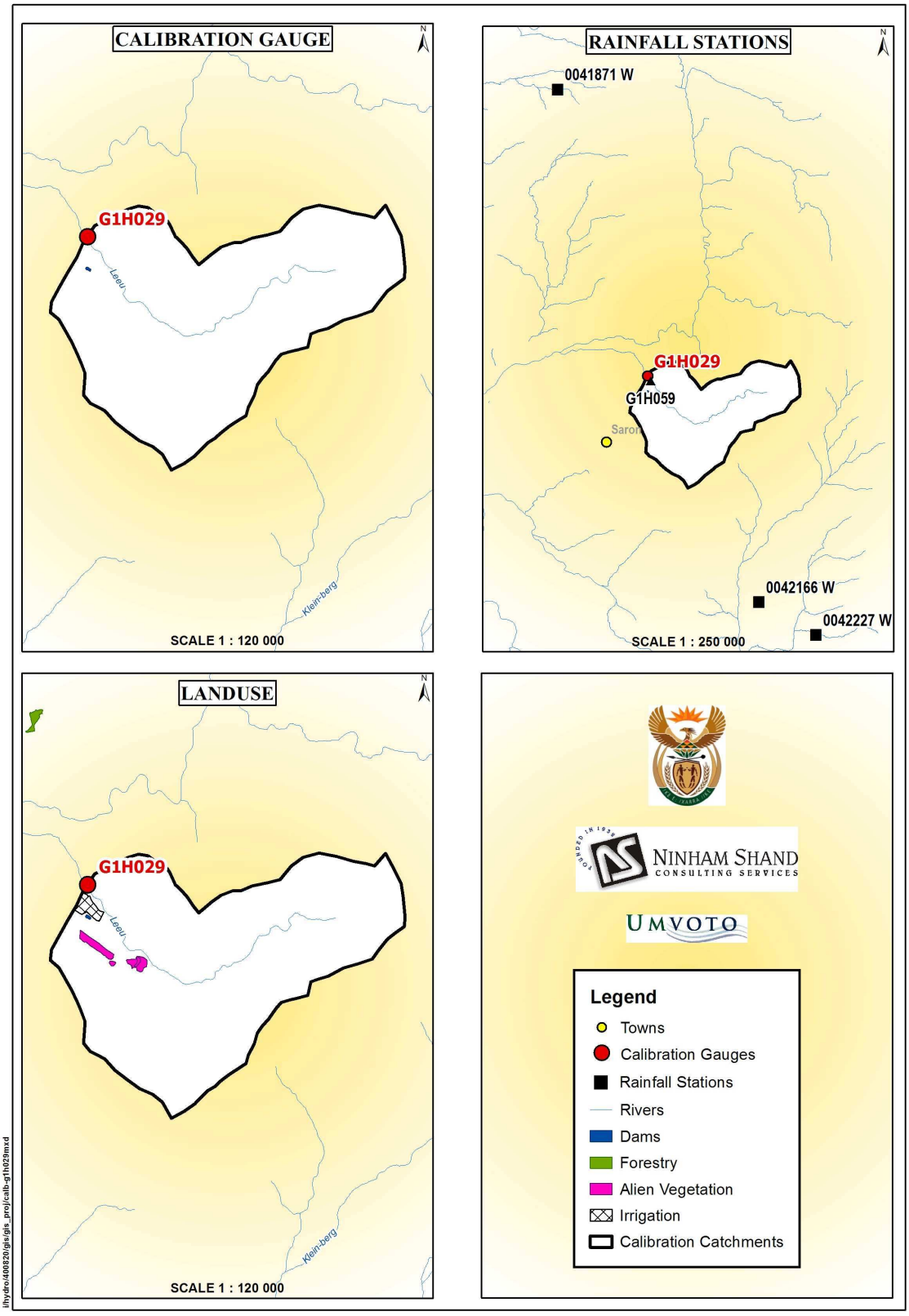


Figure 5.28: G1H029 Subcatchment hydrology information

5.10.2 Model configuration

Figure 5.29 shows the model configuration for subcatchment G1H029. There is a municipal demand by the Saron Municipality and De Hoek Estates from the river and the return flows from De Hoek Estates are added back upstream of the flow gauge. There is a diversion from this catchment to Voëlvlei which is gauged at G1H059, upstream of G1H029. For the purposes of calibration, the diverted flows were added back to the observed flows. The total groundwater contribution to baseflow in the GRDM in this catchment is estimated to be 0.2 Mm^3/a.

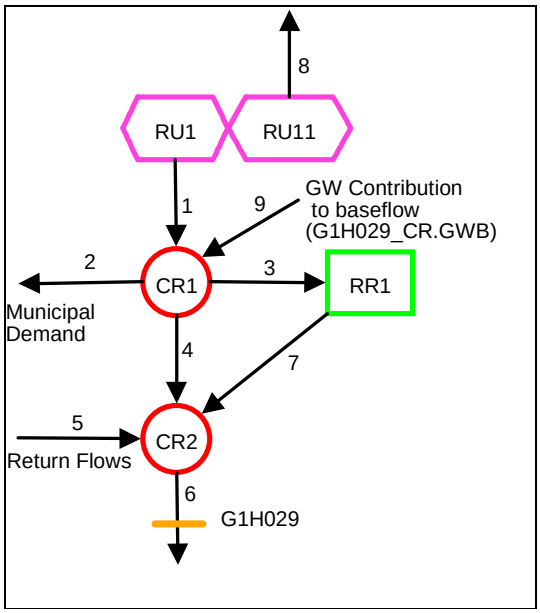


Figure 5.29: G1H029 Subcatchment Configuration

5.10.3 Evaluation and preparation of flow sequences

A detailed assessment of the flow gauges in the Berg catchment was made and is documented in *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models. Report No. 3: The Assessment of Flow Gauging Stations* (DWAF, 2007c). The patched observed flows at G1H029 were simulated for the period 1975-2004 and are included in Appendix C10.

5.10.4 Calibration (1975 - 2004)

Details of the rainfall stations used to generate catchment rainfall for G1H029 are shown in Table 5.48. The updated MAP for this catchment is estimated to be 1138 mm compared to 997 mm in the WCSA (DWAF, 1993). The updated MAP is higher than the MAP used in the WCSA and produces an acceptable calibration in this catchment.

Table 5.48: Rainfall stations for calibration at G1H029

RAINFALL STATION NUMBER	MAP	PERIOD OF RECORD	RECORD LENGTH
041871w	496	1958-2004	46
042166w	537	1927-1950	23
042227w	474	1927-2004	77

The WCSA (DWAF, 1993) Pitman parameters were used during initial model calibration. These parameters were then improved until an acceptable fit between the observed and simulated stream flow data was obtained. The final Pitman parameters are shown in Table 5.49 and

Table 5.50 displays the patched observed and simulated statistics for G1H029. Graphs showing monthly, annual and mean monthly flows as well as a cumulative frequency plot for each calibration are also included in Figure 5.30.

Table 5.49: G1H029 Final Pitman Parameters

POW	SL	ST	FT	GW	ZMIN	ZMAX	PI	TL	GL	R
2	0	180	40	0	0	340	1.5	0.25	0	0

Table 5.50: G1H029 Calibration Results (Statistical Indices)

	OBSERVED	SIMULATED	DIFFERENCE (%)
MAR (Mm3)	18.9	18.85	-0.3%
Mean (Log)	1.25	1.25	0.0%
Std Dev	7.08	6.64	-6.2%
Std Dev (Log)	0.17	0.17	0.0%
Seasonal Index	39.19	41.3	5.4%

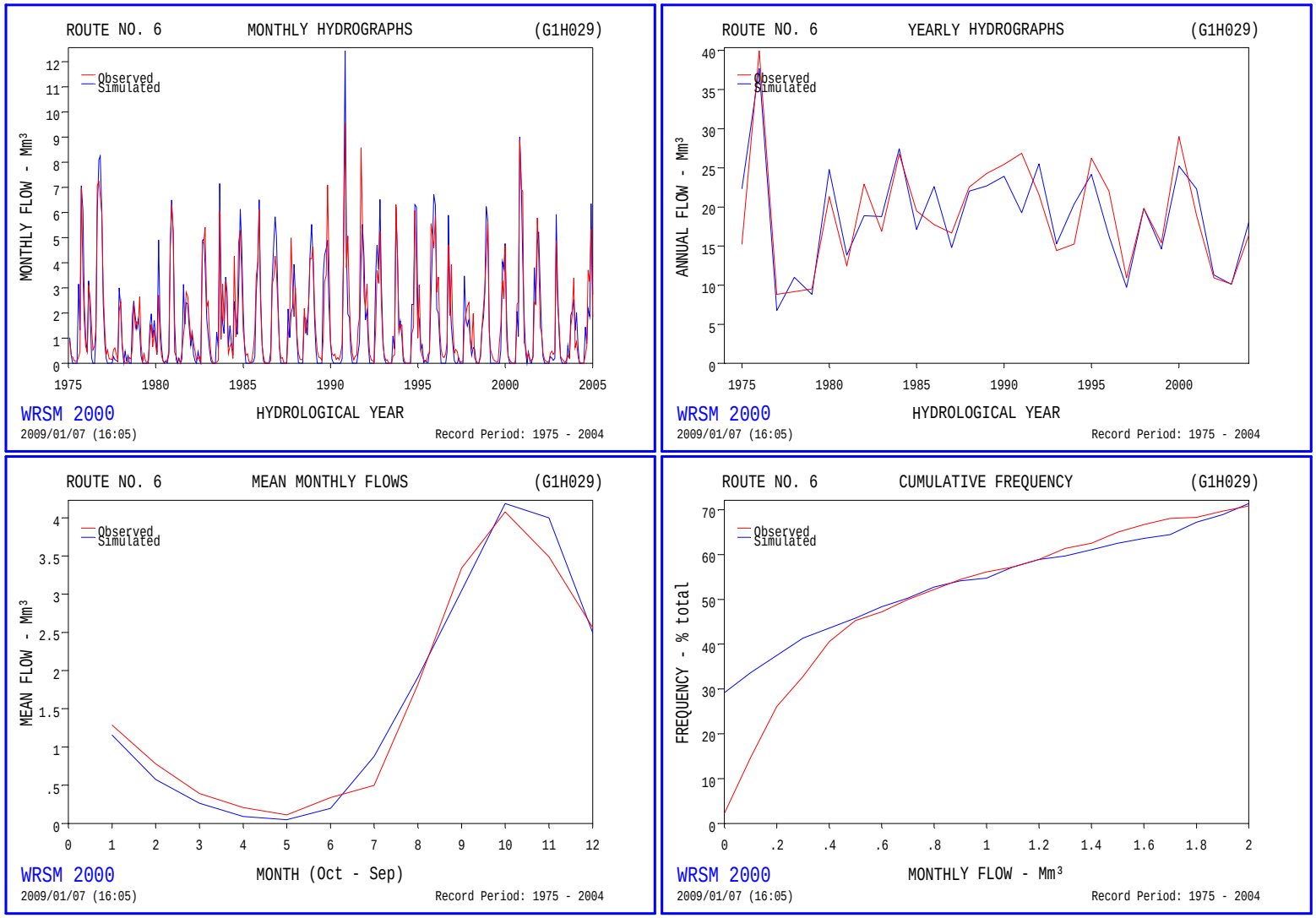


Figure 5.30: G1H029 Calibration Results (Graphical Comparison)

5.11 G1H035: Matjies River at Matjiesfontein

5.11.1 Subcatchment data

Land use in the Berg catchment has been documented in a separate report entitled *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models: Report 4 (Land Use and Water Requirements): Volume 1 (Data in Support of Catchment Modelling)* (DWAF, 2007d). Table 5.51 presents a summary of the catchment data for the subcatchment G1H035 and detailed information are summarised in Table 5.52. Figure 5.31 shows detailed maps of the catchment.

Table 5.51: Summary of information for G1H035

G1H035	
Subcatchment area from GIS (km^2)	674.2
Above farm dams	84.6
Below farm dams	589.7
Forestry area (km^2)	3.4
Alien vegetation condensed area (km^2)	1.8
Irrigation Area (km^2)	11.9
From farm dams	7.5
From river	4.4
Farm dams: Area (km^2) / Volume (Mm^3)	2.4 / 5.6
Subcatchment MAP (mm)	404
Total GW contribution to baseflow	3.5
Calibration period (Hydrological years)	1975 - 1997
Observed MAR for calibration periodMm^3/a	29.7
Patched observed MAR for calibration periodMm^3/a	31.6
Simulated MAR for calibration period Mm^3/a	31.7
Naturalised MAR (1927-2004) (Mm^3)	29.2
Naturalised MAR including GW baseflow (1927-2004) (Mm^3)	32.8
Runoff coefficient	12.0%

Table 5.52: Detailed catchment information for G1H035

APPENDIX	CONTENTS	FORMAT
A11	Hydrological information for model calibration	Table
B10	Catchment Rainfall File	Monthly time series
C14	Patched observed flow record (G1H035)	Monthly time series
D11	Naturalised flow sequence	Monthly time series

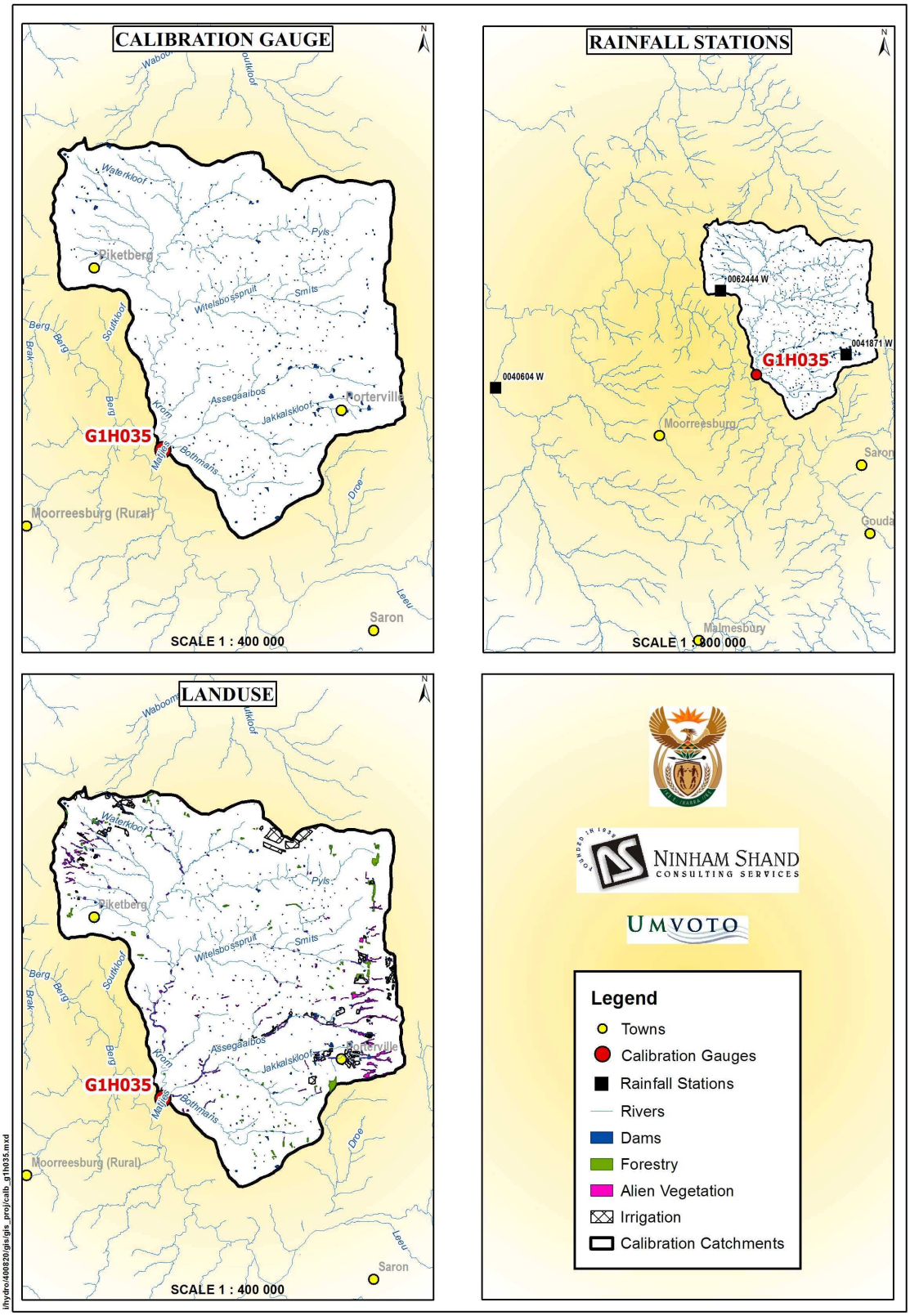


Figure 5.31: G1H035 Subcatchment hydrology information

5.11.2 Model configuration

Figure 5.32 shows the model configuration for subcatchment G1H035. There are no imports into or exports from the subcatchment. The total groundwater contribution to baseflow in the GRDM in this catchment is estimated to be 3.5 Mm^3/a. Winter filling of farm dams is taken into consideration.

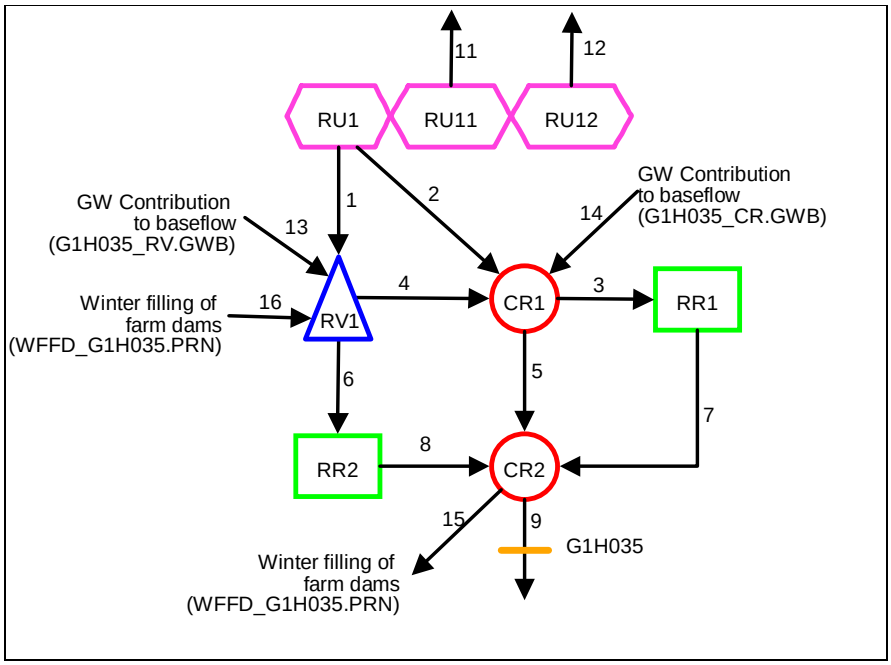


Figure 5.32: G1H035 Subcatchment Configuration

5.11.3 Evaluation and preparation of flow sequences

A detailed assessment of the flow gauges in the Berg catchment was made and is documented in *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models. Report No. 3: The Assessment of Flow Gauging Stations* (DWAF, 2007c). The patched observed flows at G1H035 were simulated for the period 1975-1997 and are included in Appendix C11.

5.11.4 Calibration (1975 - 1997)

Details of the rainfall stations used to generate catchment rainfall for G1H035 are shown in Table 5.53. The updated MAP for this catchment is estimated to be 404 mm compared to 410 mm in the WCSA (DWAF, 1993). There is very little difference between the updated MAP and the MAP used in the WCSA.

Table 5.53: Rainfall stations for calibration at G1H035

RAINFALL STATION NUMBER	MAP	PERIOD OF RECORD	RECORD LENGTH
040604w	318	1927-2004	77
041871w	496	1958-2004	46
062444w	444	1927-2004	77

The WCSA (DWAF, 1993) Pitman parameters were used during initial model calibration. These parameters were then improved until an acceptable fit between the observed and simulated stream flow data was obtained. The final Pitman parameters are shown in Table 5.54 and

Table 5.55 displays the patched observed and simulated statistics for G1H035. Graphs showing monthly, annual and mean monthly flows as well as a cumulative frequency plot for each calibration are also included in Figure 5.33.

Table 5.54: G1H035 Final Pitman Parameters

POW	SL	ST	FT	GW	ZMIN	ZMAX	PI	TL	GL	R
2	0	195	10	0	30	350	1.5	0	0	0

Table 5.55: G1H035 Calibration Results (Statistical Indices)

	OBSERVED	SIMULATED	DIFFERENCE (%)
MAR (Mm3)	31.58	31.74	0.5%
Mean (Log)	1.39	1.44	3.6%
Std Dev	21.92	18.75	-14.5%
Std Dev (Log)	0.35	0.25	-28.6%
Seasonal Index	49.65	43.03	-13.3%

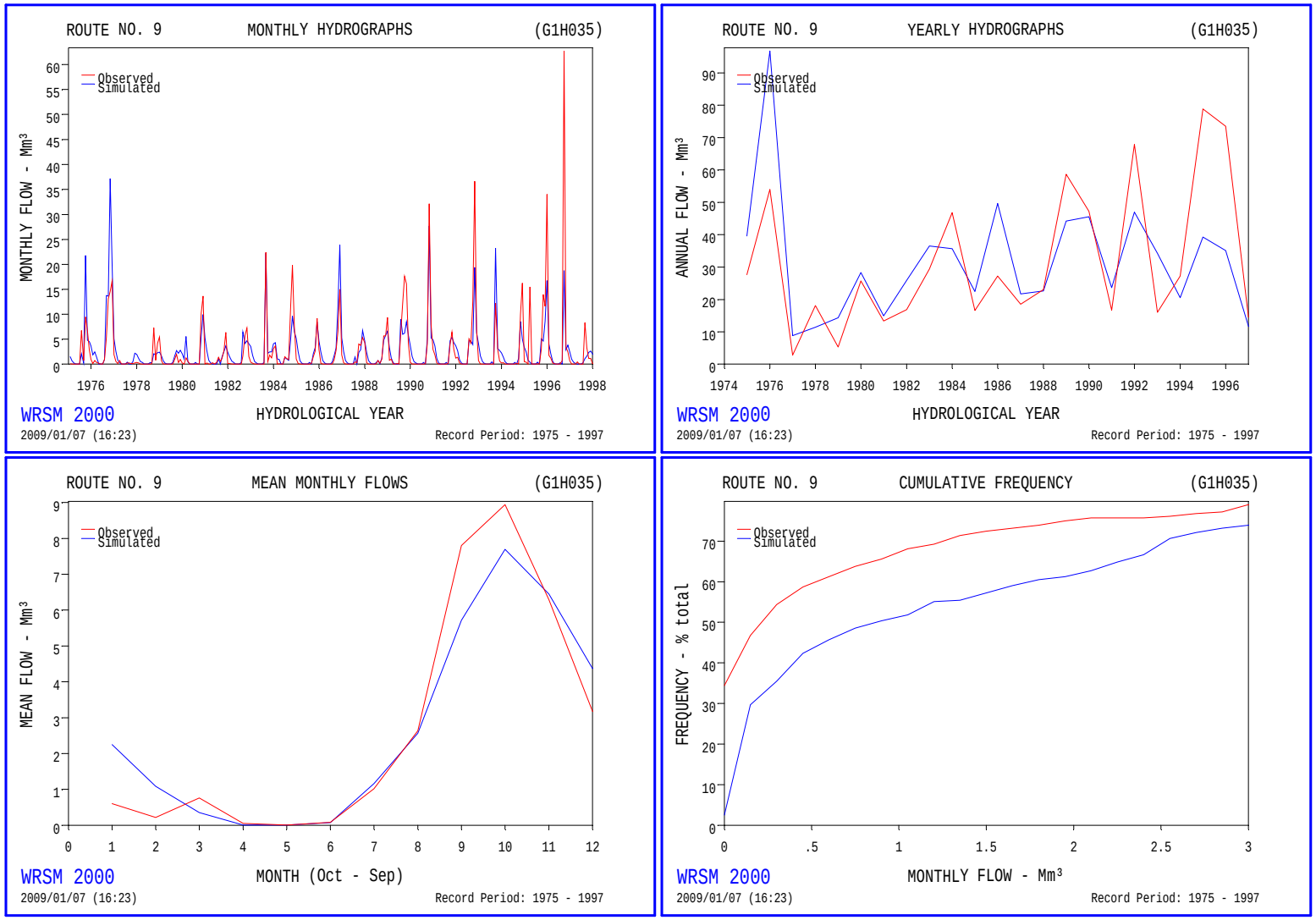


Figure 5.33: G1H035 Calibration Results (Graphical Comparison)

5.12 G1H036: Berg River at Vleesbank

5.12.1 Subcatchment data

Land use in the Berg catchment has been documented in a separate report entitled *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models: Report 4 (Land Use and Water Requirements): Volume 1 (Data in Support of Catchment Modelling)* (DWAF, 2007d). Table 5.56 presents a summary of the catchment data for the subcatchment G1H036 and detailed information are summarised in Table 5.57. Figure 5.34 shows detailed maps of the catchment.

Table 5.56: Summary of information for G1H036

G1H036	
Subcatchment area from GIS (km^2)	497.8
Above farm dams	214.7
Below farm dams	283.1
Forestry area (km^2)	4.2
Alien vegetation condensed area (km^2)	7.9
Irrigation Area (km^2)	131.9
From farm dams	51.4
From river	80.5
Farm dams: Area (km^2) / Volume (Mm^3)	7.36 / 22.37
Subcatchment MAP (mm)	642
Total GW contribution to baseflow (Mm^3/a)	3.7
Calibration period (Hydrological years)	1979 - 2004
Observed MAR for calibration period (Mm^3/a)	382.7
Patched observed MAR for calibration period (Mm^3/a)	406.4
Simulated MAR for calibration period Mm^3/av	406.2
Naturalised incremental MAR (1927-2004) (Mm^3)	58.1
Naturalised incremental MAR including GW baseflow (1927-2004) (Mm^3)	61.9
Naturalised cumulative MAR (1927-2004) (Mm^3)	435.0
Runoff coefficient	19.4%

Table 5.57: Detailed catchment information for G1H036

APPENDIX	CONTENTS	FORMAT
A12	Hydrological information for model calibration	Table
B11	Catchment Rainfall File	Monthly time series
C15	Patched observed flow record (G1H036)	Monthly time series
D12	Naturalised flow sequence	Monthly time series

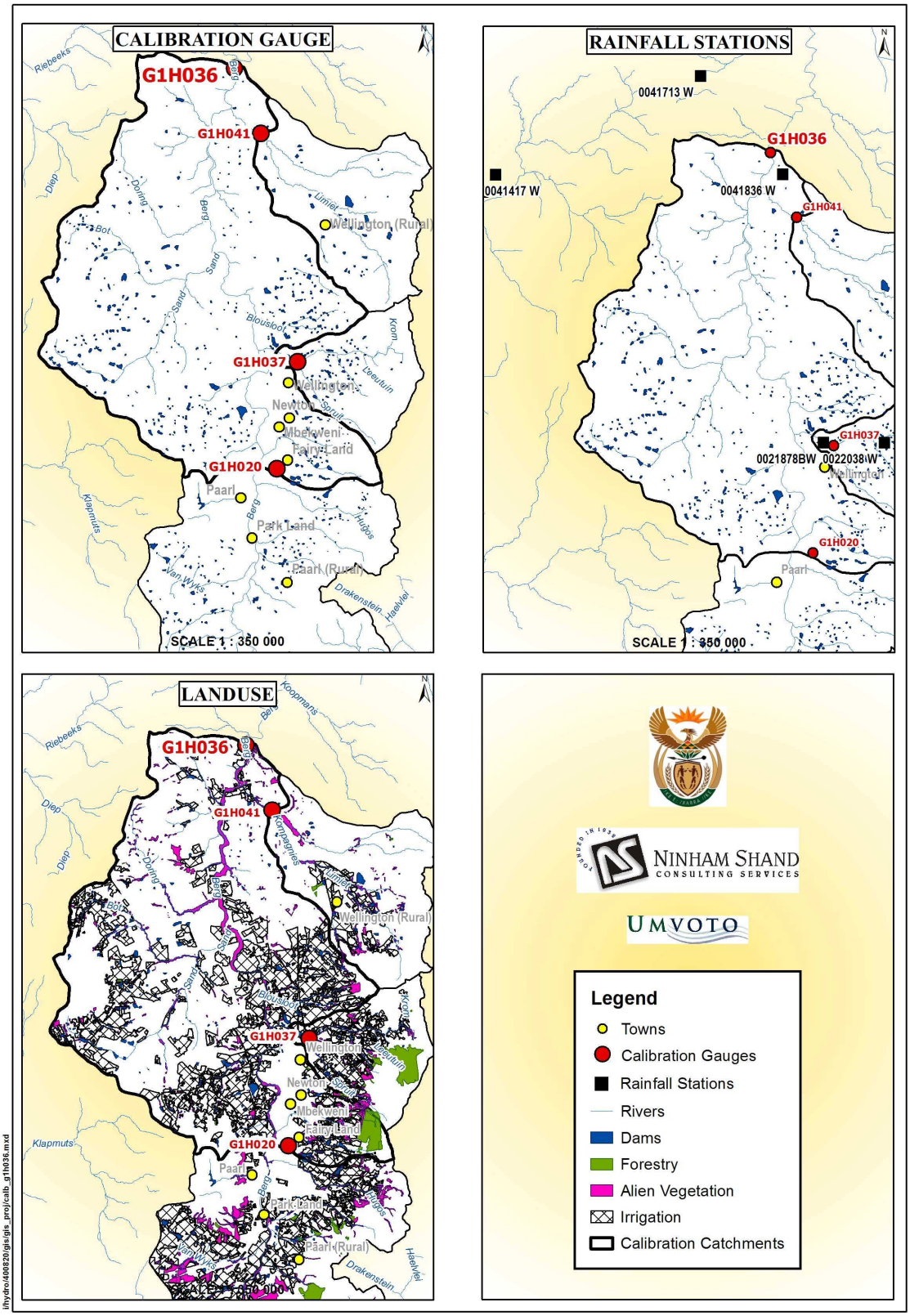


Figure 5.34: G1H036 Subcatchment hydrology information

5.12.2 Model configuration

Figure 5.35 shows the model configuration for subcatchment G1H036. An attempt was made to calibrate G1H036 incrementally as it lies downstream of the following flow gauges which have been calibrated and are presented in the preceding and following sections: G1H020, G1H037, and G1H041. However, due to the short observed record available at G1H037, as well as the incremental observed record containing many zero values, a cumulative calibration was made at this gauge using the simulated inflows of the calibrated upstream catchments.

There is an abstraction by the Perdeberg Irrigation Board directly from the river and return flows from the water treatment works are discharged upstream of the flow gauge. The total groundwater contribution to baseflow in the GRDM in this catchment is estimated to be 3.7 Mm^3/a and was added to the system according to the same percentage split of catchment runoff, respectively, to farm dams and to the river. Winter filling of farm dams was taken into consideration.

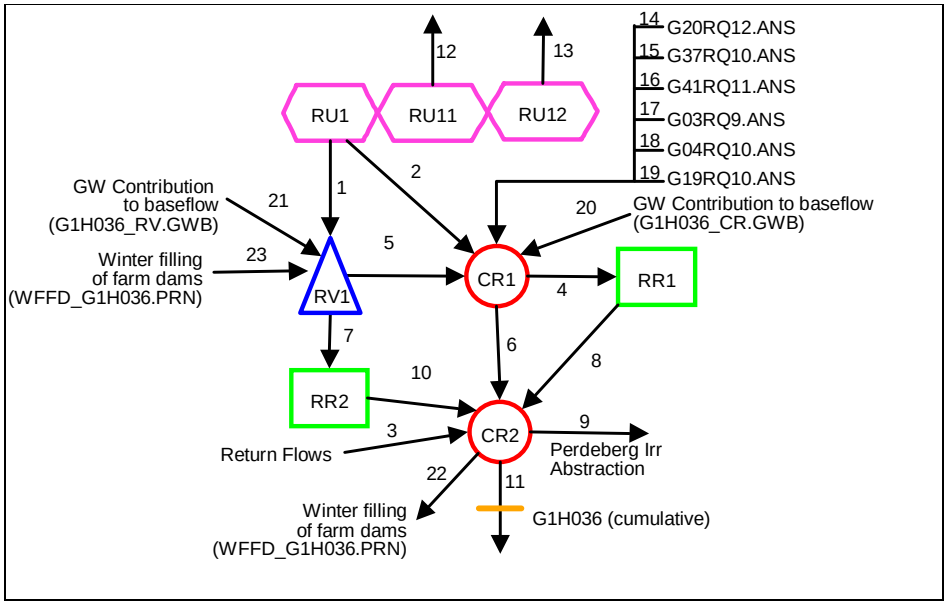


Figure 5.35: G1H036 Subcatchment Configuration

5.12.3 Evaluation and preparation of flow sequences

A detailed assessment of the flow gauges in the Berg catchment was made and is documented in *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models. Report No. 3: The Assessment of Flow Gauging Stations* (DWAF, 2007c). The cumulative observed flows at G1H036 were simulated for the period 1979-2004. The patched observed flow record for G1H036 is shown in Appendix C12.

5.12.4 Calibration (1979 - 2004)

Details of the rainfall stations used to generate catchment rainfall for G1H036 are shown in Table 5.58. The updated MAP for this catchment is estimated to be 642 mm compared to 574 mm in the WCSA (DWAF, 1993). The updated MAP is higher than the MAP used in the WCSA and results in an acceptable calibration in this catchment.

Table 5.58: Rainfall stations for calibration at G1H036

RAINFALL STATION NUMBER	MAP	PERIOD OF RECORD	RECORD LENGTH
021878w	628	1963-1987	24
022038w	763	1927-2004	77
041417w	463	1927-2000	73
041713w	663	1937-1982	45
041836w	465	1941-1978	37

The WCSA (DWAF, 1993) Pitman parameters were used during initial model calibration. These parameters were then improved until an acceptable fit between the observed and simulated stream flow data was obtained. The final Pitman parameters are shown in Table 5.59 and Table 5.60 displays the patched observed and simulated statistics for G1H036. Graphs showing monthly, annual and mean monthly flows as well as a cumulative frequency plot for each calibration are also included in Figure 5.36.

Table 5.59: G1H036 Final Pitman Parameters

POW	SL	ST	FT	GW	ZMIN	ZMAX	PI	TL	GL	R
2	0	315	25	0	50	650	1.5	0	0	0

Table 5.60: G1H036 Calibration Results (Statistical Indices)

	OBSERVED	SIMULATED	DIFFERENCE (%)
MAR (Mm3)	406.43	407.02	0.1%
Mean (Log)	2.58	2.59	0.4%
Std Dev	142.07	132.76	-6.6%
Std Dev (Log)	0.16	0.15	-6.3%
Seasonal Index	43.43	45.73	5.3%

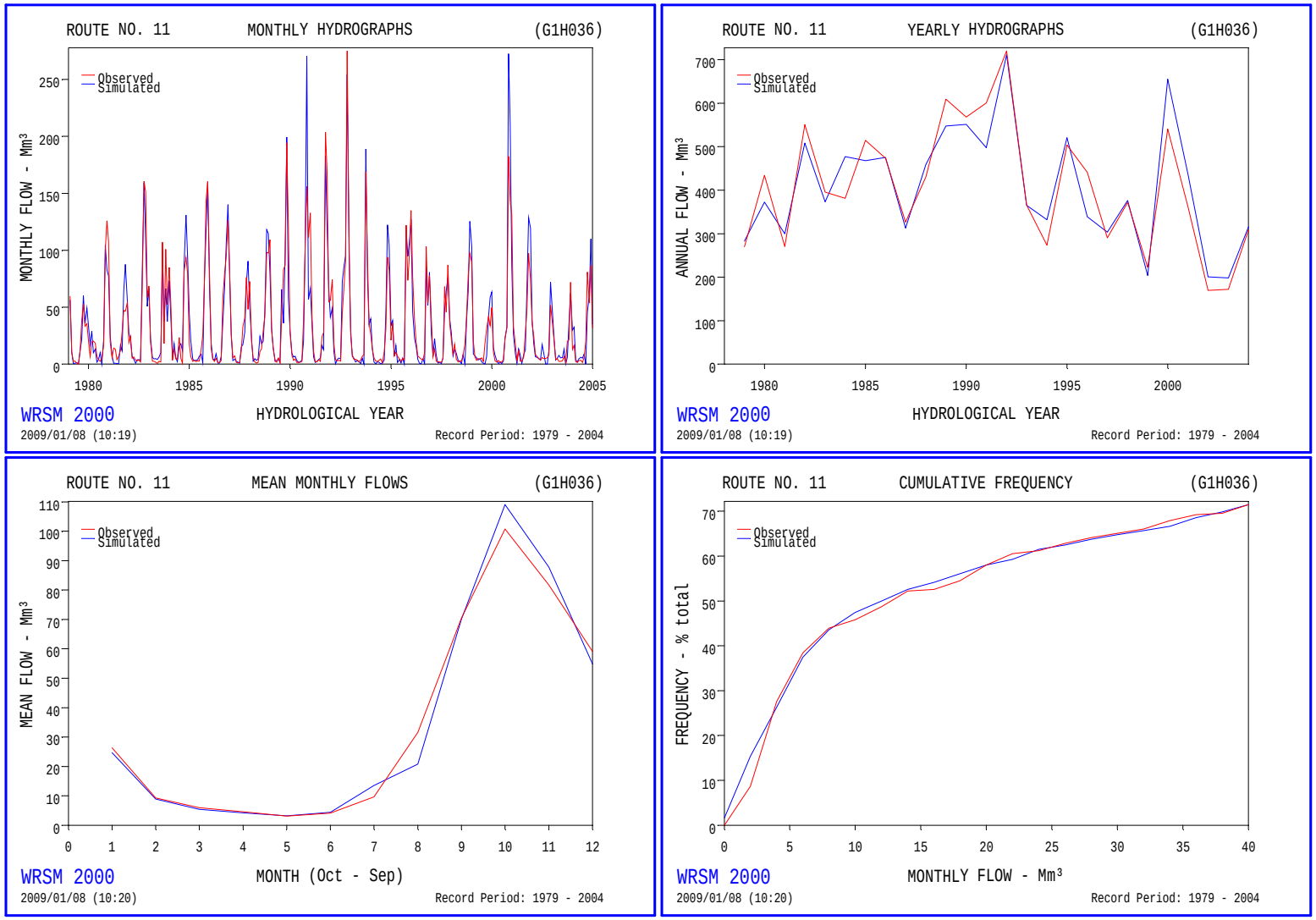


Figure 5.36: G1H036 Calibration Results (Graphical Comparison)

5.13 G1H037: Krom River at Wellington

5.13.1 Subcatchment data

Land use in the Berg catchment has been documented in a separate report entitled *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models: Report 4 (Land Use and Water Requirements): Volume 1 (Data in Support of Catchment Modelling)* (DWAF, 2007d). Table 5.61 presents a summary of the catchment data for the subcatchment G1H037 and detailed information are summarised in Table 5.62. Figure 5.37 shows detailed maps of the catchment.

Table 5.61: Summary of information for G1H037

G1H037	
Subcatchment area from GIS (km^2)	70.0
Above farm dams	43.9
Below farm dams	26.1
Forestry area (km^2)	5.3
Alien vegetation condensed area (km^2)	1.4
Irrigation Area (km^2)	19.4
From farm dams	7.6
From river	11.9
Farm dams: Area (km^2) / Volume (Mm^3)	0.84/ 2.36
Subcatchment MAP (mm)	920
Total GW contribution to baseflow	0.5
Calibration period (Hydrological years)	1978 - 1991
Observed MAR for calibration period (Mm^3/a)	22.0
Patched observed MAR for calibration period (Mm^3/a)	22.3
Simulated MAR for calibration period Mm^3/a	22.6
Naturalised MAR (1927-2004) (Mm^3)	19.0
Naturalised MAR including GW baseflow (1927-2004) (Mm^3)	19.6
Runoff coefficient	30.4%

Table 5.62: Detailed catchment information for G1H037

APPENDIX	CONTENTS	FORMAT
A13	Hydrological information for model calibration	Table
B12	Catchment Rainfall File	Monthly time series
C16	Patched observed flow record (G1H037)	Monthly time series
D13	Naturalised flow sequence	Monthly time series

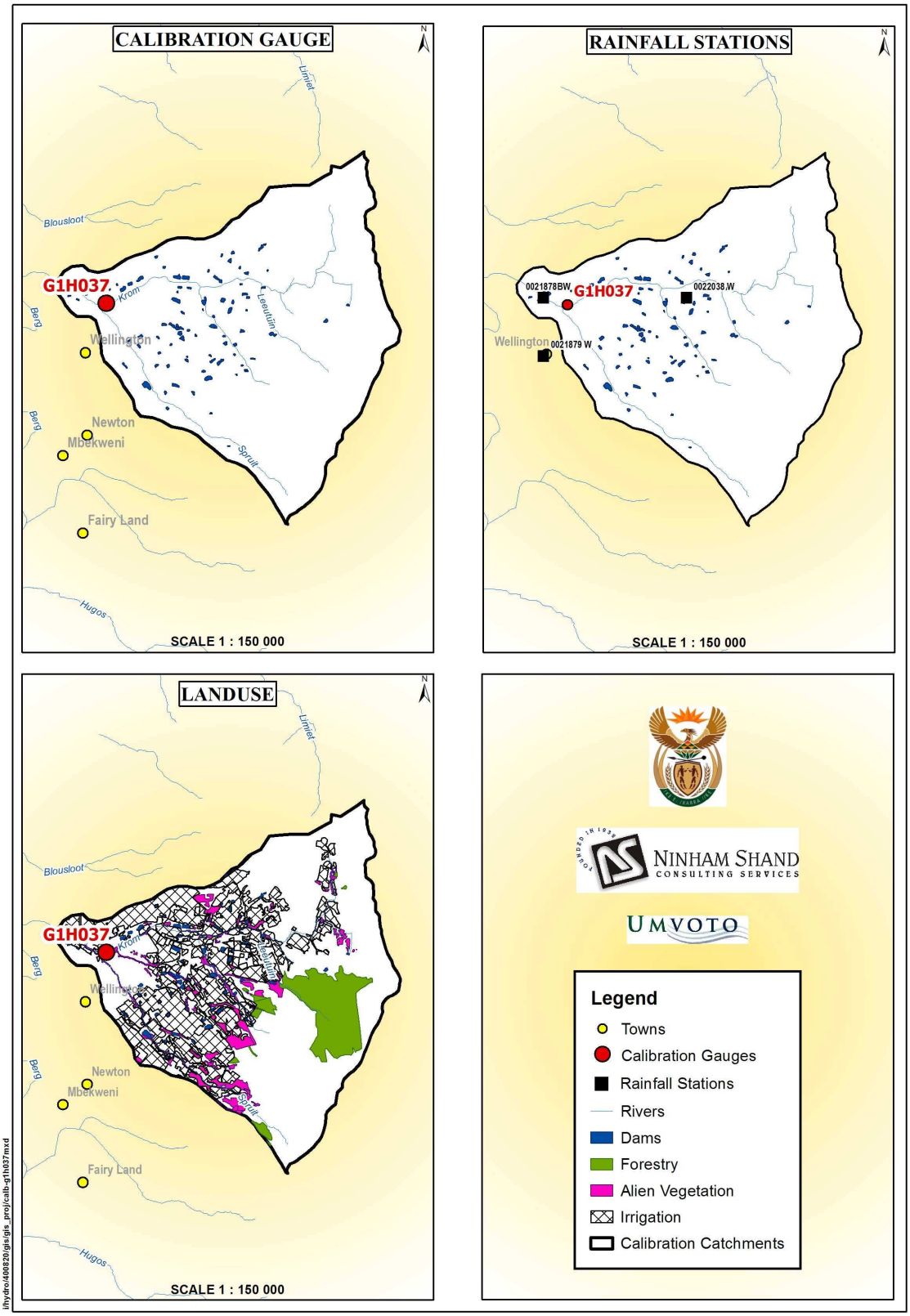


Figure 5.37: G1H037 Subcatchment hydrology information

5.13.2 Model configuration

Figure 5.38 shows the model configuration for subcatchment G1H037. There is an import of 4.9 Mm^3/a from the Wit River in the Breede River catchment which is known as "Gawie se Water". The total groundwater contribution to baseflow in the GRDM in this catchment is estimated to be 0.5 Mm^3/a and was added to the system according to the same percentage split of catchment runoff, respectively, to farm dams and to the river. Winter filling of farm dams was taken into consideration.

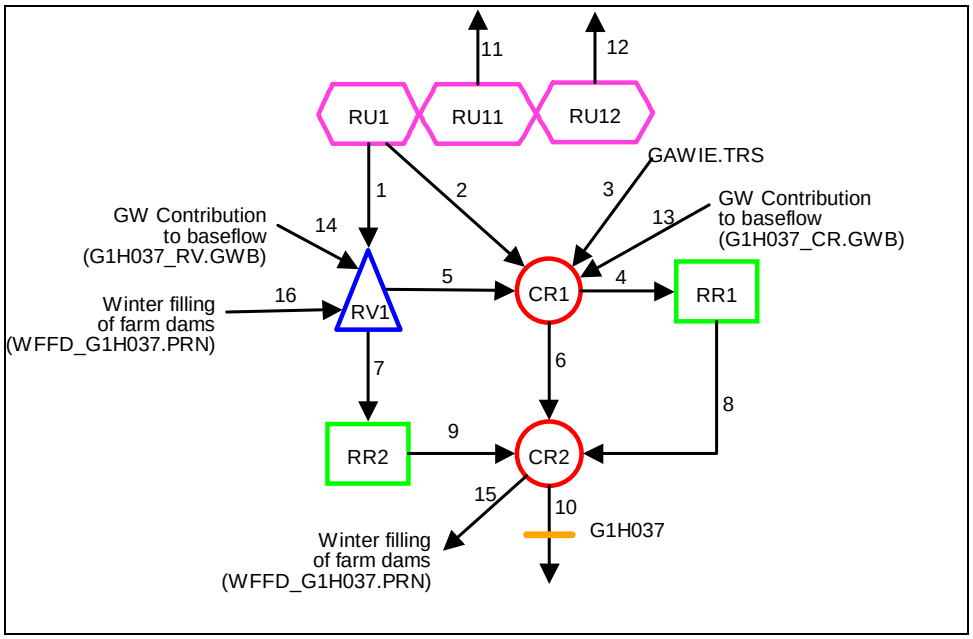


Figure 5.38: G1H037 Subcatchment Configuration

5.13.3 Evaluation and preparation of flow sequences

A detailed assessment of the flow gauges in the Berg catchment was made and is documented in *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models. Report No. 3: The Assessment of Flow Gauging Stations* (DWAF, 2007c). The observed flows at G1H037 were simulated for the period 1978-1991. The patched observed flow record for G1H037 is shown in Appendix C13.

5.13.4 Calibration (1978-1991)

Details of the rainfall stations used to generate catchment rainfall for G1H037 are shown in Table 5.8. The updated MAP for this catchment is estimated to be 920 mm compared to 939 mm in the WCSA (DWAF, 1993). The updated MAP is slightly lower than the MAP used in the WCSA and produces an acceptable calibration in this catchment.

Table 5.63: Rainfall stations for calibration at G1H037

RAINFALL STATION NUMBER	MAP	PERIOD OF RECORD	RECORD LENGTH
021878B	628	1963-1987	24
021879w	692	1987-2004	17
022038w	763	1927-2004	77

The WCSA (DWAF, 1993) Pitman parameters were used during initial model calibration. These parameters were then improved until an acceptable fit between the observed and simulated

stream flow data was obtained. The final Pitman parameters are shown in Table 5.64 and Table 5.65 displays the patched observed and simulated statistics for G1H037. Graphs showing monthly, annual and mean monthly flows as well as a cumulative frequency plot for each calibration are also included in Figure 5.39.

Table 5.64: G1H037 Final Pitman Parameters

POW	SL	ST	FT	GW	ZMIN	ZMAX	PI	TL	GL	R
2	0	350	35	0	55	600	1.5	0	0	0

Table 5.65: G1H037 Calibration Results (Statistical Indices)

	OBSERVED	SIMULATED	DIFFERENCE (%)
MAR (Mm^3)	22.33	22.59	1.2%
Mean (Log)	1.33	1.34	0.8%
Std Dev	6.19	6.10	-1.5%
Std Dev (Log)	0.13	0.13	0.0%
Seasonal Index	40.05	41.34	3.2%

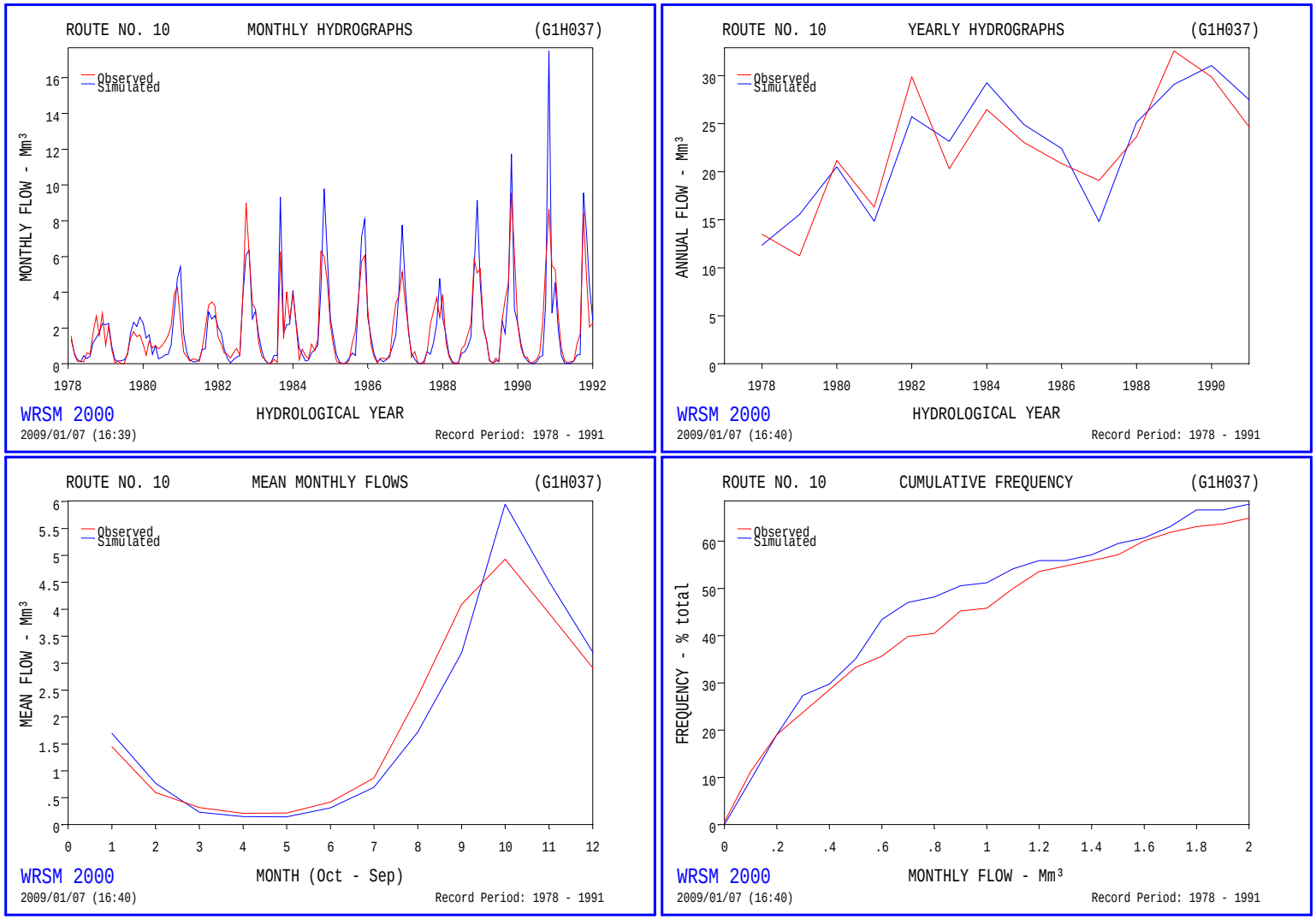


Figure 5.39: G1H037 Calibration Results (Graphical Comparison)

5.14 G1H040: Vis River at La Fontaine

5.14.1 Subcatchment data

Land use in the Berg catchment has been documented in a separate report entitled *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models: Report 4 (Land Use and Water Requirements): Volume 1 (Data in Support of Catchment Modelling)* (DWAF, 2007d). Table 5.66 presents a summary of the catchment data for the subcatchment G1H040 and detailed information are summarised in Table 5.67. Figure 5.40 shows detailed maps of the catchment.

Table 5.66: Summary of information for G1H040

G1H040	
Subcatchment area from GIS (km^2)	36.0
Above farm dams	15.5
Below farm dams	20.5
Forestry area (km^2)	0.1
Alien vegetation condensed area (km^2)	0.3
Irrigation Area (km^2)	7.7
From farm dams	4.8
From river	2.8
Farm dams: Area (km^2) Volume (Mm^3)	0.60 / 1.77
Subcatchment MAP (mm)	578
Total GW contribution to baseflow	0.3
Calibration period (Hydrological years)	1979 - 2004
Observed MAR for calibration period (Mm^3/a)	2.4
Patched observed MAR for calibration period (Mm^3/a)	2.5
Simulated MAR for calibration period Mm^3/a	2.4
Naturalised MAR (1927-2004) (Mm^3)	3.1
Naturalised MAR including GW baseflow (1927-2004) (Mm^3)	3.3
Runoff coefficient	16.1%

Table 5.67: Detailed catchment information for G1H040

APPENDIX	CONTENTS	FORMAT
A14	Hydrological information for model calibration	Table
B13	Catchment Rainfall File	Monthly time series
C17	Patched observed flow record (G1H040)	Monthly time series
D14	Naturalised flow sequence	Monthly time series

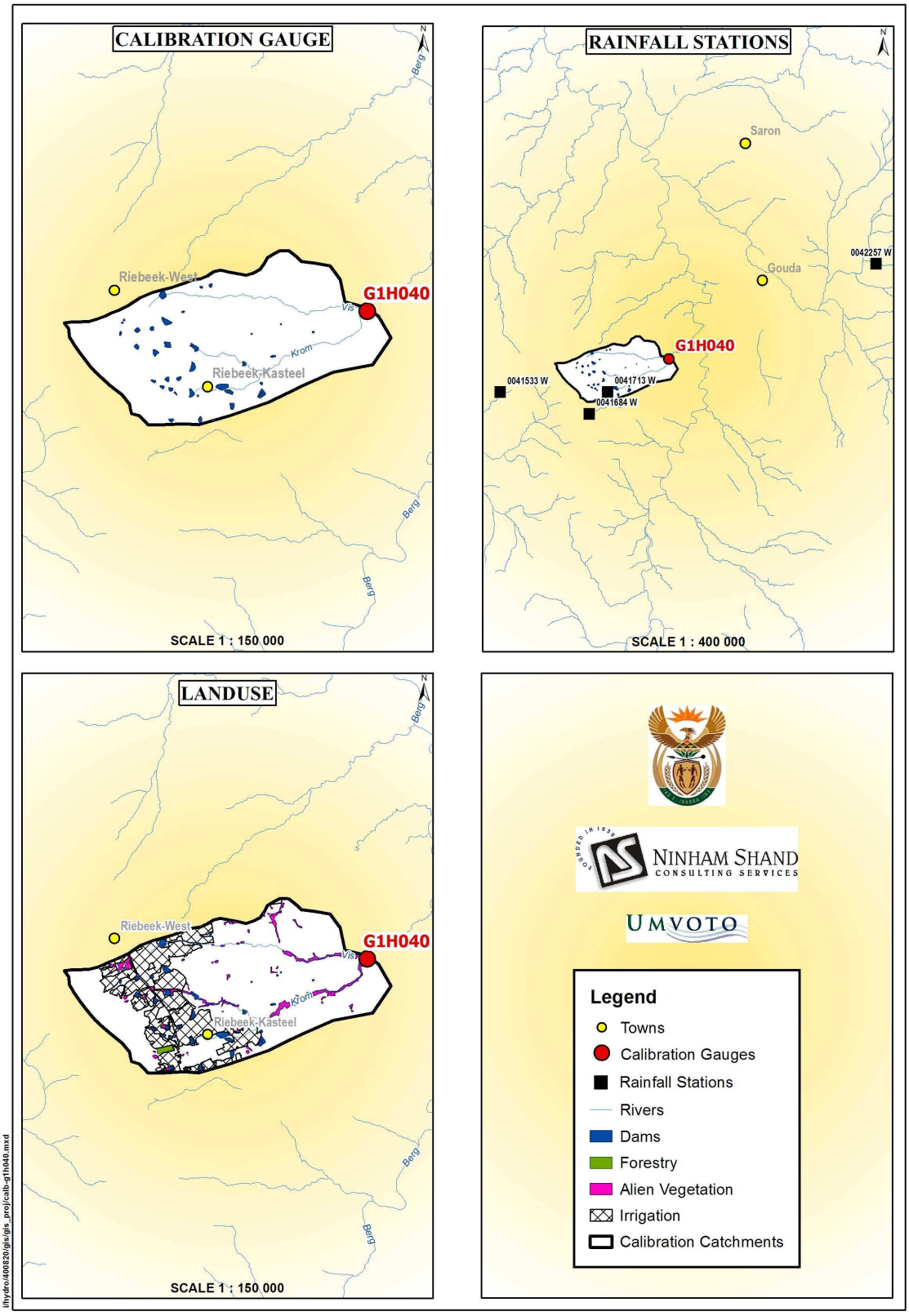


Figure 5.40: G1H040 Subcatchment hydrology information

5.14.2 Model configuration

Figure 5.41 shows the model configuration for subcatchment G1H040. There are no imports into or exports from the catchment. The total groundwater contribution to baseflow in the GRDM in this catchment is estimated to be 0.3 Mm^3/a and was added to the system according to the same percentage split of catchment runoff, respectively, to farm dams and to the river. Winter filling of farm dams was taken into consideration.

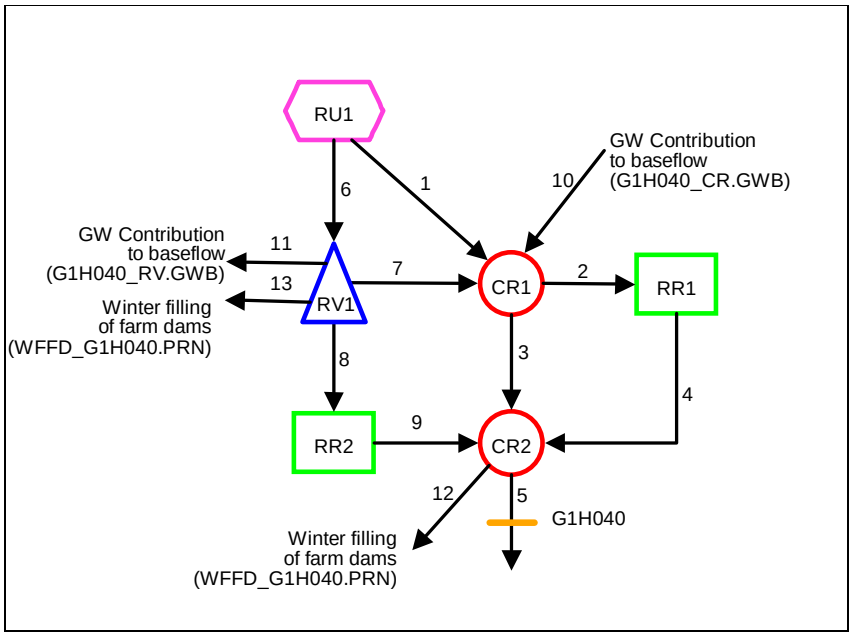


Figure 5.41: G1H040 Subcatchment Configuration

5.14.3 Evaluation and preparation of flow sequences

A detailed assessment of the flow gauges in the Berg catchment was made and is documented in *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models. Report No. 3: The Assessment of Flow Gauging Stations* (DWAF, 2007c). The patched observed flows at G1H040 were simulated for the period 1979-2004. The patched observed flow record for G1H040 is shown in Appendix C14.

5.14.4 Calibration (1979 - 2004)

Details of the rainfall stations used to generate catchment rainfall for G1H040 are shown in Table 5.68. The updated MAP for this catchment is estimated to be 578 mm compared to 547 mm in the WCSA (DWAF, 1993). The updated MAP is higher than the MAP used in the WCSA and results in an acceptable calibration in this catchment.

Table 5.68: Rainfall stations for calibration at G1H040

RAINFALL STATION NUMBER	MAP	PERIOD OF RECORD	RECORD LENGTH
041533w	391	1988-2004	16
041684w	688	1927-1964	37
041713w	663	1937-1982	45
042257w	474	1961-2004	43

The WCSA (DWAF, 1993) Pitman parameters were used during initial model calibration. These parameters were then improved until an acceptable fit between the observed and simulated

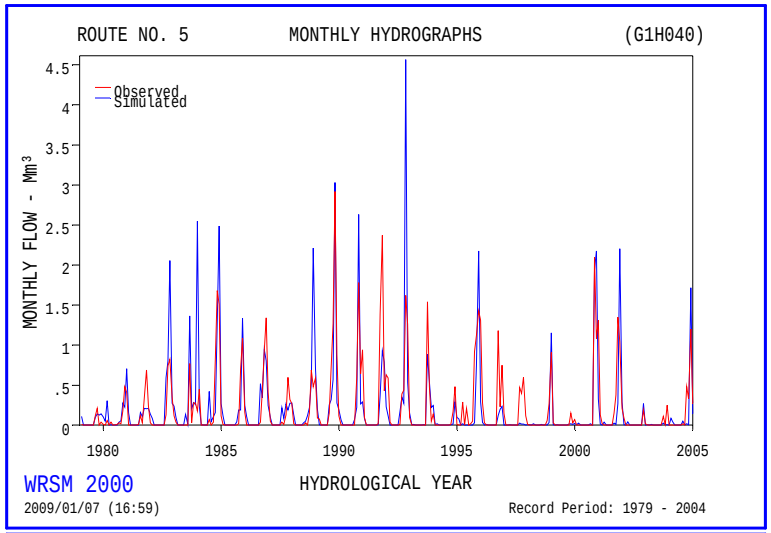
stream flow data was obtained. The final Pitman parameters are shown in Table 5.69 and Table 5.70 displays the patched observed and simulated statistics for G1H040. Graphs showing monthly, annual and mean monthly flow plots for each calibration are also included in Figure 5.42. The flows in this catchment are too low to produce a cumulative frequency plot.

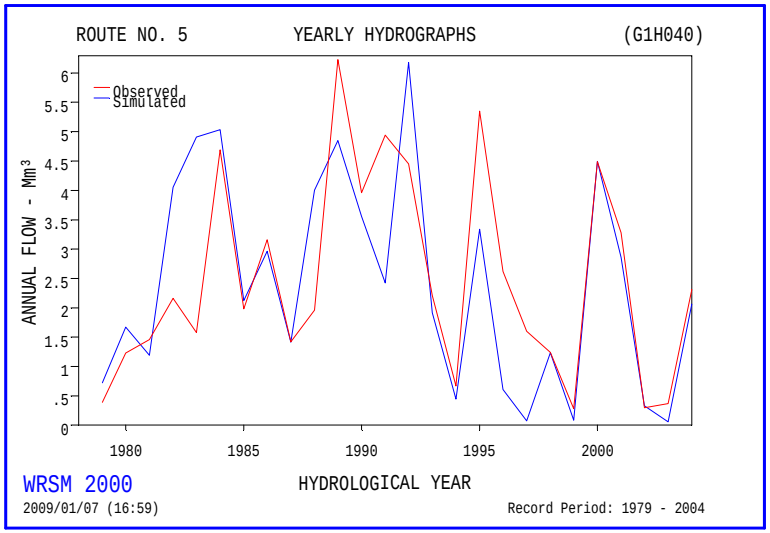
Table 5.69: G1H040 Final Pitman Parameters

POW	SL	ST	FT	GW	ZMIN	ZMAX	PI	TL	GL	R
2	0	235	7	0	30	650	1.5	0	0	0

Table 5.70: G1H040 Calibration Results (Statistical Indices)

	OBSERVED	SIMULATED	DIFFERENCE (%)
MAR (Mm^3)	2.47	2.41	-2.4%
Mean (Log)	0.26	0.15	-42.3%
Std Dev	1.72	1.80	4.7%
Std Dev (Log)	0.40	0.58	45.0%
Seasonal Index	57.17	53.85	-5.8%





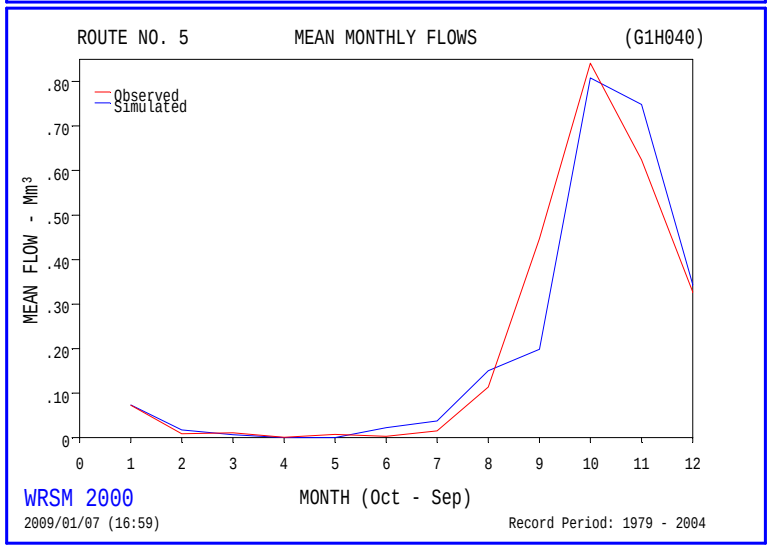


Figure 5.42: G1H040 Calibration Results (Graphical Comparison)

5.15 G1H041: Kompagnies River at De Eikeboomen

5.15.1 Subcatchment data

Land use in the Berg catchment has been documented in a separate report entitled *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models: Report 4 (Land Use and Water Requirements): Volume 1 (Data in Support of Catchment Modelling)* (DWAF, 2007d). Table 5.71 presents a summary of the catchment data for the subcatchment G1H041 and detailed information are summarised in Table 5.72. Figure 5.43 shows detailed maps of the catchment.

Table 5.71: Summary of information for G1H041

G1H041	TOTAL	High MAP	Low MAP
Subcatchment area from GIS (km^2)	120.6	21.1	99.5
Above farm dams	51.0	12.3	38.7
Below farm dams	69.6	8.8	60.8
Forestry area (km^2)	0.2	0.0	0.2
Alien vegetation condensed area (km^2)	1.9	0.0	1.9
Irrigation Area (km^2)	11.6	0.0	11.6
From farm dams	4.5	0.0	4.5
From river	7.1	0.0	7.1
Farm dams: Area (km^2) / Volume (Mm^3)	1.26 / 4.02	0.0 / 0.0	1.26 / 4.02
Subcatchment MAP (mm)		1251	661
Total GW contribution to baseflow	0.9		
Calibration period (Hydrological years)	1979 - 2004		
Observed MAR for calibration period (Mm^3/a)	23.4		
Patched observed MAR for calibration period (Mm^3/a)	23.5		
Simulated MAR for calibration period (Mm^3/a)	23.4		
Naturalised MAR (1927-2004) (Mm^3)	23.8	12.3	11.5
Naturalised MAR including GW baseflow (1927-2004) (Mm^3)	24.7	12.75	11.95
Runoff coefficient	26.8%	46.6%	17.5%

Table 5.72: Detailed catchment information for G1H041

APPENDIX	CONTENTS	FORMAT
A15	Hydrological information for model calibration	Table
B14	Catchment Rainfall File	Monthly time series
C18	Patched observed flow record (G1H041)	Monthly time series
D15	Naturalised flow sequence	Monthly time series

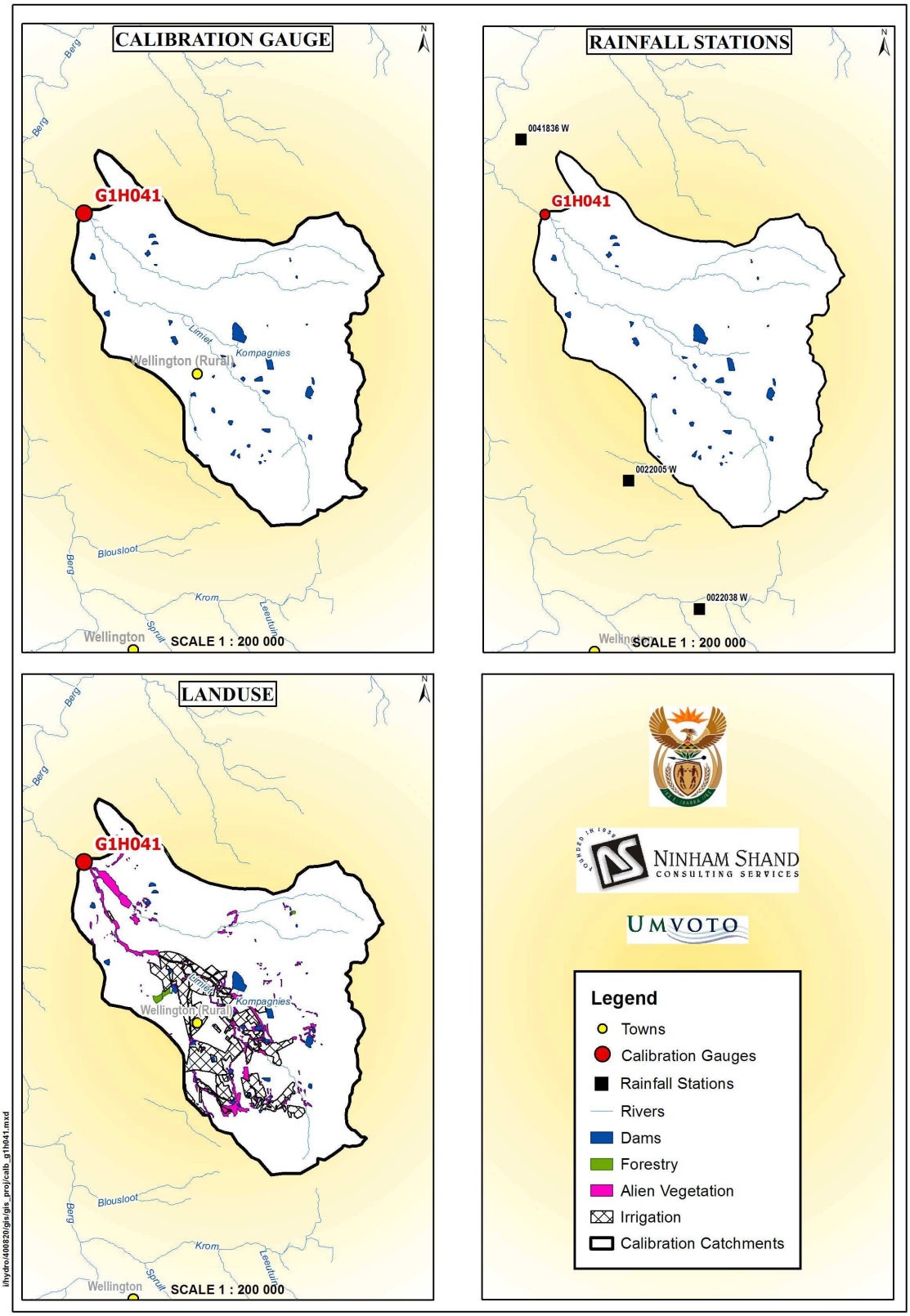


Figure 5.43: G1H041 Subcatchment hydrology information

5.15.2 Model configuration

Figure 5.44 shows the model configuration for subcatchment G1H041. The subcatchment was divided into High and Low MAP regions, with runoff from both the modules available for use in the catchment. There are no imports into or exports from the catchment. The total groundwater contribution to baseflow in the GRDM in this catchment is estimated to be 0.9 Mm^3/a and was added to the system according to the same percentage split of catchment runoff, respectively, to farm dams and to the river. Winter filling of farm dams was taken into consideration.

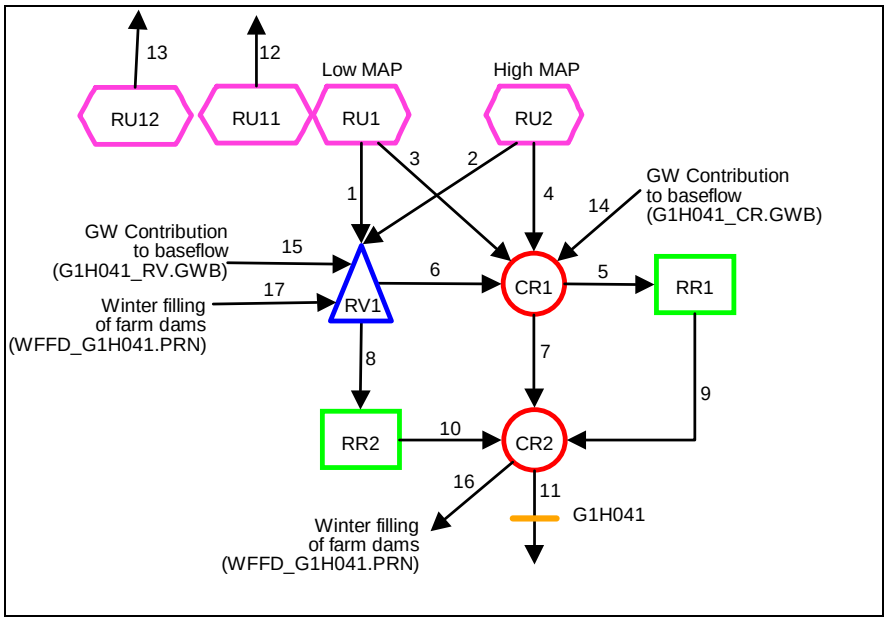


Figure 5.44: G1H041 Subcatchment Configuration

5.15.3 Evaluation and preparation of flow sequences

A detailed assessment of the flow gauges in the Berg catchment was made and is documented in *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models. Report No. 3: The Assessment of Flow Gauging Stations* (DWAF, 2007c). The observed flows at G1H041 were simulated for the period 1979-2004. The patched observed flow record for G1H041 is shown in Appendix C15.

5.15.4 Calibration (1979 - 2004)

Details of the rainfall stations used to generate catchment rainfall for G1H041 are shown in Table 5.73. The updated MAP for this catchment is estimated to be 661 mm for the low MAP area and 1251 mm for the high MAP area compared to 617 mm and 1193 mm in the WCSA (DWAF, 1993). The updated MAP is slightly higher than the MAP used in the WCSA for both the high and low MAP region and produces an acceptable calibration in this catchment.

Table 5.73: Rainfall stations for calibration at G1H041

RAINFALL STATION NUMBER	MAP	PERIOD OF RECORD	RECORD LENGTH
022005w	624	1931-2004	73
022038w	763	1927-2004	77
041836w	465	1941-1978	37

The WCSA (DWAF, 1993) Pitman parameters were used during initial model calibration. These parameters were then improved until an acceptable fit between the observed and simulated

stream flow data was obtained. The final Pitman parameters are shown in Table 5.74 and Table 5.75 displays the patched observed and simulated statistics for G1H041. Graphs showing monthly, annual and mean monthly flows as well as a cumulative frequency plot for each calibration are also included in Figure 5.45.

Table 5.74: G1H041 Final Pitman Parameters

POW	SL	ST	FT	GW	ZMIN	ZMAX	PI	TL	GL	R
2	0	245	12	0	65	560	1.5	0	0	0

Table 5.75: G1H041 Calibration Results (Statistical Indices)

	OBSERVED	SIMULATED	DIFFERENCE (%)
MAR (Mm3)	23.45	23.44	0.0%
Mean (Log)	1.32	1.32	0.0%
Std Dev	9.74	10.03	3.0%
Std Dev (Log)	0.24	0.23	-4.2%
Seasonal Index	50.07	56.59	13.0%

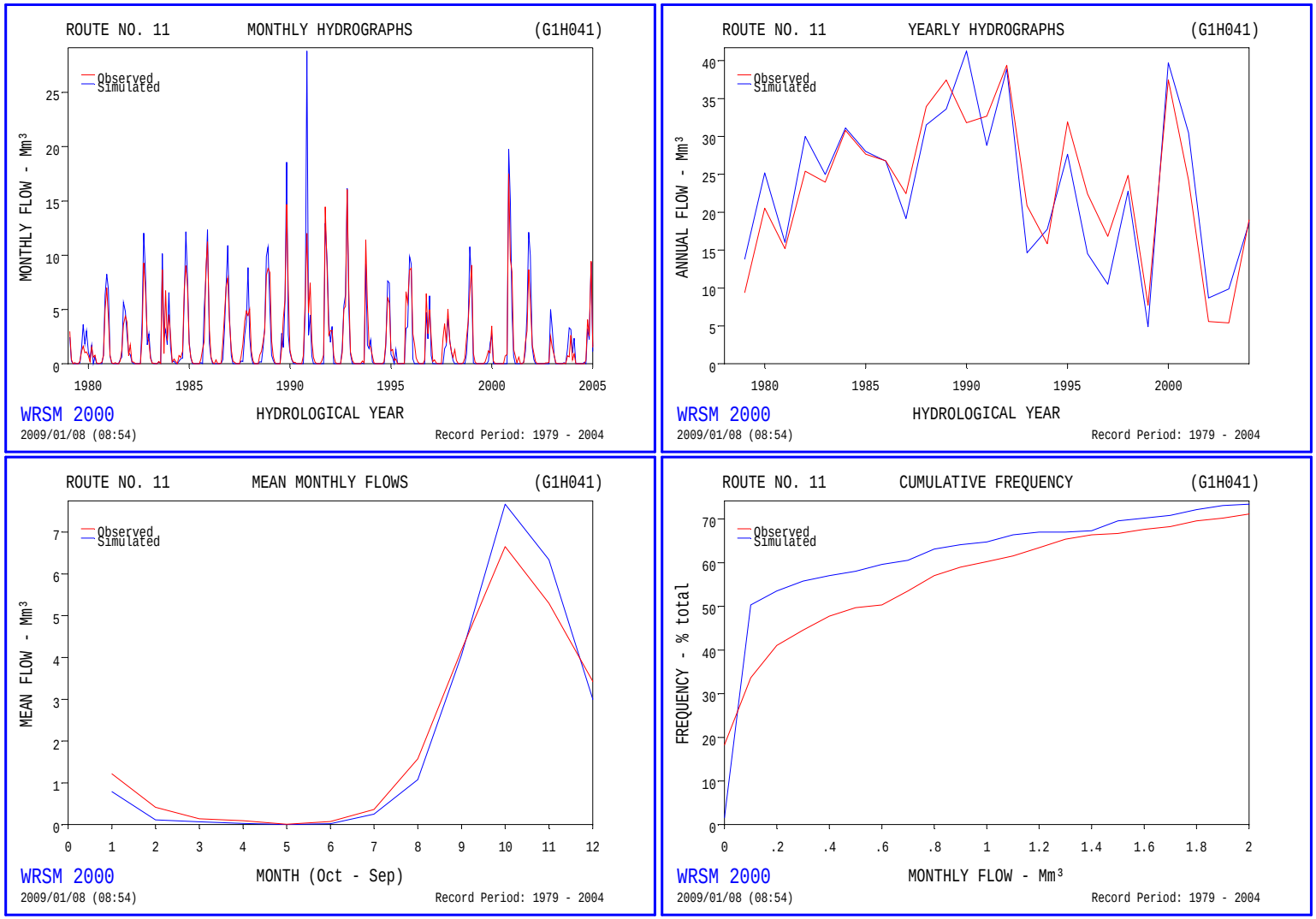


Figure 5.45: G1H041 Calibration Results (Graphical Comparison)

5.16 G1H043: Sandspruit at Vrisgewaagd

5.16.1 Subcatchment data

Land use in the Berg catchment has been documented in a separate report entitled *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models: Report 4 (Land Use and Water Requirements): Volume 1 (Data in Support of Catchment Modelling)* (DWAF, 2007d). Table 5.76 presents a summary of the catchment data for the subcatchment G1H043 and detailed information are summarised in Table 5.77. Figure 5.46 shows detailed maps of the catchment.

Table 5.76: Summary of information for G1H043

G1H043	
Subcatchment area from GIS (km^2)	154.9
Above farm dams	9.2
Below farm dams	145.6
Forestry area (km^2)	0.4
Alien vegetation condensed area (km^2)	0.3
Irrigation Area (km^2)	1.0
From farm dams	0.6
From river	0.4
Farm dams: Area (km^2) / Volume (Mm^3)	0.37 / 1.27
Subcatchment MAP (mm)	494
Total GW contribution to baseflow (Mm^3/a)	0.9
Calibration period (Hydrological years)	1979 - 2001
Observed MAR for calibration period (Mm^3/a)	4.3
Patched observed MAR for calibration period (Mm^3/a)	5.2
Simulated MAR for calibration period Mm^3/a	5.1
Naturalised MAR (1927-2004) (Mm^3)	4.4
Naturalised MAR including GW baseflow (1927-2004) (Mm^3)	5.3
Runoff coefficient	6.9%

Table 5.77: Detailed catchment information for G1H043

APPENDIX	CONTENTS	FORMAT
A16	Hydrological information for model calibration	Table
B15	Catchment Rainfall File	Monthly time series
C19	Patched observed flow record (G1H043)	Monthly time series
D16	Naturalised flow sequence	Monthly time series

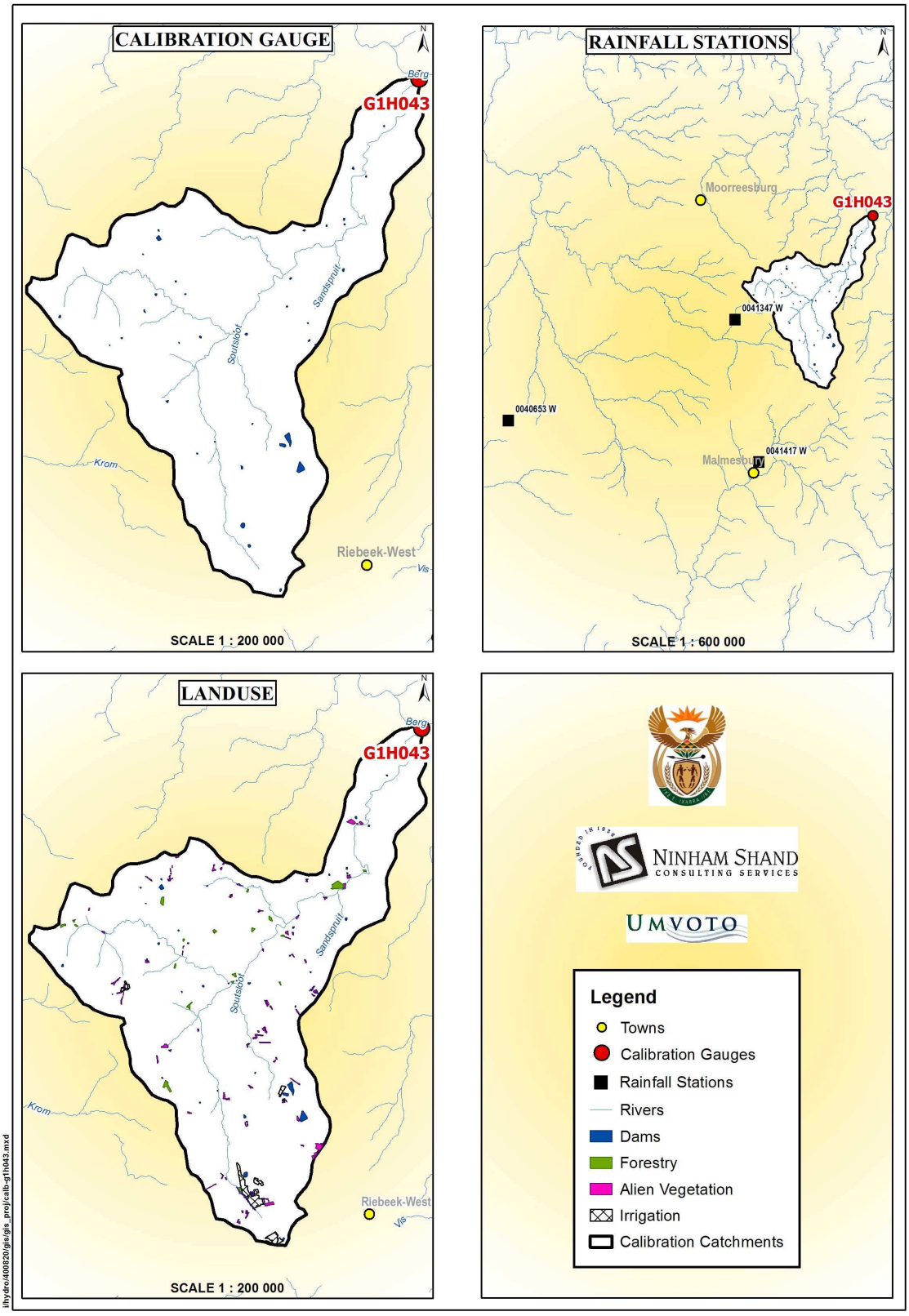


Figure 5.46: G1H043 Subcatchment hydrology information

5.16.2 Model configuration

Figure 5.47 shows the model configuration for subcatchment G1H043. There are no imports into or exports from the subcatchment. The total groundwater contribution to baseflow in the GRDM in this catchment is estimated to be 0.9 Mm^3/a. Winter filling of farm dams is taken into consideration.

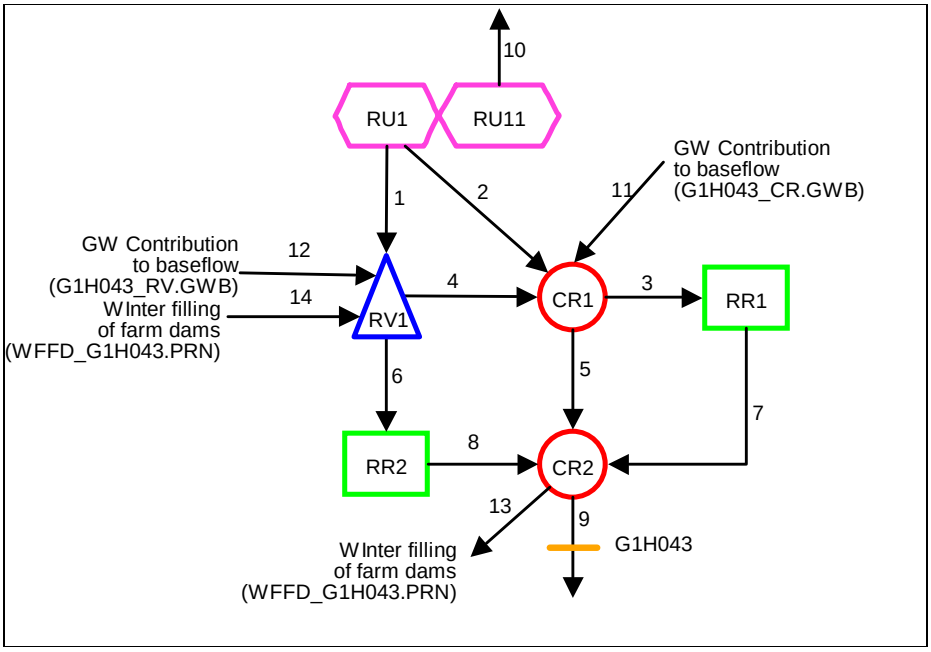


Figure 5.47: G1H043 Subcatchment Configuration

5.16.3 Evaluation and preparation of flow sequences

A detailed assessment of the flow gauges in the Berg catchment was made and is documented in *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models. Report No. 3: The Assessment of Flow Gauging Stations* (DWAF, 2007c). The patched observed flows at G1H043 were simulated for the period 1979-2001 and are included in Appendix C16.

5.16.4 Calibration (1979 - 2004)

Details of the rainfall stations used to generate catchment rainfall for G1H043 are shown in Table 5.78. The updated MAP for this catchment is estimated to be 494 mm compared to 437 mm in the WCSA (DWAF, 1993). The updated MAP is higher than the MAP used in the WCSA and produces an acceptable calibration in this catchment.

Table 5.78: Rainfall stations for calibration at G1H043

RAINFALL STATION NUMBER	MAP	PERIOD OF RECORD	RECORD LENGTH
041279w	385	1964-2004	40
041347a	394	1930-1987	57
041417w	463	1927-2000	73

The WCSA (DWAF, 1993) Pitman parameters were used during initial model calibration. These parameters were then improved until an acceptable fit between the observed and simulated stream flow data was obtained. The final Pitman parameters are shown in Table 5.79 and Table 5.80 displays the patched observed and simulated statistics for G1H043. Graphs

showing monthly, annual and mean monthly flows as well as a cumulative frequency plot for each calibration are also included in Figure 5.48.

Table 5.79: G1H043 Final Pitman Parameters

POW	SL	ST	FT	GW	ZMIN	ZMAX	PI	TL	GL	R
3	0	270	5	0	100	600	1.5	0	0	0

Table 5.80: G1H043 Calibration Results (Statistical Indices)

	OBSERVED	SIMULATED	DIFFERENCE (%)
MAR (Mm3)	5.20	5.06	-2.7%
Mean (Log)	0.47	0.57	21.3%
Std Dev	4.32	4.16	-3.7%
Std Dev (Log)	0.66	0.34	-48.5%
Seasonal Index	56.04	52.54	-6.2%

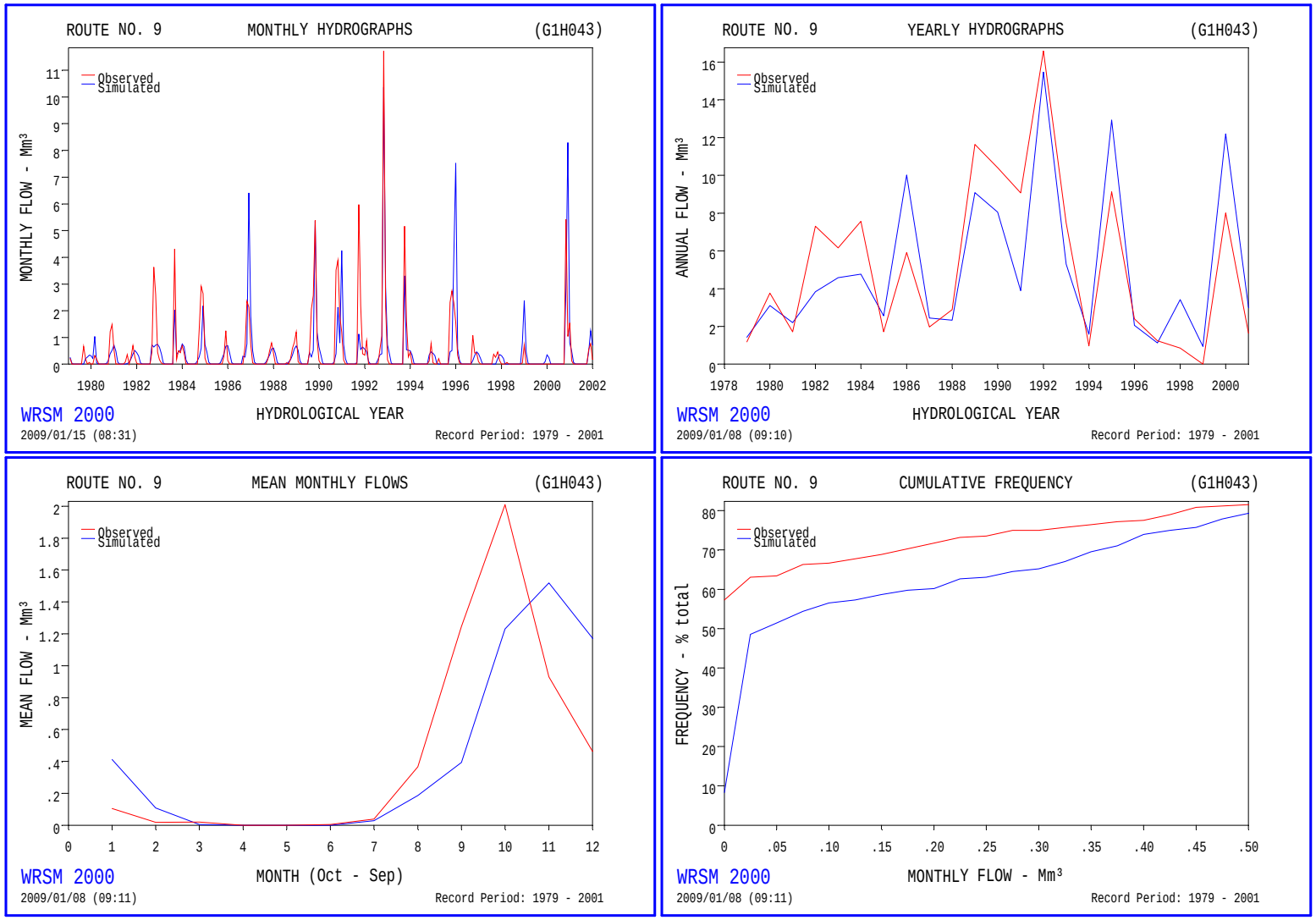


Figure 5.48: G1H043 Calibration Results (Graphical Comparison)

5.17 G1R002: Wemmershoek Dam

5.17.1 Subcatchment data

Land use in the Berg catchment has been documented in a separate report entitled *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models: Report 4 (Land Use and Water Requirements): Volume 1 (Data in Support of Catchment Modelling)* (DWAF, 2007d). Table 5.81 presents a summary of the catchment data for the subcatchment G1R002 and detailed information are summarised in Table 5.82. Figure 5.49 shows detailed maps of the catchment.

Table 5.81: Summary of information for G1R002

G1R002	
Subcatchment area from GIS (km^2)	85.3
Above farm dams	0.0
Below farm dams	85.3
Forestry area (km^2)	3.0
Alien vegetation condensed area (km^2)	0.3
Irrigation Area (km^2)	0.0
From farm dams	0.0
From river	0.0
Farm dams: Area (km^2) / Volume (Mm^3)	0.0 / 0.0
Subcatchment MAP (mm)	1373
Total GW contribution to baseflow (Mm^3/a)	3.6
Calibration period (Hydrological years)	1973 - 2004
Observed MAR for calibration period (Mm^3/a)	65.5
Patched observed MAR for calibration period (Mm^3/a)	77.5
Simulated MAR for calibration period Mm^3/a	77.6
Naturalised MAR (1927-2004) (Mm^3)	79.8
Naturalised MAR including GW baseflow (1927-2004) (Mm^3)	83.4
Runoff coefficient	71.2%

Table 5.82: Detailed catchment information for G1R002

APPENDIX	CONTENTS	FORMAT
A17	Hydrological information for model calibration	Table
B16	Catchment Rainfall File	Monthly time series
C20	Patched observed flow record (G1R002)	Monthly time series
D17	Naturalised flow sequence	Monthly time series

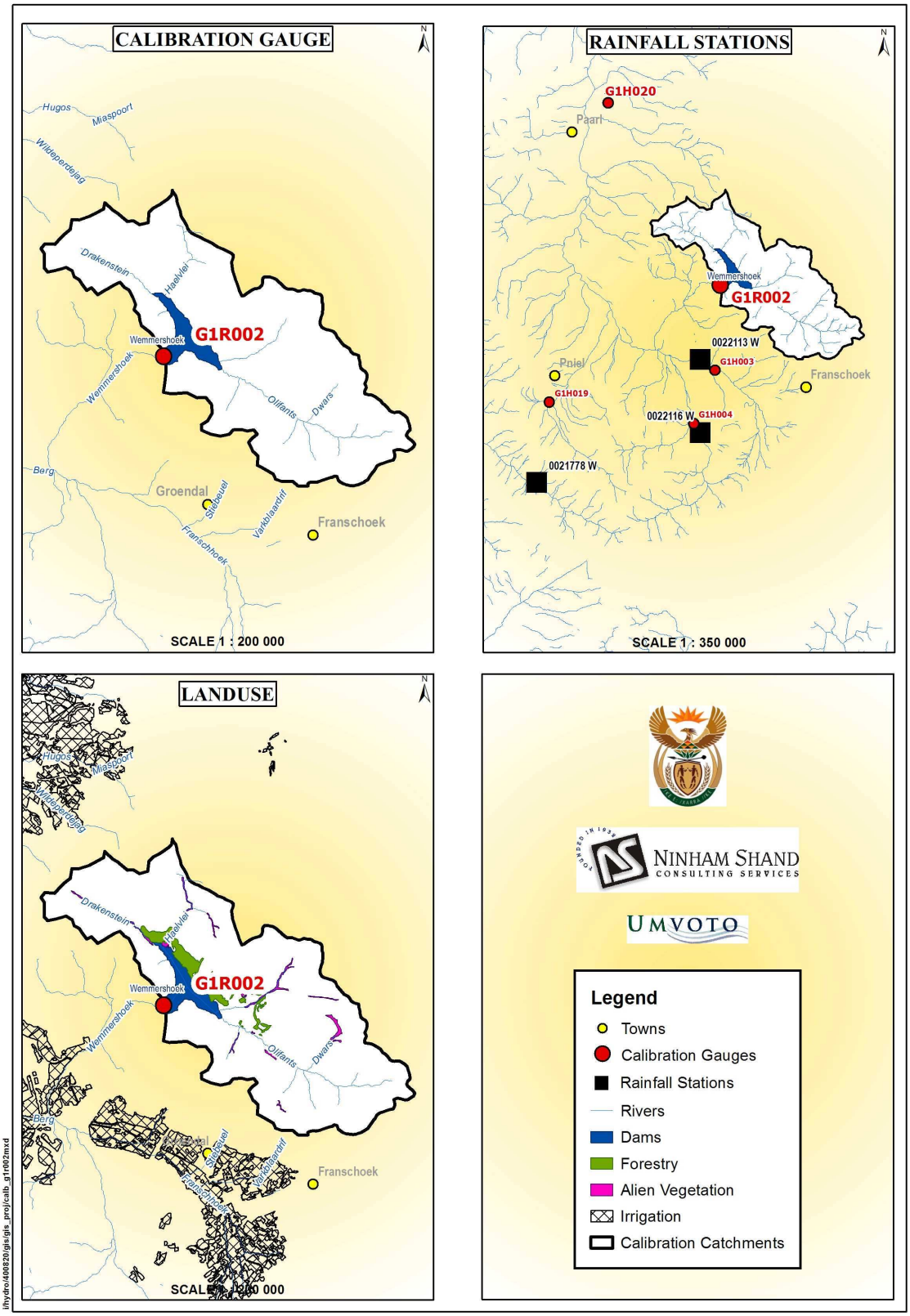


Figure 5.49: G1R002 Subcatchment hydrology information

5.17.2 Model configuration

Figure 5.50 shows the model configuration for the Wemmershoek catchment. There are no imports into or exports from the system, and water use by afforestation and alien vegetation is accounted for in the catchment runoff to the Wemmershoek Dam. The total groundwater contribution to baseflow in the GRDM in this catchment is estimated to be 3.6 Mm^3/a and was added to the catchment inflows to the dam.

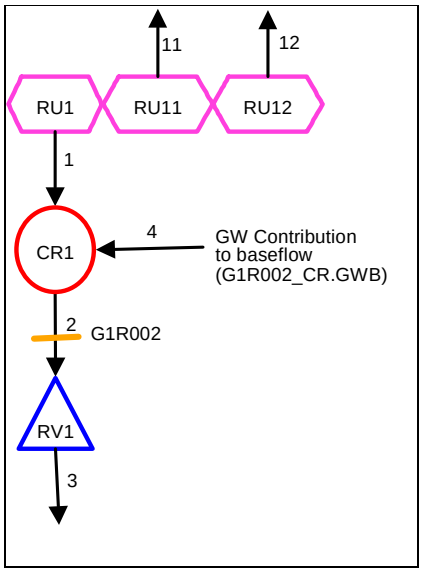


Figure 5.50: G1R002 Subcatchment Configuration

5.17.3 Evaluation and preparation of flow sequences

A detailed assessment of the flow gauges in the Berg catchment was made and is documented in *The Assessment of Water Availability in the Berg Catchment (WMA 19) by Means of Water Resource Related Models. Report No. 3 : The Assessment of Flow Gauging Stations* (DWAF, 2007c). The observed flows at G1R002 were obtained from the City of Cape Town and were simulated for the period 1973-2004. The patched observed flow record for G1R002 is shown in Appendix C17.

5.17.4 Calibration (1973 - 2004)

Details of the rainfall stations used to generate catchment rainfall for G1R002 are shown in Table 5.83. The updated MAP for this catchment is estimated to be 1373 mm compared to 1372 mm in the WCSA (DWAF, 1993) and 1382 mm in the Skuifraam Feasibility Study (1997). The updated MAP is very similar to the MAP used in the WCSA and produces an acceptable calibration in this catchment.

Table 5.83: Rainfall stations for calibration at G1R002

RAINFALL STATION NUMBER	MAP	PERIOD OF RECORD	RECORD LENGTH
911200301	984	1966-1988	22
021778w	1076	1927-2004	77
022113w	835	1927-2003	76
022116w	1842	1927-1960	33

The WCSA (DWAF, 1993) Pitman parameters were used during initial model calibration. These parameters were then improved until an acceptable fit between the observed and simulated

stream flow data was obtained. The final Pitman parameters are shown in Table 5.84 and Table 5.85 displays the patched observed and simulated statistics for G1R002. Graphs showing monthly, annual and mean monthly flows as well as a cumulative frequency plot for each calibration are also included in Figure 5.51.

Table 5.84: G1R002 Final Pitman Parameters

POW	SL	ST	FT	GW	ZMIN	ZMAX	PI	TL	GL	R
2	0	120	75	0	0	200	1.5	0.5	0	0

Table 5.85: G1R002 Calibration Results (Statistical Indices)

	OBSERVED	SIMULATED	DIFFERENCE (%)
MAR (Mm^3)	77.51	77.59	0.1%
Mean (Log)	1.87	1.88	0.5%
Std Dev	24.65	19.69	-20.1%
Std Dev (Log)	0.14	0.10	-28.6%
Seasonal Index	37.85	37.44	-1.1%

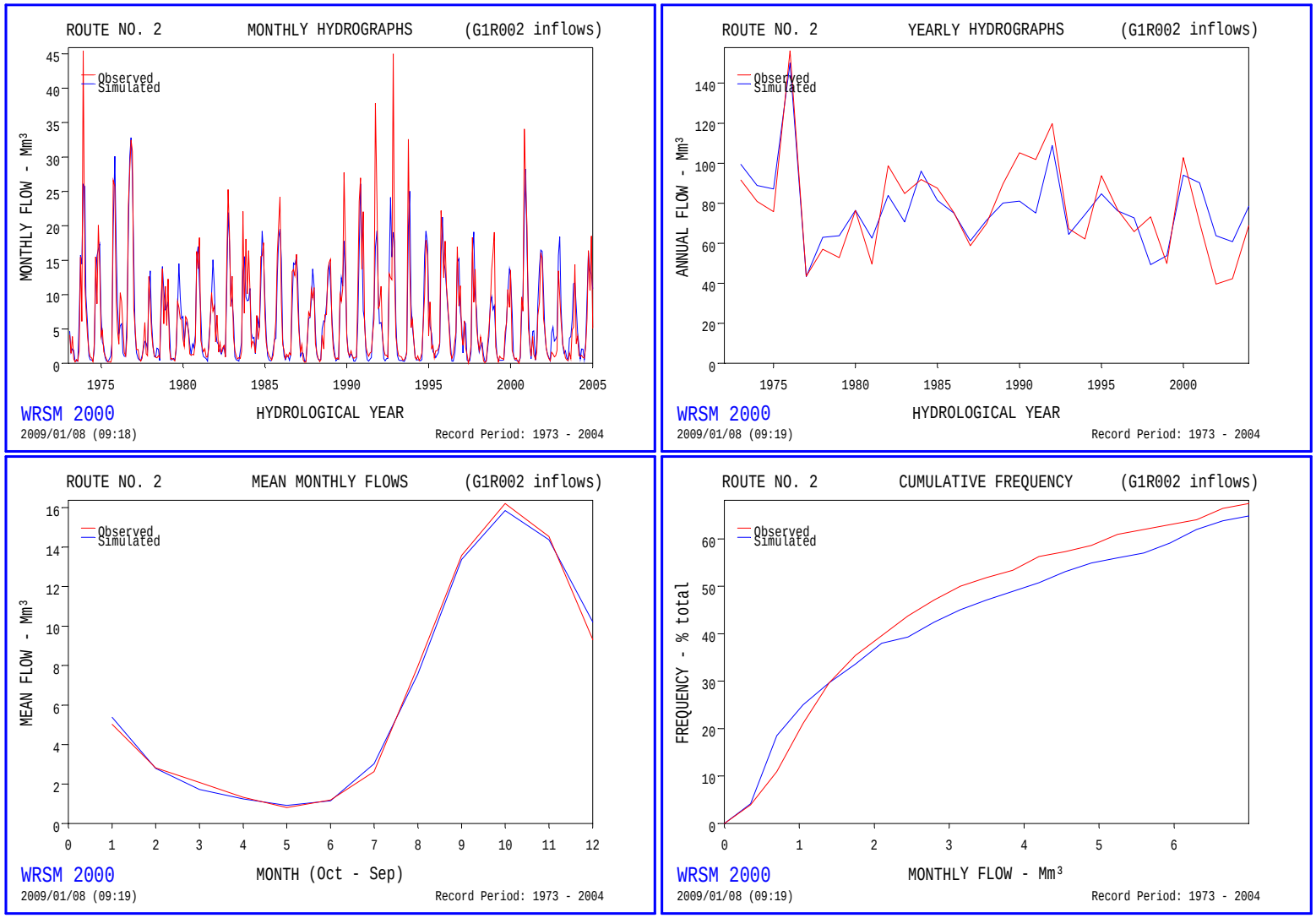


Figure 5.51: G1R002 Calibration Results (Graphical Comparison)

6. FLOW SEQUENCE GENERATION

6.1 Naturalised runoff sequences

Naturalised flows were generated in the WRSM2000 model for each of the Berg subcatchments. These are the flows generated from the runoff module ignoring all demands and abstractions on the network. To these sequences, groundwater baseflows were added back because they also form part of the natural flows in the catchment. Groundwater baseflows were treated as an external source in the modelling process and therefore model generated flows would not include them implicitly in the output. Therefore, they need to added back to the simulated natural flows in each catchment. The observed flow record was naturalised by adding back all the water use in the catchment, which was calculated as the difference between the simulated natural flows and the simulated calibrated flows for the historical sequence. The simulated naturalised flows for each subcatchment are presented in Appendix D. Figure 6.1 shows the mass balance for the Berg River, comparing the naturalised flows obtained in this study for 1927-2004 with those obtained in the WCSA (1993) which were for the period 1926-1988.

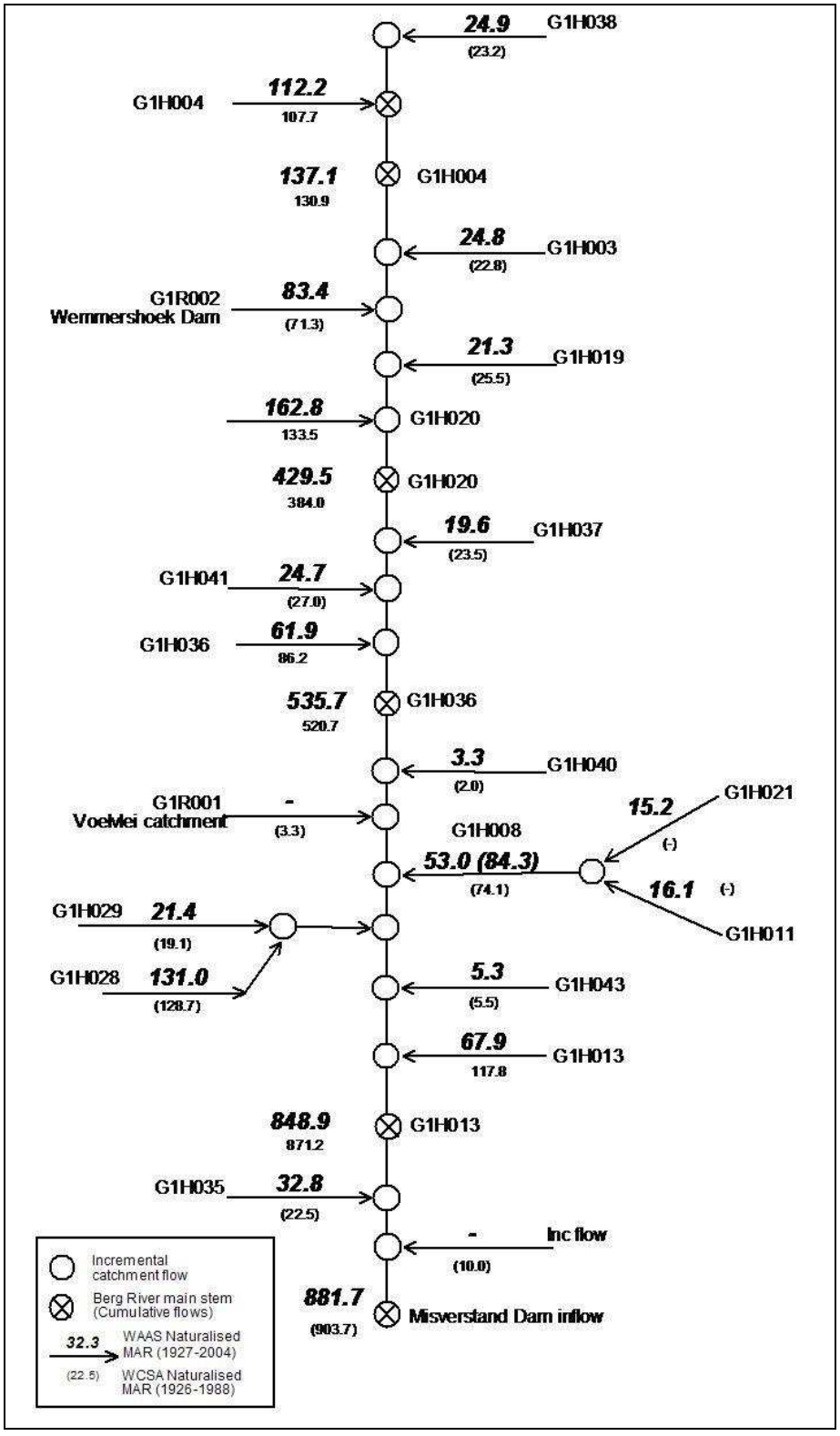


Figure 6.1: Berg River Mass Balance

7. CONCLUSIONS

This report presents the results of the catchment hydrological modelling for the Berg River with the updated WRSM2000 model. The key objective of this task was to extend the naturalisation of streamflow to the 2004 hydrological year which has been achieved. Wherever possible, the calibration of streamflow has been made on the most up-to-date period of record available at each flow gauge and most gauges had sufficient record length on which to calibrate. Additionally, the representation of groundwater contributions to streamflow has been made in the monthly modelling process.

The naturalised mean annual runoff for the Berg River subcatchments was compared to those obtained in the WCSA. The tributaries tend to compare favourably whereas there are larger differences between the incremental flows from the main stem Berg catchments. However, the cumulative difference at the inlet to Misverstand dam is in the order of only 2%. The largest difference between the main stem Berg River flows is approximately 12% which is at flow gauge G1H020 Paarl. Table 7.1 shows a comparison of naturalised flow sequences.

Table 7.1: Comparison of cumulative naturalised flow sequences on the Berg River main stem

Site	WCSA (DWAF,1993) (Mm^3/a)	WAAS (DWAF, 2007) (Mm^3/a)	Percentage difference
G1H004 - Driefontein	131	137	+4.6%
G1H020 – Paarl	384	430	+12.0%
G1H036 – Vleesbank	521	536	+2.9%
G1H013 – Drieheuwels	871	849	-2.5%
G1R003 – Misverstand inflow	904	882	-2.4%

Most subcatchments in the study area are adequately represented by suitable active rainfall stations except for those located in mountainous catchments. The MAPs generated from the new rainfall surface generally show an increase in both the CCWR and DWAF MAPs used previously. Some subcatchments in the mountainous regions are still under-represented in terms of their MAP due to the paucity of adequate rainfall stations in these regions. Thus, it is very important that the existing station network be well maintained and wherever possible, be enlarged to allow for better representation of observed records across the catchments.

8. REFERENCES

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APPENDIX A:

HYDROLOGICAL INFORMATION FOR MODEL CALIBRATION

APPENDIX NUMBER	CALIBRATION GAUGE
A1	G1H003
A2	G1H004
A3	G1H008
A4	G1H011
A5	G1H013
A6	G1H019
A7	G1H020
A8	G1H021
A9	G1H028
A10	G1H029
A11	G1H035
A12	G1H036
A13	G1H037
A14	G1H040
A15	G1H041
A16	G1H043
A17	G1R002

GAUGE:	**G1H003**
Main Catchment:	Berg
Subcatchment:	Franschhoek
River:	Franschhoek
Location:	Le Mouillage
Subcatchment area:	46.2 km^2

SUB-CATCHMENT AREAS (km^2)		
Above farm dam boundary	16.84	36%
Below farm dam boundary	29.31	64%
TOTAL AREA	**46.15**	

LANDUSE	**YEAR**											
	1950	**1959**	**1965**	**1980**	**1988**	**1990**	**1993**	**2004**				
Irrigation (km^2)	3.06	3.77	4.24	4.40	4.85	4.96	4.94	14.12				
Source = Farm dams	1.68	2.07	2.33	2.42	2.66	2.73	2.72	7.77	55%			
Source = River	1.38	1.69	1.91	1.98	2.18	2.23	2.22	6.35	45%			
Afforestation (km^2)	0.20	0.97	1.48	5.97	5.16	4.95	4.90	3.27				
Alien Vegetation (km^2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.63				
Farm Dams (Mm^3)	0.00	0.16	0.26	0.40	0.40	0.40	0.40	7.01				
Farm dam area	0.00	0.05	0.07	0.08	0.08	0.08	0.08	0.34				
Area:	**a(cap)^b**											
a	0.1306											
b	0.4912											
S-PAN (G10A)	129	183	228	238	198	167	90	48	35	33	48	78
A-PAN (G10A)	162	230	287	299	249	209	113	60	44	41	60	98

Data Sources
1950-1990 (WCSA)
1996 (VASF)
2004 (Berg WAAS)

Notes: Condensed alien veg area

GAUGE:	**G1H004**											
Main Catchment:	Berg					**SUB-CATCHMENT AREAS (km^2)**						
Subcatchment:	Berg					Below farm dam boundary	**G1H038**	13.15	19%	High MAP		
River:	Berg						**G1H004**	39.50	57%	High MAP		
Location:	Bergriviershoek						**G1H004**	16.26	24%	Low MAP		
Subcatchment area:	68.9 km^2					**TOTAL AREA**		**68.91**				
LANDUSE						**YEAR**						
		1950	**1965**	**1979**	**1980**	**1983**	**1988**	**1990**	**1993**	**2004**		
Irrigation (km^2)		**0.00**	**0.00**	**0.00**	**0.02**	**0.20**	**0.20**	**0.20**	**0.15**	**0.16**		
Source = Farm dams		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Source = River	**G1H004**	0.00	0.00	0.00	0.02	0.20	0.20	0.20	0.15	0.16	Low MAP	
Afforestation (km^2)	**G1H038**	0.30	0.30	0.17	0.16	0.20	0.27	0.30	0.49	0.31	High MAP	
	G1H004	5.63	5.63	5.27	5.24	5.35	5.56	5.63	5.52	4.20	High MAP	
	G1H004	6.89	6.89	6.43	6.40	6.55	6.79	6.89	6.76	5.13	Low MAP	
Alien Vegetation (km^2)	**G1H038**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	High MAP	
	G1H004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.79	High MAP	
	G1H004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	Low MAP	
Farm Dams (Mm^3)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Farm dam area		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

Area:	**a(cap)^b**											
a	-											
b	-											
S-PAN (G10A)	129	183	228	238	198	167	90	48	35	33	48	78
A-PAN (G10A)	162	230	287	299	249	209	113	60	44	41	60	98

Data Sources
1950-1990 (WCSA)
1993 (SDFS)
2004 (Berg WAAS)

Notes: Condensed alien veg area

GAUGE:	**G1H008**						
Main Catchment:	Berg			**SUB-CATCHMENT AREAS (km^2)**			
Subcatchment:	Klein Berg	*G1H011*	*G1H021*	Above farm dam boundary	181.72	52%	
River:	Klein Berg			Below farm dam boundary	166.17	48%	
Location:	Nuwekloof			**TOTAL AREA**	**347.90**		
Subcatchment area:	347.9 km^2						

LANDUSE	**YEAR**											
	1950	**1964**	**1965**	**1980**	**1988**	**1990**	**1996**	**2004**				
Irrigation (km^2)	**0.00**	**4.17**	**4.46**	**11.80**	**17.38**	**18.77**	**34.16**	**44.87**				
Source = Farm dams	0.00	3.88	4.15	10.98	16.16	17.46	31.77	41.73	*93%*			
Source = River	0.00	0.29	0.31	0.83	1.22	1.31	2.39	3.14	*7%*			
Afforestation (km^2)	**0.00**	**16.72**	**17.92**	**18.26**	**18.33**	**18.35**	**19.15**	**18.34**				
Alien Vegetation (km^2)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.65**				
Farm Dams: Volume (Mm^3)	**1.46**	**7.11**	**7.52**	**9.70**	**9.73**	**9.73**	**10.78**	**39.64**				
Farm Dams: Area (km^2)	**1.06**	**2.21**	**2.27**	**2.56**	**2.56**	**2.56**	**2.68**	**4.91**				
Area:	**a(cap)^b**											
a	0.8916											
b	0.4636											
S-PAN (G10E)	142	198	242	247	204	188	115	65	43	42	58	91
A-PAN (G10E)	180	250	307	313	258	239	146	83	54	53	74	115

Data Sources
1950-1990 (WCSA)
1996 (VASF)
2004 (Berg WAAS)

Notes: Condensed alien veg area

GAUGE: G1H011

Main Catchment:	Berg	**SUB-CATCHMENT AREAS (km^2)**			
Subcatchment:	Klein Berg	Above farm dam boundary	0.00	0%	
River:	Watervals	Below farm dam boundary	25.96	100%	
Location:	Watervalsberge	**TOTAL AREA**	**25.96**		
Subcatchment area:	26.0 km^2				

LANDUSE	**YEAR**							
	1950	**1965**	**1975**	**1980**	**1988**	**1990**	**1996**	**2004**
Irrigation (km^2)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Afforestation (km^2)	**0.00**	**8.20**	**8.79**	**8.96**	**8.99**	**9.00**	**9.00**	**8.70**
Alien Vegetation (km^2)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**
Farm Dams: Volume (Mm^3)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Farm Dams: Area (km^2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Area:	**a(cap)^b**
Coefficient a	-
Coefficient b	-

S-PAN (G10E)	142	198	242	247	204	188	115	65	43	42	58	91
A-PAN (G10E)	180	250	307	313	258	239	146	83	54	53	74	115

Data Sources
1950-1990 (WCSA)
1996 (VASF)
2004 (Berg WAAS)

Notes: Condensed alien veg area

GAUGE:	**G1H013**
Main Catchment:	Berg
Subcatchment:	Berg (incremental)
River:	Berg
Location:	Drieheuwels
Subcatchment area:	797.5 km^2

SUB-CATCHMENT AREAS (km^2)		
Above farm dam boundary	180.66	23%
Below farm dam boundary	616.82	77%
TOTAL AREA	**797.48**	

LANDUSE	**YEAR**											
	1950	**1965**	**1979**	**1980**	**1988**	**1990**	**1996**	**2004**				
Irrigation (km^2)	**0.08**	**5.50**	**11.43**	**11.85**	**16.90**	**18.16**	**40.13**	**60.01**				
Source = Farm dams	0.05	3.47	7.20	7.47	10.65	11.44	25.28	37.80	*63%*			
Source = River	0.03	2.04	4.23	4.39	6.25	6.72	14.85	22.21	*37%*			
Afforestation (km^2)	**0.00**	**6.52**	**2.87**	**2.61**	**5.13**	**5.76**	**3.18**	**1.78**				
Alien Vegetation (km^2)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.79**				
Farm Dams: Volume (Mm^3)	0.03	3.71	6.24	6.42	7.30	7.52	10.09	50.02				
Farm Dams: Area (km^2)	0.14	1.45	1.88	1.91	2.03	2.06	2.39	5.28				

Area:	**a(cap)^b**
a	0.7587
b	0.49588

S-PAN (G10J)	139	194	238	242	200	185	113	64	42	41	57	89
A-PAN (G10J)	176	245	301	307	253	234	143	81	53	52	73	113

Data Sources
1950-1990 (WCSA)
1996 (VASF)
2004 (Berg WAAS)

Notes: Condensed alien veg area

GAUGE:	**G1H019**
Main Catchment:	Berg
Subcatchment:	Banhoek
River:	Banhoek
Location:	The Sanctuary
Subcatchment area:	22.8 km^2

SUB-CATCHMENT AREAS (km^2)		
Above farm dam boundary	2.99	13%
Below farm dam boundary	19.80	87%
TOTAL AREA	**22.80**	

LANDUSE	**YEAR**											
	1950	**1965**	**1977**	**1980**	**1988**	**1990**	**1993**	**2004**				
Irrigation (km^2)	**0.00**	**0.77**	**0.68**	**0.65**	**0.59**	**0.57**	**0.57**	**2.03**				
Source = Farm dams	0.00	0.43	0.37	0.36	0.33	0.32	0.31	1.10	*54%*			
Source = River	0.00	0.35	0.31	0.29	0.27	0.26	0.26	0.93	*46%*			
Afforestation (km^2)	**0.00**	**0.00**	**1.06**	**1.33**	**2.03**	**2.21**	**2.43**	**0.00**				
Alien Vegetation (km^2)	**0.00**	**0.82**	**1.48**	**1.64**	**2.08**	**2.19**	**2.35**	**0.96**				
Farm Dams: Volume (Mm^3)	0.00	0.11	0.18	0.20	0.20	0.20	0.20	0.39				
Farm Dams: Area (km^2)	0.00	0.03	0.04	0.05	0.05	0.05	0.05	0.08				

Area:	**a(cap)^b**
Coefficient a	0.1672
Coefficient b	0.7858

S-PAN (G10C)	132	186	232	242	202	169	92	49	36	33	49	80
A-PAN (G10C)	165	234	292	304	254	213	115	61	45	42	61	100

Data Sources
1950-1990 (WCSA)
1993 (SDFS); Alien Veg: Only Mountain Catchment Areas and Densities > 25% (SDFS)
2004 (Berg WAAS)

Notes: Condensed alien veg area

GAUGE:	**G1H020**											
Main Catchment:	Berg						**SUB-CATCHMENT AREAS (km^2)**					
Subcatchment:	Berg (incremental)		*G1H004*	*G1H003*	*G1H019*	*G1R002*	Above farm dam boundary	160.76	40%			
River:	Berg						Below farm dam boundary	239.22	60%			
Location:	Daljosafat						**TOTAL AREA**	**399.98**				
Subcatchment area:	399.98	km^2										

LANDUSE	**YEAR**											
	1950	**1965**	**1979**	**1980**	**1988**	**1990**	**1993**	**2004**				
Irrigation (km^2)	**15.09**	**20.72**	**33.53**	**34.45**	**29.88**	**28.74**	**28.42**	**109.00**				
Source = Farm dams	7.24	13.25	16.32	16.54	14.34	13.80	13.64	52.32	*48%*			
Source = River	7.85	7.47	17.22	17.91	15.54	14.95	14.78	56.68	*52%*			
Afforestation (km^2)	**42.23**	**48.48**	**44.56**	**44.28**	**56.15**	**59.01**	**57.32**	**25.87**				
Alien Vegetation (km^2)	**0.00**	**3.39**	**6.55**	**6.78**	**8.59**	**9.04**	**9.72**	**10.00**				
Farm Dams: Volume (Mm^3)	4.39	10.26	15.51	15.88	16.38	16.51	16.51	30.37				
Farm Dams: Area (km^2)	1.45	2.23	2.75	2.78	2.83	2.84	2.84	3.87				
Area:	**a(cap)[b]**											
a	0.681											
b	0.509											
S-PAN (G10C)	132	186	232	242	202	169	92	49	36	33	49	80
A-PAN (G10C)	165	234	292	304	254	213	115	61	45	42	61	100

Data Sources
1950-1990 (WCSA)
1993 (SDFS); Alien Veg: Only Mountain Catchment Areas and Densities > 25% (SDFS)
2004 (Berg WAAS)

Notes: Condensed alien veg area

GAUGE:	**G1H021**											
Main Catchment:	Berg					**SUB-CATCHMENT AREAS (km^2)**						
Subcatchment:	Klein Berg					Above farm dam boundary	2.28	12%				
River:	Klein Berg					Below farm dam boundary	16.30	88%				
Location:	Mountain View					**TOTAL AREA**	**18.58**					
Subcatchment area:	18.6 km^2											
LANDUSE					**YEAR**							
	1950	**1964**	**1965**	**1980**	**1984**	**1988**	**1990**	**1996**	**2004**			
Irrigation (km^2)	**0.00**	**0.19**	**0.20**	**0.41**	**0.45**	**0.49**	**0.51**	**1.73**	**1.62**			
Source = Farm dams	0.00	0.18	0.19	0.38	0.42	0.45	0.47	1.61	1.51	*93%*		
Source = River	0.00	0.01	0.01	0.03	0.03	0.03	0.04	0.12	0.11	*7%*		
Afforestation (km^2)	**0.00**	**0.02**	**0.02**	**0.02**	**0.01**	**0.00**	**0.00**	**0.41**	**0.00**			
Alien Vegetation (km^2)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.21**			
Farm Dams: Volume (Mm^3)	0.00	0.07	0.07	0.16	0.16	0.16	0.16	0.12	0.36			
Farm Dams: Area (km^2)	0.00	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.05			
Area:	**a(cap)^b**											
a	0.0864											
b	0.5373											
S-PAN (G10E)	142	198	242	247	204	188	115	65	43	42	58	91
A-PAN (G10E)	180	250	307	313	258	239	146	83	54	53	74	115

Data Sources
1950-1990 (WCSA)
1996 (VASF)
2004 (Berg WAAS)

Notes: Condensed alien veg area

GAUGE: **G1H028** (G1H002)

Main Catchment:	Berg	**SUB-CATCHMENT AREAS (km^2)**			
Subcatchment:	Twenty Four Rivers	Above farm dam boundary	0.00	0%	
River:	Twenty Four Rivers	Below farm dam boundary	185.16	100%	
Location:	Driedasbosch	**TOTAL AREA**	**185.16**		
Subcatchment area:	185.2 km^2				

LANDUSE	**YEAR**											
	1950	**1951**	**1965**	**1969**	**1979**	**1980**	**1988**	**1990**	**1996**	**2004**		
Irrigation (km^2)	**0.06**	**0.06**	**0.05**	**0.06**	**0.08**	**0.09**	**0.11**	**0.11**	**0.11**	**0.20**		
Afforestation (km^2)	**0.96**	**0.90**	**0.04**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		
Alien Vegetation (km^2)	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.89**		
Farm Dams: Volume (Mm^3)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Farm Dams: Area (km^2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Area:	**a(cap)^b**											
Coefficient a	-											
Coefficient b	-											
S-PAN (G10G)	142	198	243	247	204	189	116	66	43	42	59	91
A-PAN (G10G)	180	251	308	314	259	239	147	83	54	53	74	116

Data Sources
1950-1990 (WCSA)
1996 (VASF)
2004 (Berg WAAS)

Notes: Condensed alien veg area

GAUGE:	**G1H029**		
Main Catchment:	Berg	**SUB-CATCHMENT AREAS (km^2)**	
Subcatchment:	Leeu	Above farm dam boundary	0.00 0%
River:	Leeu	Below farm dam boundary	36.16 100%
Location:	De Hoek Estates	**TOTAL AREA**	**36.16**
Subcatchment area:	36.2 km^2		

LANDUSE	**YEAR**											
	1950	**1965**	**1975**	**1980**	**1988**	**1990**	**1996**	**2004**				
Irrigation (km^2)	**0.00**	**0.02**	**0.04**	**0.06**	**0.08**	**0.08**	**0.89**	**0.26**				
Source = Farm dams	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*0%*			
Source = River	0.00	0.02	0.04	0.06	0.08	0.08	0.89	0.26	*100%*			
Afforestation (km^2)	**0.00**	**1.80**	**1.09**	**0.73**	**0.16**	**0.02**	**0.07**	**0.00**				
Alien Vegetation (km^2)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.08**				
Farm Dams: Volume (Mm^3)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Farm Dams: Area (km^2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01				
Area:	**a(cap)[b]**											
Coefficient a	-											
Coefficient b	-											
S-PAN (G10J)	139	194	238	242	200	185	113	64	42	41	57	89
A-PAN (G10J)	176	245	301	307	253	234	143	81	53	52	73	113

Data Sources
1950-1990 (WCSA)
1996 (VASF)
2004 (Berg WAAS)

Notes: Condensed alien veg area

GAUGE:	**G1H035**
Main Catchment:	Berg
Subcatchment:	Matjies
River:	Matjies
Location:	Matjiesfontein
Subcatchment area:	674.2 km^2

SUB-CATCHMENT AREAS (km^2)		
Above farm dam boundary	84.56	13%
Below farm dam boundary	589.66	87%
TOTAL AREA	**674.23**	

LANDUSE	**YEAR**											
	1950	**1965**	**1975**	**1980**	**1988**	**1990**	**1996**	**2004**				
Irrigation (km^2)	**0.00**	**0.43**	**3.82**	**5.51**	**5.11**	**5.01**	**7.00**	**11.88**				
Source = Farm dams	0.00	0.27	2.41	3.47	3.22	3.16	4.41	7.48	*63%*			
Source = River	0.00	0.16	1.41	2.04	1.89	1.85	2.59	4.40	*37%*			
Afforestation (km^2)	**0.00**	**1.21**	**1.81**	**2.11**	**3.94**	**4.39**	**1.23**	**3.35**				
Alien Vegetation (km^2)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.78**				
Farm Dams: Volume (Mm^3)	0.61	0.84	1.13	1.28	1.28	1.28	1.41	38.82				
Farm Dams: Area (km^2)	0.28	0.32	0.38	0.40	0.40	0.40	0.42	2.36				

Area:	**a(cap)^b**
a	0.3549
b	0.5178

S-PAN (G10H)	140	195	240	244	201	186	114	65	42	41	58	90
A-PAN (G10H)	177	247	303	309	255	235	144	82	54	52	73	114

Data Sources
1950-1990 (WCSA)
1996 (VASF)
2004 (Berg WAAS)

Notes: Condensed alien veg area

GAUGE:	**G1H036**											
Main Catchment:	Berg						**SUB-CATCHMENT AREAS (km^2)**					
Subcatchment:	Berg (incremental)			*G1H020*	*G1H037*	*G1H041*	Above farm dam boundary	214.68	43%			
River:	Berg						Below farm dam boundary	283.09	57%			
Location:	Vleesbank (Hermon Bridge)						**TOTAL AREA**	**497.77**				
Subcatchment area:	497.8 km^2											

LANDUSE					**YEAR**							
	1950	**1965**	**1979**	**1980**	**1982**	**1988**	**1990**	**1996**	**2004**			
Irrigation (km^2)	**6.71**	**25.81**	**47.67**	**49.23**	**50.79**	**55.48**	**57.04**	**100.52**	**131.89**			
Source = Farm dams	2.62	10.06	18.59	19.20	19.81	21.64	22.25	39.20	51.44	*39%*		
Source = River	4.09	15.74	29.08	30.03	30.98	33.84	34.79	61.32	80.45	*61%*		
Afforestation (km^2)	**2.21**	**8.66**	**7.52**	**7.44**	**8.24**	**10.63**	**11.43**	**1.56**	**4.20**			
Alien Vegetation (km^2)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**7.87**			
Farm Dams: Volume (Mm^3)	3.07	10.18	14.01	14.28	14.55	15.37	15.64	17.39	47.64			
Farm Dams: Area (km^2)	1.81	3.34	3.93	3.97	4.01	4.12	4.16	4.39	7.36			
Area:	**a(cap)^b**											
a	1.0157											
b	0.5126											
S-PAN (G10D)	138	193	237	241	199	184	113	64	42	41	57	89
A-PAN (G10D)	175	244	299	305	251	232	142	81	53	51	72	112

Data Sources
1950-1990 (WCSA)
1996 (VASF)
2004 (Berg WAAS)

Notes: Condensed alien veg area

GAUGE:	**G1H037**											
Main Catchment:	Berg					**SUB-CATCHMENT AREAS (km^2)**						
Subcatchment:	Krom					Above farm dam boundary		43.94	63%			
River:	Krom					Below farm dam boundary		26.05	37%			
Location:	Wellington					**TOTAL AREA**		**69.99**				
Subcatchment area:	70.0 km^2											
LANDUSE					**YEAR**							
	1950	**1965**	**1979**	**1980**	**1981**	**1988**	**1990**	**1996**	**2004**			
Irrigation (km^2)	**2.42**	**4.20**	**4.16**	**4.16**	**4.36**	**5.73**	**6.13**	**19.01**	**19.43**			
Source = Farm dams	0.94	1.64	1.62	1.62	1.70	2.24	2.39	7.42	7.58	*39%*		
Source = River	1.48	2.56	2.54	2.54	2.66	3.50	3.74	11.59	11.85	*61%*		
Afforestation (km^2)	**0.30**	**1.67**	**4.90**	**5.13**	**5.31**	**6.62**	**7.00**	**1.14**	**5.27**			
Alien Vegetation (km^2)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.42**			
Farm Dams: Volume (Mm^3)	0.17	0.61	1.12	1.16	1.22	1.63	1.75	1.76	7.52			
Farm Dams: Area (km^2)	0.14	0.26	0.34	0.35	0.36	0.41	0.43	0.43	0.85			
Area:	**a(cap)^b**											
a	0.326											
b	0.475											
S-PAN (G10D)	138	193	237	241	199	184	113	64	42	41	57	89
A-PAN (G10D)	175	244	299	305	251	232	142	81	53	51	72	112

Data Sources
1950-1990 (WCSA)
1996 (VASF)
2004 (Berg WAAS)

Notes: Condensed alien veg area

GAUGE:	**G1H040**

Main Catchment:	Berg	**SUB-CATCHMENT AREAS (km^2)**		
Subcatchment:	Fish	Above farm dam boundary	15.48	43%
River:	Fish	Below farm dam boundary	20.53	57%
Location:	La Fontaine	**TOTAL AREA**	**36.00**	
Subcatchment area:	36.00 km^2			

LANDUSE	**YEAR**											
	1950	**1965**	**1980**	**1988**	**1990**	**1996**	**2004**					
Irrigation (km^2)	**0.00**	**0.56**	**0.83**	**0.92**	**0.94**	**5.81**	**7.67**					
Source = Farm dams	0.00	0.00	0.00	0.00	0.00	3.66	4.83	63%				
Source = River	0.00	0.56	0.83	0.92	0.94	2.15	2.84	37%				
Afforestation (km^2)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.09**					
Alien Vegetation (km^2)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.34**					
Farm Dams: Volume (Mm^3)	0.00	0.00	0.00	0.00	0.00	0.67	0.64					
Farm Dams: Area (km^2)	0.00	0.00	0.00	0.00	0.00	0.62	0.61					

Area:	**a(cap)^b**
Coefficient a	0.7587
Coefficient b	0.4959

S-PAN (G10F)	140	195	240	244	201	186	114	65	42	41	58	90
A-PAN (G10F)	177	247	303	309	255	235	144	82	54	52	73	114

Data Sources
1950-1990 (WCSA)
1996 (VASF)
Farm dams (VASF)
2004 (Berg WAAS)

Notes: Condensed alien veg area

GAUGE:	**G1H041**											
									SUB-CATCHMENT AREAS (km^2)			
Main Catchment:	Berg								Above farm dam boundary	12.33	10%	HIGH MAP
Subcatchment:	Kompanjies								Below farm dam boundary	8.80	7%	HIGH MAP
River:	Kompanjies								Above farm dam boundary	38.68	32%	LOW MAP
Location:	De Eikeboomen								Below farm dam boundary	60.80	50%	LOW MAP
Subcatchment area:	120.6 km^2								**TOTAL AREA**	**120.60**		

LANDUSE	**YEAR**									
	1950	**1965**	**1979**	**1980**	**1988**	**1990**	**1996**	**2004**		
Irrigation (km^2)	**0.00**	**0.98**	**1.96**	**2.03**	**2.59**	**2.73**	**12.14**	**11.60**		**LOW MAP**
Source = Farm dams	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		HIGH MAP
Source = River	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		HIGH MAP
Source = Farm dams	0.00	0.38	0.76	0.79	1.01	1.07	4.74	4.53	*39%*	LOW MAP
Source = River	0.00	0.60	1.19	1.24	1.58	1.67	7.40	7.07	*61%*	LOW MAP
Afforestation (km^2)	**0.00**	**1.63**	**0.57**	**0.50**	**2.87**	**3.47**	**0.62**	**0.23**		**LOW MAP**
Alien Vegetation (km^2)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.90**		**LOW MAP**
Farm Dams: Volume (Mm^3)	0.16	2.58	3.05	3.08	3.30	3.36	4.24	4.68		**LOW MAP**
Farm Dams: Area (km^2)	0.22	0.93	1.01	1.01	1.05	1.06	1.20	1.26		

Area:	**a(cap)^b**
a	0.5644
b	0.5205

S-PAN (G10D)	138	193	237	241	199	184	113	64	42	41	57	89
A-PAN (G10D)	175	244	299	305	251	232	142	81	53	51	72	112

Data Sources
1950-1990 (WCSA)
1996 (VASF)
2004 (Berg WAAS)

Notes: Condensed alien veg area

GAUGE:	**G1H043**

Main Catchment:	Berg	**SUB-CATCHMENT AREAS (km^2)**		
Subcatchment:	Sandspruit	Above farm dam boundary	9.24	6%
River:	Sandspruit	Below farm dam boundary	145.62	94%
Location:	Vrisgewaagd	**TOTAL AREA**	**154.86**	
Subcatchment area:	154.9 km^2			

LANDUSE	**YEAR**											
	1950	**1965**	**1980**	**1988**	**1990**	**1996**	**2004**					
Irrigation (km^2)	**0.00**	**0.13**	**0.27**	**0.11**	**0.07**	**1.00**	**0.95**					
Source = Farm dams	0.00	0.08	0.17	0.07	0.04	0.63	0.60	*63%*				
Source = River	0.00	0.05	0.10	0.04	0.03	0.37	0.35	*37%*				
Afforestation (km^2)	**0.00**	**4.00**	**0.25**	**0.59**	**0.68**	**0.60**	**0.41**					
Alien Vegetation (km^2)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.26**					
Farm Dams: Volume (Mm^3)	0.55	0.55	0.55	0.55	0.55	0.57	31.83					
Farm Dams: Area (km^2)	0.09	0.09	0.09	0.09	0.09	0.09	0.37					

Area:	**a(cap)^b**
a	0.1131
b	0.3425

S-PAN (G10J)	139	194	238	242	200	185	113	64	42	41	57	89
A-PAN (G10J)	176	245	301	307	253	234	143	81	53	52	73	113

Data Sources
1950-1990 (WCSA)
1996 (VASF)
2004 (Berg WAAS)

Notes: Condensed alien veg area

GAUGE:	**G1R002**		
Main Catchment:	Berg	**SUB-CATCHMENT AREAS (km^2)**	
Subcatchment:	Wemmershoek	Above farm dam boundary	0.00 0%
River:	Wemmershoek	Below farm dam boundary	85.27 100%
Location:	Wemmershoek Dam	**TOTAL AREA**	**85.27**
Subcatchment area:	85.3 km^2		

LANDUSE	**YEAR**							
	1950	**1965**	**1972**	**1980**	**1988**	**1990**	**1993**	**2004**
Irrigation (km^2)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Afforestation (km^2)	**0.00**	**0.00**	**5.49**	**5.29**	**5.09**	**5.04**	**5.04**	**2.96**
Alien Vegetation (km^2)	**0.00**	**8.43**	**12.37**	**16.87**	**21.37**	**22.49**	**24.18**	**0.25**
Farm Dams: Volume (Mm^3)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Farm Dams: Area (km^2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Area:	**a(cap)[b]**
Coefficient a	-
Coefficient b	-

S-PAN (G10B)	133	188	234	244	204	171	93	49	36	33	49	80
A-PAN (G10B)	167	237	295	308	256	215	117	62	46	42	62	101

Data Sources
1950-1990 (WCSA)
1993 (SDFS); Alien Veg: Only Mountain Catchment Areas and Densities > 25% (SDFS)
2004 (Berg WAAS)

Notes: Condensed alien veg area

APPENDIX B:

CATCHMENT RAINFALL FILES

APPENDIX NUMBER	CALIBRATION GAUGE
B1	G1H003
B2	G1H004
B3	G1H008, G1H021
B4	G1H011
B5	G1H013
B6	G1H019
B7	G1H020
B8	G1H028
B9	G1H029
B10	G1H035
B11	G1H036
B12	G1H037
B13	G1H040
B14	G1H041
B15	G1H043
B16	G1R002

AVERAGE RAINFALL ON CATCHMENT OF CODE G1H003

DETAILS OF RAINFALL STATIONS USED

SECTION	POSITION	MAP(mm)	PERIOD OF RECORD	LATITUDE	LONGITUDE
22	113	835	1927 TO 2003	33.53	19.04
22	116	1842	1927 TO 1960	33.56	19.04
22	148	1995	1961 TO 2004	33.58	19.05
22	204	880	1941 TO 1969	33.54	19.07

RAINFALL INPUT AS PERCENT M.A.P.

YEAR	STNS.	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	YEAR
1927	2	0.89	9.37	4.42	2.63	0.00	5.05	2.75	0.50	29.49	12.85	11.14	14.02	93.12
1928	2	2.33	3.32	2.92	0.00	0.69	1.12	12.22	11.89	9.34	17.37	12.01	5.35	78.57
1929	2	2.72	3.34	4.27	2.20	2.40	4.81	4.43	0.00	2.38	16.67	14.28	22.22	79.72
1930	2	4.29	6.58	2.36	0.00	3.33	0.00	10.45	15.84	5.29	8.75	17.19	18.32	92.38
1931	2	11.14	0.00	2.00	3.15	7.87	3.94	2.94	16.55	17.14	10.07	9.86	10.17	94.83
1932	2	2.29	0.39	2.03	2.35	2.72	1.47	1.02	8.91	21.81	11.80	11.38	2.56	68.73
1933	2	7.58	0.34	0.00	0.80	1.80	4.08	1.55	12.84	6.76	7.14	8.41	8.20	59.49
1934	2	6.01	3.45	1.49	1.02	2.55	3.55	8.74	13.31	7.73	15.92	9.55	9.00	82.32
1935	2	2.19	4.48	0.92	7.20	2.28	1.67	0.57	9.55	7.01	11.33	13.94	9.30	70.43
1936	2	1.89	2.72	5.85	2.37	0.30	5.47	9.50	16.90	31.48	20.63	7.57	5.75	110.42
1937	2	4.13	1.00	0.25	7.85	1.92	1.96	10.25	14.42	6.74	12.52	9.09	12.57	82.72
1938	2	4.65	6.36	1.29	0.00	7.31	1.14	9.06	20.00	3.77	9.44	15.87	5.73	84.61
1939	2	1.56	4.66	6.39	0.58	7.12	5.27	8.50	13.76	18.06	9.65	8.47	7.28	91.30
1940	2	6.27	8.54	1.40	6.86	2.31	1.24	22.16	20.52	22.56	18.61	13.45	27.93	151.83
1941	3	7.72	1.84	3.44	2.50	0.30	0.59	3.34	18.97	37.58	8.58	18.02	2.57	105.46
1942	3	4.54	0.02	2.20	4.08	1.58	5.53	7.61	7.20	10.91	15.05	20.48	6.98	86.17
1943	3	6.17	5.44	0.29	2.05	0.01	2.05	7.29	17.71	31.66	20.26	17.70	6.73	117.35
1944	3	8.16	5.26	6.66	0.00	0.00	0.34	6.80	27.43	33.72	35.46	14.80	1.28	139.92
1945	3	5.83	3.13	2.79	1.08	1.53	4.10	7.98	11.81	4.98	11.77	15.62	17.57	88.18
1946	3	13.43	2.91	1.08	0.00	0.00	8.29	4.37	15.62	7.72	34.24	11.86	3.99	103.49
1947	3	5.49	1.67	0.00	0.55	1.07	2.98	3.27	18.60	12.28	18.23	12.64	17.47	94.25
1948	3	8.74	1.71	4.19	0.96	0.00	0.76	9.29	7.51	10.45	13.75	13.20	10.41	80.96
1949	3	6.80	6.89	1.20	0.30	0.00	0.61	17.17	1.68	8.21	29.25	3.10	14.74	89.96
1950	3	4.74	10.45	4.85	4.11	0.29	0.08	24.37	12.47	26.31	15.13	7.31	7.54	117.67
1951	3	4.92	5.17	0.00	0.00	0.98	3.60	6.94	10.42	6.16	9.30	20.26	16.29	84.02
1952	3	4.70	8.10	0.35	0.59	0.75	1.98	28.52	23.85	11.90	18.84	13.81	3.10	116.50
1953	3	4.50	5.95	1.83	1.74	2.36	3.66	16.46	30.83	14.31	30.20	20.43	4.94	137.21
1954	3	7.22	2.22	4.13	0.01	13.61	1.16	4.87	1.93	9.79	23.92	28.52	4.34	101.72
1955	3	9.25	8.87	1.47	1.18	0.35	3.86	8.57	16.15	25.62	18.21	20.97	9.15	123.66
1956	3	5.34	0.27	3.17	1.51	10.48	4.73	5.63	30.85	23.08	22.00	18.86	8.22	134.14
1957	3	14.34	1.89	0.00	1.71	8.91	3.33	4.84	20.65	9.34	2.68	17.79	4.80	90.30
1958	3	5.04	5.04	0.00	2.16	0.99	1.79	13.68	34.14	3.52	3.25	11.93	3.92	85.46
1959	3	5.97	0.08	1.83	1.57	1.23	3.81	6.37	12.48	24.17	3.48	3.14	3.44	67.56
1960	3	4.04	0.05	1.68	4.69	1.19	0.94	3.39	9.67	16.61	9.02	14.58	17.42	83.29
1961	3	3.30	0.00	3.07	1.57	5.02	7.55	11.41	4.02	43.62	12.08	24.87	6.95	123.46
1962	3	16.07	3.68	0.24	2.68	0.00	1.22	2.19	6.18	10.34	24.16	19.95	5.72	92.43
1963	3	3.93	4.95	5.44	0.26	10.28	3.23	5.68	11.71	19.23	13.87	14.23	3.26	96.06
1964	3	6.55	6.95	1.55	6.04	5.72	10.15	11.64	20.30	8.92	9.84	13.71	5.53	106.89
1965	3	3.71	3.27	6.45	0.20	1.30	18.28	5.69	10.66	14.26	22.96	14.83	9.04	110.66
1966	3	0.36	2.35	3.93	3.36	0.14	0.85	15.99	12.50	26.17	6.96	6.75	8.22	87.58
1967	3	6.33	5.04	0.35	5.04	1.57	0.36	14.69	24.13	16.87	19.81	12.58	3.19	109.95
1968	3	15.50	2.24	2.94	6.79	1.53	1.27	6.12	2.25	14.96	11.47	15.45	13.79	94.30
1969	3	10.01	0.51	0.10	1.15	2.63	0.26	0.45	20.57	24.72	14.79	19.14	8.31	102.65
1970	2	3.65	3.47	5.36	0.36	0.00	3.23	3.12	8.72	14.28	18.99	19.22	3.76	84.16
1971	2	3.30	0.66	3.20	2.93	1.87	0.71	7.53	10.64	12.94	5.16	8.99	7.16	65.08
1972	2	2.23	0.01	2.98	0.19	0.05	2.61	1.29	6.13	2.52	24.68	8.96	4.04	55.68
1973	2	4.46	3.02	6.46	1.03	0.59	0.80	0.20	13.69	19.16	10.88	31.09	9.99	101.37
1974	2	9.11	5.38	1.51	2.28	1.14	1.21	7.93	26.86	15.60	27.96	10.27	2.92	112.17
1975	2	5.88	3.50	0.41	0.00	0.21	3.57	3.64	6.58	38.56	22.55	8.70	5.72	99.32
1976	2	1.99	16.23	7.05	2.92	4.79	1.97	19.34	32.41	41.86	30.52	26.70	7.50	193.27
1977	2	3.30	2.56	4.44	1.85	2.10	4.14	4.35	6.72	1.99	4.54	23.03	9.68	68.70
1978	2	8.15	0.82	5.27	2.30	7.24	1.16	2.52	16.78	18.46	9.83	11.31	11.37	95.20
1979	2	13.68	0.11	0.00	4.57	4.44	0.33	10.24	17.48	17.69	3.97	12.46	6.70	91.69
1980	2	5.44	12.11	7.48	10.80	1.55	6.77	4.76	3.58	11.92	22.01	9.82	13.52	109.78
1981	2	5.01	3.66	1.95	3.91	0.40	1.55	9.53	10.46	18.11	18.86	9.58	3.29	86.32
1982	2	7.10	4.10	7.06	0.65	5.29	4.33	2.66	28.28	26.20	15.29	8.39	17.35	126.70
1983	2	2.07	1.47	2.62	2.58	0.61	6.52	6.43	26.46	5.31	13.05	7.40	15.86	90.40
1984	2	10.67	0.16	11.29	3.51	6.21	11.19	9.35	6.43	25.67	23.44	13.18	8.70	129.80
1985	2	4.61	1.38	2.17	1.94	1.98	7.69	8.54	11.10	22.64	18.00	23.74	8.36	112.15
1986	2	1.38	1.97	1.40	6.57	2.46	2.45	5.64	21.49	15.13	14.66	19.41	11.56	104.12
1987	2	2.95	2.39	7.87	0.39	0.41	3.05	10.78	14.98	8.86	14.92	13.96	9.00	89.56
1988	2	3.27	1.14	2.88	0.86	3.97	11.38	6.62	15.03	10.99	20.14	16.02	11.72	104.01
1989	2	5.20	7.24	0.90	0.81	4.54	0.53	24.59	8.43	19.59	28.18	6.80	4.21	111.02
1990	2	0.99	3.45	4.33	0.30	1.91	1.39	4.41	18.14	34.65	24.92	7.74	15.48	117.69
1991	2	4.92	1.83	0.37	0.05	3.97	5.03	9.94	12.16	36.27	18.31	6.36	7.72	106.91
1992	2	13.21	2.87	1.20	0.83	3.20	0.95	23.26	21.18	16.09	30.63	9.93	0.72	124.06
1993	2	0.67	0.81	2.69	2.78	0.26	0.85	5.92	5.53	43.66	15.32	5.98	10.66	95.13
1994	2	2.53	1.25	1.42	3.12	0.82	2.54	1.51	12.56	19.62	25.97	14.85	4.15	90.34
1995	2	12.98	1.54	4.92	0.85	3.95	4.01	5.11	8.02	34.12	15.27	16.51	21.23	128.50
1996	2	9.11	9.76	7.25	0.93	0.01	1.10	5.86	7.54	27.60	6.24	14.10	1.41	90.90
1997	2	7.33	4.53	6.50	2.56	0.01	2.49	8.30	27.60	11.84	16.66	5.78	5.86	99.46
1998	2	2.31	6.35	6.51	0.00	0.06	0.00	7.28	12.22	19.00	14.38	21.32	14.91	104.34
1999	2	0.27	3.27	0.31	6.05	0.12	2.02	0.71	15.52	9.88	13.05	14.37	12.55	78.10
2000	2	2.17	1.90	1.99	2.35	1.98	0.01	5.40	21.40	8.53	35.77	21.07	14.58	117.15
2001	2	4.34	1.00	0.66	8.60	2.86	1.24	8.39	13.97	16.30	20.61	12.40	5.46	95.83
2002	2	9.68	3.74	4.04	1.38	0.49	6.52	4.30	4.37	2.98	6.68	20.73	10.44	75.35
2003	2	6.84	4.33	4.97	4.50	0.00	1.99	8.02	8.81	15.56	13.59	17.22	4.28	90.11
2004	1	8.81	0.76	0.66	8.16	0.11	0.47	6.04	16.65	21.27	18.78	18.91	6.74	107.36
AVERAGE		5.77	3.58	2.96	2.41	2.38	3.13	7.98	14.30	17.46	16.48	14.17	8.92	99.53
ADJUSTED		5.80	3.60	2.97	2.42	2.40	3.14	8.02	14.36	17.54	16.55	14.23	8.96	100.00
STD.DEV.		3.66	3.11	2.44	2.38	2.82	3.09	5.91	7.82	10.49	7.80	5.75	5.37	21.75

AVERAGE RAINFALL ON CATCHMENT OF CODE G1H004

DETAILS OF RAINFALL STATIONS USED

SECTION	POSITION	MAP(mm)	PERIOD OF RECORD	LATITUDE	LONGITUDE
21	809	1463	1936 TO 2004	33.59	18.57
22	113	835	1927 TO 2003	33.53	19.04
9020	4	2116	1936 TO 1986	0.04	3596.01

RAINFALL INPUT AS PERCENT M.A.P.

YEAR	STNS.	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	YEAR
1927	1	0.60	8.92	5.44	3.32	0.00	4.90	3.41	0.60	34.11	13.81	10.67	12.12	97.88
1928	1	1.98	2.41	3.28	0.00	0.85	1.01	10.24	13.25	8.09	17.27	11.82	3.78	73.97
1929	1	3.34	2.69	4.43	3.20	2.96	6.90	3.62	0.00	2.47	14.72	14.34	22.68	81.33
1930	1	5.09	6.80	2.07	0.00	3.50	0.00	9.82	5.11	3.83	7.83	12.64	8.62	65.31
1931	1	10.56	0.00	1.10	1.34	6.57	1.13	1.07	17.65	11.61	10.31	7.38	7.30	76.02
1932	1	1.98	0.10	1.58	1.15	1.90	0.95	0.99	9.34	18.10	10.55	9.70	1.95	58.29
1933	1	5.08	0.36	0.00	0.53	1.68	3.35	0.97	14.10	5.59	7.38	4.96	6.31	50.30
1934	1	6.33	3.14	0.85	0.95	3.26	3.81	10.55	12.70	6.92	11.97	6.82	5.84	73.14
1935	1	1.13	3.41	0.60	7.30	2.17	1.92	0.65	7.36	6.07	7.82	13.07	10.15	61.65
1936	3	2.69	5.50	5.08	3.76	0.39	4.74	8.14	13.59	28.70	19.33	9.17	5.64	106.74
1937	3	5.12	3.03	0.08	7.70	2.05	1.82	11.71	16.96	7.15	11.07	9.13	14.99	90.81
1938	3	4.98	5.92	1.26	0.00	8.08	1.08	9.11	19.62	4.70	8.49	15.62	5.24	84.10
1939	3	2.44	5.50	6.66	1.36	5.64	6.35	12.12	12.67	17.25	10.54	8.94	8.61	98.07
1940	3	8.06	9.88	2.07	5.83	2.57	1.78	22.89	20.73	21.38	17.78	17.34	26.52	156.82
1941	3	7.63	3.40	3.55	2.86	0.51	0.79	3.99	20.75	35.47	12.04	15.07	3.86	109.92
1942	3	5.26	0.23	1.58	4.90	2.56	4.59	7.30	7.96	9.13	20.00	12.90	7.36	83.77
1943	3	8.16	4.67	0.73	2.34	0.29	2.30	9.26	24.39	23.56	21.00	12.68	12.14	121.53
1944	3	7.03	5.93	4.47	0.05	0.00	0.89	6.81	26.84	33.05	25.16	15.67	1.00	126.91
1945	3	7.05	3.96	2.79	2.15	1.44	4.26	7.35	11.56	9.14	12.17	14.75	20.53	97.16
1946	3	8.18	2.88	1.48	0.40	0.00	6.88	5.48	14.69	8.84	26.07	12.97	5.01	92.88
1947	3	6.91	1.81	0.64	0.42	1.66	3.23	5.32	16.69	13.47	17.04	9.75	16.19	93.14
1948	3	8.38	1.54	3.34	2.04	0.39	0.92	10.59	6.63	9.14	11.45	14.41	8.89	77.72
1949	3	6.23	7.87	1.56	0.39	0.56	1.27	18.56	2.48	10.27	32.21	4.07	13.10	98.57
1950	3	4.80	9.03	5.09	5.27	0.54	0.33	19.32	12.03	34.12	15.31	11.48	12.02	129.36
1951	3	7.15	7.93	0.20	0.21	1.44	5.35	7.58	11.17	7.04	12.81	22.69	15.90	99.46
1952	3	5.48	10.04	1.01	1.09	0.67	2.46	24.80	21.45	11.64	18.91	15.33	1.82	114.69
1953	3	3.78	7.98	1.69	2.38	2.20	3.68	14.63	28.54	14.21	30.20	18.85	4.23	132.38
1954	3	7.54	2.87	3.87	0.12	15.63	1.71	5.55	2.92	14.04	22.13	27.44	6.79	110.62
1955	3	10.55	9.49	1.94	1.56	0.93	4.16	9.34	15.59	24.93	22.20	18.10	7.70	126.49
1956	3	5.51	0.81	3.85	1.38	8.82	4.23	6.20	30.04	17.58	20.45	15.91	10.95	125.71
1957	3	13.48	1.71	0.01	2.64	8.81	3.12	6.71	24.67	10.47	5.98	15.27	4.95	97.83
1958	3	6.30	5.34	0.02	2.17	1.37	2.82	16.31	30.08	6.70	3.27	10.86	7.64	92.88
1959	3	7.42	0.45	2.64	2.96	1.90	6.85	4.26	14.40	22.36	2.98	5.07	4.89	76.17
1960	3	3.50	0.40	2.62	5.31	1.32	1.46	3.12	11.97	20.42	9.37	18.08	11.47	89.04
1961	3	4.72	0.02	2.74	1.90	4.73	8.34	10.54	4.88	36.44	13.77	24.62	6.76	119.44
1962	3	13.86	5.12	1.06	3.72	0.23	1.34	2.22	5.99	11.32	21.30	21.12	7.47	94.73
1963	3	1.75	6.31	6.72	0.65	9.95	0.62	4.75	12.23	17.32	12.13	15.47	4.18	92.07
1964	3	8.51	6.90	1.77	5.67	6.65	12.87	9.28	19.10	7.07	6.25	16.64	5.76	106.49
1965	3	3.81	1.56	6.77	0.73	2.24	14.87	6.59	8.36	13.94	18.21	13.34	7.79	98.21
1966	3	0.68	3.54	3.03	3.79	0.10	1.69	15.38	11.65	24.49	8.99	6.85	8.28	88.44
1967	3	8.90	6.66	1.35	6.06	2.51	0.02	14.80	13.99	17.51	16.56	11.82	3.10	103.27
1968	3	12.27	1.43	4.33	7.67	2.80	2.58	7.51	2.47	13.37	9.88	13.46	13.04	90.80
1969	3	8.75	1.56	0.88	1.76	1.94	0.34	1.15	22.54	20.96	13.74	17.60	8.79	100.02
1970	3	3.62	3.80	5.36	1.62	0.03	3.04	2.82	7.86	14.59	15.39	16.07	3.93	78.15
1971	3	4.97	1.13	3.55	4.34	2.23	1.85	16.42	11.74	10.65	7.34	8.94	8.11	81.28
1972	3	3.28	0.07	4.59	0.60	0.19	5.12	1.49	7.50	5.56	18.70	8.12	9.85	65.08
1973	3	5.03	3.15	7.10	0.95	1.02	1.25	0.83	17.38	20.33	10.60	30.37	8.79	106.81
1974	3	11.09	5.61	1.86	2.50	1.66	1.85	4.44	22.83	13.54	24.54	12.92	2.62	105.45
1975	3	7.15	3.74	0.53	0.15	0.70	4.19	5.47	6.57	28.09	20.30	10.58	9.90	97.38
1976	3	5.21	16.24	10.98	3.21	4.27	3.09	17.68	23.20	38.78	24.90	23.40	8.88	179.84
1977	3	4.13	1.51	4.93	3.08	2.26	3.57	9.22	9.32	2.87	5.20	22.57	10.63	79.29
1978	3	8.98	2.87	7.02	2.53	6.83	2.63	3.34	13.93	19.46	8.86	9.51	8.22	94.18
1979	3	15.20	1.30	0.38	4.19	4.46	0.82	9.34	14.62	19.11	3.91	11.66	6.72	91.70
1980	3	5.58	12.29	6.98	10.49	1.09	6.25	7.09	3.28	11.94	20.57	13.38	12.06	111.00
1981	3	4.39	5.03	2.75	3.96	0.37	1.62	12.15	10.29	14.77	16.70	8.62	3.94	84.59
1982	3	7.03	4.01	6.53	2.94	6.49	4.51	2.82	28.23	25.92	11.61	7.23	14.16	121.49
1983	3	1.80	1.24	1.94	1.85	0.91	7.11	6.53	22.09	4.55	11.88	4.31	11.13	75.35
1984	3	8.88	0.45	13.71	3.76	5.24	9.13	8.66	5.20	20.45	15.17	8.66	7.28	106.59
1985	3	3.89	1.14	1.71	2.45	2.49	6.92	6.28	5.57	15.85	10.07	24.72	8.73	89.81
1986	3	1.94	2.09	1.43	6.77	2.25	3.11	6.70	18.50	15.97	17.37	15.46	13.16	104.76
1987	2	3.57	2.56	7.19	0.90	0.01	3.12	11.79	12.04	11.26	15.02	15.26	11.00	93.71
1988	2	4.62	2.05	2.79	0.57	3.67	16.93	7.65	13.49	10.89	19.83	13.91	12.39	108.80
1989	2	7.62	7.23	0.48	1.86	4.35	0.43	23.92	10.12	21.60	22.18	6.99	4.00	110.78
1990	2	1.36	4.04	5.44	0.76	1.07	1.45	5.21	16.67	22.13	30.51	6.31	10.75	105.70
1991	2	5.22	2.14	0.82	0.07	3.99	3.95	11.72	9.57	29.56	13.86	9.59	8.76	99.25
1992	2	12.69	4.15	1.30	1.31	4.82	1.11	31.39	20.01	21.13	26.69	9.97	1.02	135.58
1993	2	0.65	1.03	2.07	2.50	0.41	0.77	4.68	5.48	30.50	12.63	5.22	8.43	74.37
1994	2	2.95	1.64	1.56	3.13	0.49	1.60	2.67	15.22	15.70	16.86	19.09	4.15	85.05
1995	2	13.10	1.80	7.09	0.87	5.05	4.48	6.00	4.95	27.64	17.23	15.42	15.56	119.19
1996	2	14.16	9.75	11.66	0.60	0.33	1.31	6.69	9.87	20.66	10.13	11.51	2.42	99.07
1997	2	3.39	17.05	1.77	3.10	0.00	2.35	7.13	30.65	14.04	12.67	8.33	4.54	105.01
1998	2	2.66	8.60	4.89	0.24	0.19	0.02	8.48	7.80	15.86	7.29	11.78	9.05	76.84
1999	2	1.33	3.18	0.29	4.03	2.11	2.04	0.79	11.58	9.52	15.07	13.58	14.82	78.36
2000	2	2.35	2.06	1.31	2.32	1.69	0.19	4.46	20.12	8.71	38.08	20.72	12.97	114.98
2001	2	6.97	2.42	1.28	12.55	3.84	1.42	7.97	15.19	17.58	22.24	11.59	7.16	110.21
2002	2	7.06	3.52	4.35	1.66	0.82	12.78	4.80	6.89	5.16	8.06	24.81	11.26	91.17
2003	2	8.21	0.06	5.59	4.73	0.00	2.51	10.82	1.57	14.94	9.88	14.40	5.81	78.52
2004	1	11.50	1.52	1.44	2.06	5.59	1.89	7.19	8.58	18.32	10.53	18.35	5.20	92.18
AVERAGE		6.08	4.10	3.19	2.66	2.62	3.44	8.39	13.43	16.30	15.16	13.55	8.70	97.64
ADJUSTED		6.23	4.20	3.27	2.73	2.69	3.52	8.60	13.76	16.70	15.52	13.88	8.91	100.00
STD.DEV.		3.49	3.55	2.76	2.41	2.79	3.30	5.96	7.48	8.71	6.98	5.54	4.72	21.19

AVERAGE RAINFALL ON CATCHMENT OF CODE G1H008 AND G1H021

DETAILS OF RAINFALL STATIONS USED

SECTION	POSITION	MAP(mm)	PERIOD OF RECORD	LATITUDE	LONGITUDE
42	11	444	1964 TO 1978	33.11	19.01
42	166	537	1927 TO 1950	33.16	19.06
42	227	474	1927 TO 2004	33.17	19.08
42	257	445	1961 TO 2004	33.17	19.09

RAINFALL INPUT AS PERCENT M.A.P.

YEAR	STNS.	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	YEAR
1927	2	0.38	10.95	2.70	2.96	0.00	3.48	0.21	0.08	32.27	8.96	14.34	8.47	84.79
1928	2	5.07	4.08	1.26	0.00	0.36	1.54	9.03	13.14	14.95	20.14	16.89	4.31	90.79
1929	2	3.65	1.22	7.26	2.95	7.27	1.64	2.30	1.60	1.74	8.71	9.50	23.69	71.54
1930	2	6.82	5.22	0.41	0.00	1.92	0.91	12.63	18.26	2.25	9.25	22.76	12.01	92.43
1931	2	7.42	0.26	4.89	1.97	22.93	0.85	0.19	14.59	17.31	13.50	10.63	10.86	105.40
1932	2	5.10	1.58	0.94	1.70	4.32	3.89	0.26	17.26	27.08	31.93	9.59	7.35	111.01
1933	2	4.29	2.59	3.58	0.95	1.72	6.60	0.45	15.23	15.39	7.60	5.37	17.61	81.38
1934	2	14.52	7.52	0.00	0.67	3.20	6.91	12.15	12.88	13.67	10.80	16.85	7.03	106.19
1935	2	1.35	6.05	0.24	5.07	0.78	3.18	1.82	15.75	4.45	13.84	16.48	17.69	86.70
1936	2	4.31	2.59	10.20	0.38	0.21	9.88	10.31	12.76	22.96	21.51	6.48	0.83	102.42
1937	2	5.85	0.00	2.16	3.54	1.45	1.77	15.00	16.12	8.36	8.78	11.32	12.68	87.03
1938	2	4.09	2.46	2.92	0.00	5.26	0.63	5.12	16.55	7.58	6.73	15.58	9.48	76.40
1939	2	1.45	3.20	1.25	0.73	7.03	1.93	10.25	6.37	18.08	6.61	2.70	11.51	71.11
1940	2	4.09	5.89	2.61	11.99	0.08	0.63	13.47	29.13	25.05	13.85	14.54	24.00	145.34
1941	2	13.27	1.46	2.87	1.29	0.00	0.38	1.35	17.71	45.42	8.20	10.59	2.39	104.91
1942	2	8.28	0.66	1.76	6.73	5.07	5.69	3.05	6.85	15.91	23.54	24.54	10.95	113.02
1943	2	6.85	8.65	0.00	2.43	0.00	4.59	7.90	24.60	29.12	4.25	23.36	11.16	122.92
1944	2	6.68	7.71	3.96	0.00	0.00	0.23	8.38	31.38	28.03	18.95	18.47	1.07	124.87
1945	2	5.86	3.93	1.95	0.42	0.19	4.20	5.32	10.17	6.51	5.95	8.36	26.28	79.14
1946	2	6.84	2.24	2.08	0.00	0.00	9.99	1.29	11.52	3.17	25.24	8.70	6.63	77.71
1947	2	10.29	2.29	0.00	0.40	5.39	15.04	9.85	14.23	9.38	21.45	3.64	20.87	112.84
1948	2	7.96	1.55	1.86	1.52	0.00	0.76	10.93	6.76	11.37	11.55	10.86	12.89	78.00
1949	2	13.93	17.43	2.28	0.00	0.00	0.75	23.55	2.74	7.32	30.74	0.00	26.48	125.21
1950	2	11.15	15.55	4.59	7.98	0.00	0.00	11.26	8.19	31.72	13.16	13.68	9.75	127.03
1951	1	8.39	8.22	0.00	0.63	3.21	3.31	3.65	26.61	15.86	21.85	21.49	10.04	123.26
1952	1	6.68	15.44	1.12	0.00	0.00	1.27	27.73	23.79	5.12	23.98	14.09	0.46	119.68
1953	1	3.58	10.90	6.64	2.00	1.05	3.56	14.87	43.40	11.39	33.07	27.58	4.85	162.91
1954	1	6.54	1.37	7.82	0.00	13.81	3.75	4.83	2.34	22.88	23.15	35.41	4.01	125.92
1955	1	17.19	4.85	2.85	3.54	2.21	1.16	2.11	13.69	20.56	10.86	11.70	5.17	95.89
1956	1	2.85	0.00	5.27	0.00	16.17	6.12	6.54	28.45	22.78	20.67	18.45	6.96	134.25
1957	1	24.57	0.00	0.00	0.95	6.64	0.00	4.85	17.08	9.17	1.58	16.66	5.69	87.20
1958	1	5.69	4.22	0.00	1.16	4.15	3.37	15.16	32.75	5.90	1.90	16.87	6.12	97.30
1959	1	12.02	0.00	5.48	0.00	0.63	6.12	5.80	12.91	17.71	4.11	4.43	4.74	73.96
1960	1	3.58	2.00	2.85	4.22	0.53	2.15	5.27	7.91	7.59	11.60	14.02	18.45	80.18
1961	2	1.63	0.00	0.43	2.01	4.70	12.24	10.81	7.88	40.09	15.53	28.45	4.89	128.67
1962	2	24.56	6.67	0.37	0.35	0.00	1.35	0.45	1.01	14.54	16.11	31.49	3.38	100.27
1963	2	1.53	12.51	5.90	0.07	2.88	1.37	4.78	9.05	22.10	13.73	23.04	11.85	108.84
1964	3	6.95	10.50	0.19	3.11	12.02	11.81	8.85	13.68	6.04	6.08	9.80	3.97	92.99
1965	3	6.57	1.73	4.99	0.00	1.16	10.08	6.65	6.40	18.77	22.98	7.76	9.18	96.29
1966	3	0.18	0.61	0.15	1.62	0.54	0.08	13.21	7.07	31.01	10.94	9.61	7.83	82.87
1967	3	8.50	7.22	0.00	1.85	1.74	0.00	13.45	21.24	20.95	17.62	13.71	0.66	106.95
1968	3	23.04	3.53	0.71	1.43	2.22	2.17	9.93	1.06	9.11	5.58	13.28	9.54	81.60
1969	3	15.07	1.79	0.38	0.00	1.48	0.00	0.21	15.99	24.49	15.71	16.63	7.83	99.59
1970	3	5.22	0.00	1.98	0.87	0.19	9.45	0.67	5.43	12.73	16.34	12.03	1.46	66.38
1971	3	1.52	1.14	1.34	3.18	1.26	2.54	13.12	16.13	12.77	12.82	4.31	7.49	77.63
1972	3	4.13	0.00	7.36	0.00	0.60	5.67	0.99	7.73	2.64	28.30	12.64	11.12	81.18
1973	3	5.31	1.42	6.35	0.19	0.00	2.14	3.07	24.61	19.79	11.09	54.82	9.68	138.46
1974	3	11.61	4.87	2.05	2.98	0.94	1.92	7.45	27.12	5.89	13.83	12.65	2.10	93.42
1975	3	11.56	1.69	0.74	1.75	2.42	2.29	22.23	5.87	33.76	18.59	8.16	4.10	113.15
1976	3	4.56	21.86	13.00	1.21	5.43	2.02	11.52	28.90	24.55	28.92	17.95	7.63	167.54
1977	3	4.29	1.16	1.73	1.28	0.49	6.60	6.19	2.98	2.64	0.52	19.57	7.78	55.22
1978	3	1.98	0.47	2.93	3.62	8.17	0.62	1.45	10.89	12.94	13.69	6.44	8.89	72.08
1979	2	6.93	0.77	0.11	5.41	2.80	0.38	5.04	11.09	11.68	2.72	11.86	1.83	60.60
1980	2	6.04	29.64	13.35	19.97	0.00	4.53	4.93	2.26	5.07	24.15	15.07	21.48	146.50
1981	2	4.29	1.81	0.17	6.49	0.53	8.29	25.01	5.75	14.94	7.59	3.40	0.82	79.09
1982	2	8.46	3.69	3.94	0.13	10.33	6.77	1.53	33.17	23.66	14.61	5.38	7.58	119.26
1983	2	2.51	4.82	1.25	0.58	0.11	19.67	7.95	36.98	1.95	13.27	4.66	24.96	118.72
1984	2	12.48	0.00	13.57	8.44	10.17	21.69	9.40	7.98	12.67	23.46	18.14	9.79	147.81
1985	2	0.79	0.26	3.08	0.99	1.78	5.16	3.37	2.89	18.77	15.84	22.70	7.75	83.37
1986	2	2.18	3.07	0.00	0.86	1.74	1.18	8.13	25.49	21.21	12.19	12.78	8.48	97.30
1987	2	0.11	0.00	3.33	0.00	0.00	1.79	20.71	4.87	15.85	7.26	13.01	11.24	78.18
1988	2	1.73	1.05	0.86	2.54	3.66	16.95	11.70	9.47	20.09	13.71	21.03	16.12	118.91
1989	2	8.43	3.35	0.11	1.92	5.56	3.19	19.54	21.45	17.86	17.68	9.00	0.55	108.63
1990	2	0.11	4.57	4.36	1.49	0.00	1.37	5.66	9.01	26.61	40.44	4.78	12.91	111.31
1991	2	7.40	3.89	3.25	0.00	7.12	4.12	12.19	9.35	25.81	18.05	15.39	5.44	112.01
1992	2	13.81	3.49	1.09	0.76	4.05	1.09	24.50	21.24	15.14	28.84	7.71	2.64	124.36
1993	2	0.44	3.46	2.50	0.00	0.00	0.55	13.75	7.99	33.11	13.38	2.55	15.13	92.86
1994	2	3.99	0.00	1.17	0.66	0.11	3.33	1.83	20.90	12.39	18.34	16.43	3.25	82.38
1995	2	12.76	3.51	13.91	2.56	4.52	4.56	4.46	9.33	21.11	22.88	21.87	10.81	132.27
1996	2	6.35	11.56	10.95	1.45	0.00	2.48	3.42	8.01	29.26	4.68	8.85	0.36	87.36
1997	2	3.25	12.51	5.28	9.53	0.00	0.00	2.44	18.76	11.05	14.12	5.51	2.49	84.94
1998	2	3.78	11.93	6.05	0.17	0.49	0.00	10.20	8.58	8.03	10.45	23.13	17.22	100.03
1999	2	0.16	1.87	2.56	1.30	0.00	0.74	1.49	4.40	9.89	24.58	9.92	19.08	75.98
2000	2	0.16	3.29	0.11	0.93	1.69	0.00	6.20	19.66	5.26	37.28	14.89	16.76	106.22
2001	2	6.21	4.14	0.22	10.97	4.68	3.51	11.32	22.08	9.62	19.58	18.70	15.68	126.71
2002	2	6.92	4.68	2.17	3.89	0.43	5.72	5.06	6.53	1.33	2.85	30.96	9.67	80.23
2003	2	6.71	0.00	5.48	5.10	0.02	1.14	9.84	0.87	13.60	11.03	10.74	5.59	70.11
2004	2	15.25	1.41	0.11	2.73	0.21	0.72	16.95	5.51	14.65	8.51	29.50	5.22	100.78
AVERAGE		6.80	4.59	3.12	2.32	2.84	3.94	8.31	13.84	16.07	15.31	14.57	9.42	101.12
ADJUSTED		6.72	4.54	3.09	2.29	2.81	3.90	8.22	13.69	15.89	15.13	14.41	9.31	100.00
STD.DEV.		5.36	5.38	3.43	3.27	4.12	4.49	6.48	9.46	9.58	8.54	8.73	6.57	23.75

AVERAGE RAINFALL ON CATCHMENT OF CODE G1h011

DETAILS OF RAINFALL STATIONS USED

SECTION	POSITION	MAP(mm)	PERIOD OF RECORD	LATITUDE	LONGITUDE
42	250	1127	1984 TO 2004	33.10	19.09
42	326	645	1927 TO 2004	33.26	19.11
42	415	616	1927 TO 1960	33.25	19.14

RAINFALL INPUT AS PERCENT M.A.P.

YEAR	STNS.	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	YEAR
1927	2	1.14	11.39	3.00	3.57	0.00	4.06	1.03	0.31	33.96	7.65	12.80	12.12	91.03
1928	2	1.09	1.85	1.19	0.00	0.81	2.29	13.25	13.18	11.40	17.09	14.62	3.37	80.14
1929	2	2.38	1.74	6.35	4.07	4.52	1.37	4.18	1.39	1.87	12.01	13.99	22.37	76.25
1930	2	4.64	4.15	0.99	0.02	2.63	0.02	12.18	16.77	4.13	8.70	29.85	11.66	95.73
1931	2	8.15	0.66	2.84	3.94	22.92	1.65	2.03	17.70	15.14	14.42	7.82	8.66	105.93
1932	2	2.44	0.63	1.94	2.19	3.88	2.35	0.66	12.42	26.02	22.95	11.51	5.11	92.10
1933	2	5.20	1.58	3.36	1.39	2.23	6.22	1.95	13.69	12.04	9.56	10.49	13.85	81.54
1934	2	12.87	7.61	0.00	0.62	2.28	5.61	9.83	13.49	9.03	17.80	14.72	11.07	104.93
1935	2	2.51	6.58	0.93	5.12	1.36	3.11	1.29	14.60	4.39	12.34	16.92	12.23	81.39
1936	2	2.75	1.90	11.29	1.50	0.04	7.97	9.21	13.89	22.71	26.33	6.34	2.11	106.05
1937	2	4.79	0.77	2.69	10.57	1.48	0.91	11.45	21.46	8.50	7.73	11.63	13.14	95.13
1938	2	4.04	2.86	2.68	0.00	10.14	1.34	7.31	17.83	3.76	8.57	18.37	7.73	84.62
1939	2	1.21	3.44	5.05	1.65	5.87	3.87	10.23	7.37	16.75	8.68	6.08	6.23	76.43
1940	2	4.50	8.16	1.24	7.93	1.45	0.22	15.46	29.52	26.17	12.97	17.09	25.79	150.50
1941	2	11.43	1.36	1.64	1.12	0.00	0.56	2.06	20.98	47.97	6.79	12.00	1.99	107.91
1942	2	5.68	0.15	4.04	6.17	1.94	4.98	6.30	6.47	15.67	22.34	21.99	12.44	108.16
1943	2	4.56	8.19	0.00	1.59	0.00	3.19	8.70	18.26	42.24	7.41	17.39	10.04	121.56
1944	2	4.85	5.85	1.99	0.00	0.00	0.46	8.90	26.07	32.72	19.85	14.84	1.94	117.46
1945	2	2.67	2.75	2.14	0.00	0.47	3.08	5.89	7.43	5.11	9.06	11.27	24.06	73.93
1946	2	5.99	1.24	1.47	0.00	0.00	8.45	2.98	7.00	5.25	27.81	10.47	4.83	75.50
1947	2	6.70	1.18	0.00	0.24	2.95	13.75	11.08	18.15	10.43	19.94	4.66	18.80	107.89
1948	2	7.48	1.72	1.53	1.23	0.00	0.37	9.04	9.39	11.54	14.89	14.97	14.18	86.34
1949	2	10.98	9.04	2.00	0.12	0.00	0.72	21.92	2.30	4.63	31.03	0.57	17.50	100.81
1950	2	6.60	11.81	4.53	9.13	0.00	0.00	14.53	9.21	30.01	14.34	9.90	9.23	119.29
1951	2	7.39	11.19	0.08	0.23	3.90	3.77	4.73	20.56	10.41	13.67	25.96	11.29	113.18
1952	2	6.51	11.16	0.27	0.08	0.30	1.11	24.33	24.45	6.32	23.12	11.85	0.15	109.65
1953	2	1.32	8.28	4.74	1.34	1.00	2.56	14.56	26.46	10.85	28.19	19.35	7.11	125.76
1954	2	4.97	1.50	5.19	0.00	11.22	1.67	5.77	3.35	19.30	21.85	37.58	2.62	115.03
1955	2	11.41	12.05	0.76	2.10	2.77	2.20	2.76	12.51	23.09	15.20	14.45	4.16	103.44
1956	2	3.81	0.00	0.59	0.62	19.12	7.08	3.79	30.10	27.67	28.21	17.87	7.93	146.79
1957	2	19.33	0.77	0.00	0.84	7.30	1.33	4.02	20.06	10.97	3.72	16.93	5.25	90.53
1958	2	5.99	5.40	0.00	0.85	3.62	1.68	15.58	46.93	4.37	3.07	15.42	4.39	107.30
1959	2	12.73	0.00	3.11	0.69	1.30	3.84	7.50	20.46	23.19	3.42	3.78	4.12	84.14
1960	2	2.52	2.16	2.05	6.39	0.87	2.21	5.08	15.28	12.47	9.80	15.57	17.66	92.06
1961	1	1.94	0.00	1.47	2.25	5.22	5.73	7.90	5.33	45.04	11.98	25.83	6.20	118.89
1962	1	17.00	6.35	0.00	1.39	0.00	0.62	1.32	2.09	11.23	16.50	34.52	2.56	93.59
1963	1	1.70	6.28	6.45	0.00	9.31	0.00	7.36	9.99	25.95	11.43	27.35	4.34	110.16
1964	1	5.39	9.76	1.16	2.97	7.20	11.93	7.75	7.98	8.60	4.26	6.82	2.77	76.60
1965	1	4.76	0.85	4.49	0.00	0.46	8.77	7.19	3.10	16.72	22.03	6.26	10.18	84.82
1966	1	0.23	0.43	1.63	2.57	1.01	0.00	10.07	6.04	28.74	10.18	6.74	6.82	74.47
1967	1	7.51	7.11	0.00	1.86	0.70	0.00	14.02	23.15	17.97	17.14	14.87	0.46	104.80
1968	1	21.92	2.63	2.63	0.46	1.60	0.62	8.17	4.11	7.28	4.45	11.16	8.75	73.78
1969	1	12.71	1.32	0.54	0.39	1.47	0.31	0.23	14.58	22.61	16.42	19.00	6.85	96.42
1970	1	3.41	2.40	1.69	0.40	0.54	8.37	0.00	5.30	14.67	12.75	16.36	0.85	66.75
1971	1	1.16	0.70	1.01	1.24	1.70	0.00	15.71	13.33	9.45	8.52	8.88	5.92	67.62
1972	1	6.93	0.00	4.73	0.00	0.00	4.42	0.77	7.02	2.71	27.89	15.42	11.93	81.81
1973	1	4.73	0.93	4.88	0.00	0.31	0.31	0.00	17.97	23.71	11.47	49.27	11.93	125.50
1974	1	12.71	6.51	0.00	3.18	2.09	1.16	7.25	29.41	7.38	14.91	16.55	1.91	103.04
1975	1	12.78	3.41	0.85	0.00	2.87	2.25	7.51	5.11	37.19	15.65	6.35	2.79	96.76
1976	1	1.78	26.03	11.30	3.64	4.18	1.60	11.39	33.39	30.14	29.59	23.55	5.42	182.01
1977	1	2.63	2.25	6.66	0.93	2.01	5.97	7.59	8.35	3.41	0.15	21.54	12.63	74.12
1978	1	1.47	0.00	1.86	3.61	12.01	0.00	1.60	11.56	20.84	12.01	9.99	13.56	88.50
1979	1	11.31	0.23	0.00	3.80	2.32	0.00	7.82	13.23	13.71	2.48	14.10	1.47	70.48
1980	1	5.11	21.15	15.68	18.59	0.00	4.60	4.88	1.63	11.00	22.85	19.21	16.04	140.75
1981	1	3.18	1.94	0.00	6.28	0.39	4.93	16.50	8.29	9.92	10.54	5.66	0.00	67.60
1982	1	11.11	2.17	3.80	0.00	4.26	4.18	1.39	27.32	21.38	23.16	5.73	6.59	111.09
1983	1	0.00	1.78	0.70	0.54	0.15	15.57	5.61	41.06	9.92	8.75	6.97	20.07	111.12
1984	2	13.31	0.13	10.20	5.51	4.05	17.11	9.40	10.72	17.04	20.93	18.22	9.23	135.84
1985	2	1.11	0.43	3.23	1.61	1.86	8.85	4.75	7.74	16.13	13.97	29.61	8.07	97.36
1986	2	2.01	2.94	0.00	2.99	0.98	1.04	7.26	23.86	18.75	16.30	16.96	8.20	101.30
1987	2	0.54	0.88	3.90	0.42	0.00	1.81	17.09	7.86	20.34	8.23	13.89	9.99	84.95
1988	2	1.50	1.48	1.23	0.38	6.47	14.94	6.71	10.06	14.61	12.95	19.62	19.73	109.70
1989	2	6.72	5.22	0.86	2.08	4.40	2.16	18.71	16.56	15.61	20.80	8.94	0.53	102.59
1990	2	0.60	4.26	5.18	0.67	0.59	2.77	5.51	13.94	25.41	34.62	5.55	17.61	116.70
1991	2	6.99	2.26	0.85	0.00	6.61	2.92	13.12	5.41	33.46	16.90	13.86	6.58	108.97
1992	2	17.86	3.51	0.48	1.34	3.97	1.24	17.97	21.88	15.10	30.42	4.21	3.26	121.23
1993	2	0.26	1.21	4.34	0.29	0.35	0.75	10.17	7.32	42.25	11.50	3.14	15.53	97.11
1994	2	3.98	0.55	1.55	0.67	0.55	1.91	1.83	14.23	14.17	18.18	14.24	3.01	74.88
1995	2	19.28	1.95	10.43	0.61	4.40	3.73	3.98	11.23	31.12	19.41	23.31	25.09	154.54
1996	2	8.09	15.34	8.84	2.12	0.25	2.16	4.00	8.82	30.15	5.53	15.52	0.52	101.34
1997	2	1.72	8.81	3.91	6.59	0.03	0.58	2.76	31.33	9.86	14.35	7.67	3.79	91.40
1998	2	3.14	12.90	6.15	0.00	1.37	0.00	3.65	6.75	13.42	6.21	11.24	17.08	81.93
1999	2	0.04	0.00	2.89	1.55	0.13	0.89	1.02	6.23	8.86	21.92	9.71	16.78	70.03
2000	2	0.64	3.39	1.54	0.74	2.07	0.00	7.30	20.38	7.22	37.78	18.22	15.80	115.08
2001	2	3.91	4.96	1.39	10.47	4.12	1.54	4.45	20.32	9.77	24.98	16.72	5.53	108.14
2002	2	5.47	4.31	2.78	1.53	0.15	4.37	3.77	4.12	1.61	6.32	24.82	6.20	65.43
2003	2	8.24	0.10	6.55	4.02	0.14	0.57	10.52	1.42	12.62	12.22	9.84	4.03	70.26
2004	2	8.70	1.05	0.22	2.44	0.68	0.26	14.25	7.08	21.05	10.55	29.38	6.44	102.12
AVERAGE		5.98	4.22	2.92	2.25	2.81	3.27	7.69	14.05	17.03	15.25	15.08	8.95	99.49
ADJUSTED		6.01	4.24	2.93	2.26	2.83	3.29	7.73	14.12	17.12	15.33	15.15	9.00	100.00
STD.DEV.		5.00	4.87	3.09	3.08	4.03	3.80	5.41	9.44	10.78	8.10	8.36	6.38	22.29

AVERAGE RAINFALL ON CATCHMENT OF CODE G1H013

DETAILS OF RAINFALL STATIONS USED

SECTION	POSITION	MAP(mm)	PERIOD OF RECORD	LATITUDE	LONGITUDE
40	653	482	1927 TO 2004	33.23	18.22
41	417	463	1927 TO 2000	33.27	18.44
41	871	496	1958 TO 2004	33.01	18.60
42	227	474	1927 TO 2004	33.17	19.08

RAINFALL INPUT AS PERCENT M.A.P.

YEAR	STNS.	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	YEAR
1927	3	1.60	7.68	2.60	2.89	0.00	3.17	0.68	0.56	24.72	7.24	11.57	8.58	71.28
1928	3	2.43	2.19	4.27	0.02	0.58	2.00	8.55	13.14	12.02	16.60	9.64	4.55	76.00
1929	3	2.50	2.14	5.67	3.25	4.33	1.74	3.42	1.31	2.84	10.21	8.66	24.36	70.44
1930	3	4.90	6.34	0.99	0.00	3.22	0.60	14.20	13.80	5.56	8.08	21.05	11.90	90.63
1931	3	6.44	0.02	2.17	1.70	16.61	0.77	0.86	19.74	15.88	12.45	9.39	12.85	98.87
1932	3	3.60	1.01	2.07	2.50	2.60	2.50	1.00	13.47	25.71	26.11	10.95	4.83	96.34
1933	3	5.21	2.69	3.79	1.82	2.72	8.81	2.31	15.41	9.84	8.13	9.48	13.71	83.92
1934	3	10.02	7.41	0.00	0.29	0.95	4.40	10.51	14.17	9.74	14.93	12.89	9.92	95.24
1935	3	2.46	5.47	0.87	6.49	1.74	3.25	0.98	13.04	5.39	12.54	13.71	15.95	81.90
1936	3	2.24	2.33	6.95	0.81	0.18	10.10	8.54	11.14	22.89	23.15	5.74	2.25	96.32
1937	3	5.05	0.64	1.09	3.60	1.63	1.41	12.32	12.61	7.58	8.18	9.39	11.94	75.45
1938	3	3.61	1.95	5.31	0.21	4.82	1.00	4.25	17.06	7.23	11.03	14.21	7.09	77.77
1939	3	1.91	3.50	1.56	1.08	10.20	3.16	10.84	9.95	18.28	7.93	4.28	9.72	82.40
1940	3	5.81	6.85	1.94	5.74	1.31	1.17	16.70	30.56	24.62	15.03	16.79	22.56	149.07
1941	3	10.40	1.97	3.83	0.67	0.90	0.60	4.28	20.90	43.14	7.29	13.96	3.76	111.69
1942	3	6.85	0.25	1.99	5.98	3.97	7.83	2.28	7.60	11.29	19.99	20.53	11.07	99.64
1943	3	5.20	7.03	0.00	3.11	0.00	2.56	7.25	23.77	35.97	7.28	25.07	9.34	126.58
1944	3	8.14	5.33	4.90	0.00	0.00	1.07	8.88	32.41	26.30	23.98	19.00	1.22	131.21
1945	3	3.91	2.38	1.65	0.71	0.33	4.20	5.25	11.17	7.25	12.14	10.13	26.31	85.44
1946	3	6.94	2.23	1.77	0.00	0.00	10.20	3.13	9.66	6.34	26.42	9.80	4.62	81.12
1947	3	5.88	2.69	0.12	0.36	1.96	12.38	6.43	14.06	9.32	24.17	7.00	17.97	102.35
1948	3	8.63	1.78	2.20	1.82	0.22	1.03	11.66	8.15	13.31	15.09	13.36	12.06	89.32
1949	3	8.06	9.68	1.31	0.48	0.00	1.19	23.29	3.22	8.53	36.15	2.57	19.07	113.56
1950	3	6.90	9.22	4.18	4.80	0.07	0.16	14.59	9.62	32.03	13.52	12.52	8.40	116.02
1951	3	6.74	8.33	0.02	0.71	1.85	3.15	5.33	22.19	13.95	19.52	26.33	14.56	122.67
1952	3	4.88	13.35	0.58	0.43	0.24	2.98	26.02	22.82	6.73	21.35	20.25	1.01	120.64
1953	3	2.10	6.34	2.99	1.64	1.34	3.34	11.76	43.01	12.57	35.06	22.52	6.59	149.27
1954	3	6.94	0.84	5.64	0.00	13.90	2.17	5.05	4.64	16.74	21.70	34.03	5.61	117.25
1955	3	11.69	4.58	2.25	1.58	1.42	2.02	3.93	17.42	21.64	15.81	14.33	3.99	100.65
1956	3	5.27	0.24	2.57	0.28	12.95	3.88	4.36	26.72	22.25	26.44	16.25	6.61	127.83
1957	3	19.84	0.73	0.00	0.87	5.91	1.23	5.00	17.47	9.72	2.49	15.64	5.39	84.29
1958	4	6.31	3.88	0.00	1.39	2.45	3.32	14.23	39.77	5.89	6.21	17.07	6.03	106.55
1959	4	10.15	0.16	2.77	0.00	1.07	5.59	5.88	16.90	18.22	4.25	5.70	3.83	74.52
1960	4	4.21	0.63	4.26	2.99	2.00	2.49	4.90	9.41	14.53	9.39	15.37	18.71	88.89
1961	4	2.47	0.00	0.47	2.45	4.86	5.52	11.54	5.85	38.64	12.33	20.07	5.57	109.78
1962	4	18.60	5.94	0.67	1.03	0.24	2.35	0.87	2.83	14.21	17.18	28.21	4.32	96.46
1963	4	1.96	9.04	4.74	0.04	5.44	1.77	3.54	9.56	19.81	14.97	18.08	6.83	95.77
1964	4	7.41	10.50	0.34	3.14	9.51	11.71	9.17	10.68	8.60	5.78	10.96	3.67	91.47
1965	4	5.56	1.14	4.55	0.36	1.22	9.60	5.46	5.28	14.22	22.32	9.87	9.36	88.95
1966	4	0.35	0.99	1.13	2.41	0.54	0.18	13.25	6.42	28.10	9.26	9.14	6.75	78.52
1967	4	8.32	5.65	0.78	3.48	1.28	0.00	15.46	18.83	17.72	20.42	13.65	1.68	107.27
1968	4	17.57	1.45	1.15	3.53	1.81	2.43	9.37	1.91	9.70	6.65	12.07	10.38	78.02
1969	4	12.56	0.94	0.44	1.02	1.51	0.06	0.57	16.15	22.21	15.61	13.88	7.20	92.14
1970	4	4.76	1.18	2.49	1.27	0.63	4.75	1.93	5.26	11.85	13.52	16.09	1.90	65.63
1971	4	2.43	1.16	1.55	3.65	2.06	2.81	10.73	13.43	11.67	9.83	6.54	6.95	72.80
1972	4	2.49	0.00	7.63	0.00	0.49	8.06	0.94	7.16	2.71	28.10	10.33	10.76	78.67
1973	4	4.81	4.15	6.34	0.89	1.02	1.45	1.36	24.16	25.25	9.60	49.94	10.21	139.16
1974	4	11.62	4.07	1.30	5.00	1.12	1.19	11.45	24.25	6.84	17.48	12.45	2.40	99.16
1975	4	10.11	2.62	0.81	0.36	0.81	3.07	15.50	6.70	31.19	15.68	8.64	6.78	102.26
1976	4	2.09	18.84	10.12	1.98	6.31	3.89	12.99	28.98	27.04	28.08	19.09	9.47	168.87
1977	4	4.09	4.27	4.33	2.02	1.68	6.80	8.33	5.38	2.34	3.05	18.00	9.98	70.27
1978	4	4.05	1.55	7.91	3.33	7.34	0.89	2.35	13.81	14.82	8.74	7.33	9.63	81.75
1979	4	8.99	0.75	0.06	5.17	2.80	0.39	7.34	14.52	12.08	5.29	12.87	3.49	73.73
1980	4	4.20	23.85	8.01	9.72	0.55	5.50	6.71	2.94	7.78	26.05	20.14	17.15	132.60
1981	4	3.35	2.48	1.76	6.57	0.75	6.41	17.98	9.45	15.74	11.09	11.25	1.65	88.48
1982	4	8.76	2.50	6.52	1.48	8.19	5.98	2.63	27.63	22.09	14.45	6.83	9.27	116.32
1983	4	2.35	3.43	2.09	1.36	1.58	10.94	6.41	33.49	5.96	11.37	5.30	18.83	103.13
1984	4	13.70	0.10	12.65	6.62	6.44	15.76	9.81	9.60	15.01	21.54	13.66	9.61	134.49
1985	4	2.71	0.68	2.92	1.76	1.19	7.18	5.20	7.62	20.72	17.41	21.65	9.47	98.51
1986	4	2.64	3.80	0.71	4.14	1.99	2.30	8.74	22.87	18.53	21.71	20.11	11.67	119.20
1987	4	1.88	1.37	5.71	0.33	0.58	4.18	16.97	6.21	12.94	12.99	16.14	10.60	89.91
1988	4	2.57	2.12	2.42	1.96	4.21	13.12	11.07	11.11	12.60	17.72	17.58	15.84	112.31
1989	4	7.59	5.52	0.38	2.28	4.74	0.62	24.26	18.82	19.28	19.91	8.91	2.78	115.08
1990	4	0.52	2.98	4.68	1.28	1.57	1.50	4.61	11.10	22.43	35.34	5.12	16.84	107.95
1991	4	13.28	2.51	1.84	0.00	5.23	5.54	8.46	9.93	29.24	16.92	10.73	7.87	111.56
1992	4	14.34	2.75	0.49	0.98	4.35	1.43	23.75	21.49	15.83	31.26	11.52	5.27	133.48
1993	4	0.26	1.40	2.78	1.26	0.00	1.12	10.83	6.56	38.44	10.01	3.57	11.24	87.48
1994	4	4.56	0.79	0.88	1.91	0.83	3.85	1.91	12.62	18.17	25.20	16.97	2.99	90.70
1995	4	13.61	1.43	12.75	0.16	8.05	3.98	5.00	9.39	21.75	14.91	20.16	20.70	131.87
1996	4	9.77	11.53	7.95	2.17	0.13	1.67	3.57	9.65	27.46	6.41	12.28	0.95	93.53
1997	4	0.73	6.83	3.03	4.99	0.00	1.20	3.77	22.95	8.96	10.73	8.60	3.68	75.47
1998	4	3.22	9.18	6.68	0.02	0.45	0.09	9.28	11.07	12.50	11.67	25.81	19.49	109.46
1999	4	0.41	2.93	2.98	2.29	0.00	1.77	0.67	5.07	8.85	18.39	10.86	17.59	71.81
2000	4	0.88	5.16	0.39	1.87	0.96	0.13	4.95	19.34	8.18	38.02	18.62	14.28	112.77
2001	3	8.02	2.84	0.01	11.97	3.85	2.22	7.78	20.64	10.56	18.63	18.00	10.47	114.99
2002	3	7.17	3.57	2.22	2.11	0.55	6.58	6.87	5.62	2.28	4.66	29.10	9.48	80.21
2003	3	7.08	0.10	5.37	4.77	0.06	2.33	11.48	0.76	16.92	15.11	11.91	4.96	80.85
2004	3	17.31	1.04	0.14	4.78	0.55	0.81	12.82	9.46	17.80	8.08	23.50	6.96	103.25
AVERAGE		6.26	3.94	3.01	2.26	2.68	3.70	8.16	14.02	16.12	15.81	14.68	9.40	100.02
ADJUSTED		6.25	3.94	3.01	2.26	2.68	3.70	8.16	14.02	16.11	15.81	14.67	9.40	100.00
STD.DEV.		4.47	4.16	2.84	2.28	3.37	3.45	5.86	8.92	9.03	8.19	7.48	5.83	21.48

AVERAGE RAINFALL ON CATCHMENT OF CODE G1H019

DETAILS OF RAINFALL STATIONS USED

SECTION	POSITION	MAP(mm)	PERIOD OF RECORD	LATITUDE	LONGITUDE
21	809	1463	1936 TO 2004	33.59	18.57
21	778	1076	1927 TO 2004	33.58	18.56
9020	4	2116	1936 TO 1986	0.04	3596.01
22	29	2060	1944 TO 2004	33.59	19.01

RAINFALL INPUT AS PERCENT M.A.P.

YEAR	STNS.	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	YEAR
1927	1	1.99	10.05	7.10	3.86	0.07	3.53	2.59	1.35	21.37	7.11	16.60	16.42	92.04
1928	1	4.37	2.91	4.06	0.09	0.81	1.09	15.77	13.16	8.04	16.72	14.21	5.28	86.50
1929	1	1.58	4.96	12.35	4.04	4.25	3.90	4.79	1.33	4.64	13.61	17.67	22.90	96.02
1930	1	7.68	8.24	0.51	0.00	4.03	0.00	15.27	14.99	9.66	14.53	18.27	17.28	110.47
1931	1	16.88	0.57	3.22	3.50	12.52	3.68	4.69	15.04	19.75	13.90	8.68	9.56	111.98
1932	1	4.69	1.82	4.15	2.75	2.19	1.47	2.75	8.05	19.11	14.96	17.18	3.55	82.68
1933	1	6.56	1.41	0.00	1.25	2.56	4.61	2.07	19.59	9.05	5.79	12.73	11.05	76.67
1934	1	8.85	9.66	0.85	2.70	1.65	4.19	9.66	16.23	5.64	15.69	11.74	7.82	94.68
1935	1	5.81	11.04	0.59	6.64	2.70	8.11	1.43	13.71	6.64	10.05	12.51	13.20	92.44
1936	3	3.07	5.95	4.44	4.14	0.60	4.92	7.48	13.36	29.07	20.44	10.29	6.37	110.12
1937	3	6.18	3.98	0.06	8.55	1.90	2.19	12.60	18.95	8.25	10.80	9.65	15.57	98.67
1938	3	6.09	4.94	1.09	0.00	8.02	0.84	9.67	16.26	5.17	9.05	15.05	4.93	81.11
1939	3	2.59	5.39	6.78	1.57	3.81	7.11	13.62	11.23	17.63	9.77	7.53	8.91	95.94
1940	3	8.44	8.81	2.16	4.58	2.80	2.14	21.92	20.32	22.45	16.71	17.04	25.77	153.15
1941	3	7.57	4.07	3.34	3.44	0.53	0.74	4.51	21.39	32.37	11.74	14.25	4.65	108.61
1942	3	5.15	0.35	1.60	5.99	3.46	4.24	8.24	10.11	9.71	21.31	12.65	7.87	90.68
1943	3	8.65	4.85	1.27	2.39	0.42	2.28	8.81	26.10	22.78	19.14	12.44	14.63	123.78
1944	4	6.53	5.68	3.47	0.32	0.01	1.34	6.34	19.91	29.79	14.90	14.90	1.24	104.42
1945	4	7.90	10.67	2.64	1.81	1.08	4.33	7.14	9.15	11.06	12.65	10.66	19.98	99.05
1946	4	7.50	4.08	1.98	0.59	0.00	6.12	4.35	15.12	6.73	25.67	8.76	7.55	88.45
1947	4	5.16	2.54	1.34	0.67	1.61	4.16	4.68	13.51	12.38	17.47	7.13	13.60	84.24
1948	4	10.40	1.08	3.97	2.35	0.49	1.12	9.06	6.44	8.89	10.62	10.67	9.73	74.82
1949	4	8.29	7.67	5.10	0.64	0.48	1.97	15.01	6.38	7.67	29.55	4.72	9.12	96.59
1950	4	8.45	8.00	5.42	5.91	0.42	0.72	14.18	12.62	25.11	17.91	11.15	9.42	119.29
1951	4	11.06	9.03	0.24	0.38	1.97	4.00	7.25	10.63	6.37	11.43	12.70	14.76	89.83
1952	4	5.83	6.80	3.82	1.38	0.86	2.45	24.88	20.87	9.25	23.32	11.97	8.43	119.86
1953	4	4.25	9.11	1.57	2.84	1.65	3.91	12.72	19.77	16.62	32.21	19.91	4.74	129.31
1954	4	8.09	2.57	4.99	0.09	12.22	6.21	6.45	2.47	14.44	20.53	20.06	14.06	112.19
1955	4	14.14	8.78	1.50	3.04	1.21	4.38	6.53	17.20	16.80	19.83	20.91	6.40	120.71
1956	4	4.33	2.62	3.28	2.66	9.28	3.12	6.86	21.98	12.87	21.55	21.23	8.60	118.37
1957	4	18.61	1.56	0.01	1.93	8.67	6.23	6.16	22.06	18.78	6.26	13.43	9.96	113.67
1958	4	8.53	3.72	1.38	2.95	1.11	2.90	15.75	31.37	13.76	3.78	9.50	10.82	105.56
1959	4	9.69	1.74	3.55	2.70	2.76	6.10	6.62	17.46	22.79	2.19	5.43	8.10	89.12
1960	4	3.47	0.45	2.45	6.11	2.31	1.93	3.35	10.08	23.18	6.83	19.04	13.17	92.35
1961	4	6.81	0.02	1.77	2.44	4.51	9.11	9.75	4.99	26.58	14.23	26.76	5.10	112.06
1962	4	11.90	10.02	1.62	2.97	0.18	1.43	2.84	6.93	11.24	16.66	26.76	6.09	98.64
1963	4	4.26	6.66	6.75	0.75	6.49	3.10	4.35	11.10	17.15	12.26	15.68	3.70	92.25
1964	4	10.32	5.66	3.64	3.43	6.17	11.20	10.11	13.83	9.67	6.31	18.21	6.39	104.93
1965	4	4.08	1.79	5.31	2.73	3.11	10.75	11.54	6.83	11.67	21.38	9.82	12.31	101.32
1966	4	0.65	3.58	2.98	4.09	1.13	1.77	12.04	14.40	26.10	7.43	11.73	6.28	92.16
1967	4	10.79	4.89	3.40	6.27	2.30	0.98	10.45	18.73	18.35	12.36	18.42	3.99	110.93
1968	4	11.43	0.90	4.78	5.61	4.10	3.93	7.53	3.06	9.72	10.88	13.13	13.38	88.45
1969	4	6.56	3.75	1.64	1.45	2.36	0.53	1.55	16.88	19.25	18.89	13.42	13.69	99.97
1970	4	2.98	4.21	5.22	2.43	0.03	2.41	4.13	8.79	10.69	14.66	15.92	8.00	79.47
1971	4	4.31	2.76	3.05	3.53	3.15	2.30	14.25	17.91	7.98	8.93	10.79	9.00	87.97
1972	4	3.68	0.05	3.97	0.60	0.57	5.53	1.01	6.33	6.47	13.46	13.78	7.92	63.38
1973	4	6.30	5.43	4.37	0.79	1.28	1.42	1.11	14.11	18.66	14.91	26.35	15.63	110.36
1974	4	9.61	6.04	2.78	2.41	2.25	2.20	5.29	20.95	14.18	21.25	14.02	2.44	103.42
1975	4	8.10	2.77	1.43	0.14	0.83	3.39	4.28	7.52	29.76	13.62	16.50	11.24	99.59
1976	4	4.85	19.60	14.18	2.77	2.85	3.49	16.75	17.07	37.03	24.03	25.83	8.22	176.67
1977	4	3.78	1.07	5.56	3.60	2.23	2.58	11.01	9.66	3.17	5.82	23.88	11.63	83.99
1978	4	8.75	3.71	5.42	5.06	6.52	3.16	3.49	11.47	21.67	8.99	8.66	7.01	93.90
1979	4	15.13	2.02	0.55	4.12	3.01	0.72	8.87	14.60	18.24	3.74	11.76	5.12	87.88
1980	4	4.76	10.50	6.65	9.71	0.22	5.46	7.93	2.80	11.31	20.21	15.73	15.22	110.51
1981	4	2.44	6.71	3.61	4.22	0.54	1.44	12.44	8.31	11.84	11.90	9.24	4.10	76.79
1982	4	7.56	4.46	5.89	3.45	7.09	4.32	2.88	30.77	25.29	12.41	6.94	12.91	123.94
1983	4	1.85	1.49	1.71	1.31	1.07	5.68	6.18	22.73	4.55	13.04	5.52	10.84	75.96
1984	4	9.39	1.01	13.43	4.18	6.17	9.41	8.96	5.91	20.05	13.72	9.76	6.89	108.87
1985	4	3.17	1.85	2.14	2.72	3.13	5.84	7.92	6.79	17.65	11.25	23.35	9.01	94.82
1986	4	2.68	2.42	1.78	6.40	1.74	3.44	6.79	17.11	16.08	18.31	14.29	13.42	104.46
1987	3	3.60	2.54	6.88	0.80	0.24	2.48	12.23	9.35	13.81	15.22	17.42	11.21	95.77
1988	3	6.40	3.20	3.13	0.45	2.61	16.27	8.73	12.89	9.38	16.69	13.73	11.90	105.38
1989	3	9.18	6.90	0.87	2.31	4.74	0.54	13.26	17.93	16.28	23.87	8.34	4.71	108.94
1990	3	2.20	3.69	3.83	1.45	1.23	1.81	4.59	16.78	19.53	23.64	13.31	12.75	104.81
1991	3	6.76	2.00	1.19	0.35	4.15	2.80	14.43	11.74	24.88	14.33	9.57	9.31	101.52
1992	3	12.71	4.36	2.29	1.44	4.52	0.81	36.97	17.32	21.19	29.04	9.82	1.87	142.32
1993	3	0.88	1.53	2.30	3.54	0.66	0.86	4.95	6.13	29.62	10.73	6.73	6.63	74.57
1994	3	3.34	2.11	1.87	2.88	0.64	1.43	4.13	13.64	16.05	16.72	17.84	4.37	85.03
1995	3	12.51	1.73	7.74	0.41	5.40	4.23	6.39	4.51	22.60	11.78	9.67	17.50	104.48
1996	3	17.66	10.20	11.29	1.86	0.45	1.09	6.67	9.37	19.87	8.86	10.58	1.73	99.63
1997	3	4.28	16.37	7.77	2.83	0.18	2.44	7.25	20.57	16.74	16.04	7.82	3.95	106.23
1998	3	1.94	9.93	9.07	0.34	0.25	0.10	8.37	6.09	12.15	0.00	0.00	0.00	48.24
1999	3	1.37	2.13	0.48	1.24	2.17	2.39	1.50	6.93	12.23	14.53	8.04	18.49	71.50
2000	3	2.25	1.48	1.94	1.35	1.30	0.41	2.92	18.82	5.51	20.58	13.61	7.52	77.70
2001	3	6.03	16.59	2.01	14.81	2.48	1.12	4.36	17.62	17.20	14.06	15.65	4.98	116.90
2002	3	11.37	2.57	2.20	2.19	1.82	11.81	2.92	7.79	9.08	9.68	17.43	8.04	86.90
2003	3	4.44	2.95	4.02	5.27	0.08	3.82	8.63	5.52	7.73	6.93	10.27	4.35	64.02
2004	3	11.79	3.03	3.33	5.66	4.22	3.85	7.45	11.03	23.59	9.32	20.10	5.54	108.90
AVERAGE		6.84	4.89	3.67	2.93	2.67	3.59	8.36	13.23	15.76	14.37	13.68	9.36	99.34
ADJUSTED		6.88	4.93	3.69	2.94	2.69	3.61	8.42	13.32	15.87	14.46	13.77	9.42	100.00
STD.DEV.		3.96	3.92	2.95	2.45	2.66	2.94	5.74	6.47	7.54	6.32	5.38	5.00	19.29

AVERAGE RAINFALL ON CATCHMENT OF CODE G1H020

DETAILS OF RAINFALL STATIONS USED

SECTION	POSITION	MAP(mm)	PERIOD OF RECORD	LATITUDE	LONGITUDE
21	795	944	1941 TO 1987	33.45	18.57
21	823	895	1927 TO 2004	33.43	18.58
21	825	915	1959 TO 1997	33.45	18.58
21	860	812	1940 TO 1987	33.50	18.59
22	113	835	1927 TO 2003	33.53	19.04

RAINFALL INPUT AS PERCENT M.A.P.

YEAR	STNS.	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	YEAR
1927	2	1.06	8.54	4.40	3.06	0.00	3.76	2.61	0.38	28.30	10.62	12.10	13.40	88.24
1928	2	3.59	2.19	2.75	0.00	0.87	1.15	9.92	14.70	8.28	17.69	11.85	5.74	78.72
1929	2	2.53	2.48	4.35	2.78	3.00	5.04	5.53	0.16	2.28	16.22	14.12	21.54	80.03
1930	2	4.62	6.69	1.89	0.00	2.97	0.00	10.35	11.26	5.23	7.84	16.63	13.92	81.38
1931	2	9.12	0.00	1.36	2.81	9.15	2.54	1.13	16.38	18.97	9.68	9.09	8.25	88.49
1932	2	1.71	0.63	1.85	1.74	1.90	0.93	1.22	8.60	22.98	14.35	9.32	2.44	67.67
1933	2	8.58	0.73	1.42	0.49	1.40	4.13	1.07	17.14	5.94	7.09	7.76	8.19	63.94
1934	2	8.30	4.83	0.67	0.71	1.70	3.65	10.07	11.16	6.79	14.05	9.68	10.21	81.82
1935	2	2.41	4.90	0.47	7.75	2.40	2.92	0.32	9.68	5.97	7.54	12.75	8.78	65.88
1936	2	2.63	1.21	5.96	3.08	0.10	5.58	11.08	13.78	28.35	21.51	6.53	5.02	104.85
1937	2	4.12	0.98	0.11	6.18	1.85	0.80	12.29	12.57	6.62	10.82	9.50	11.76	77.60
1938	2	4.85	6.99	1.20	0.45	6.55	1.73	8.40	20.85	4.68	8.43	17.91	6.51	88.55
1939	2	1.65	5.46	5.54	0.58	9.08	5.71	8.42	12.23	18.77	9.52	9.90	7.79	94.64
1940	3	6.04	6.79	2.17	7.99	2.10	1.92	25.15	24.36	22.43	18.27	15.25	24.48	156.96
1941	4	7.62	1.94	3.32	2.30	0.27	0.41	4.50	26.08	35.65	8.50	22.37	3.70	116.67
1942	4	6.68	0.11	1.34	4.13	2.24	6.09	6.46	7.89	10.28	15.01	17.48	7.83	85.55
1943	4	5.23	7.85	0.04	2.69	0.03	1.63	9.05	18.04	30.75	17.77	19.06	8.92	121.05
1944	4	8.79	4.57	7.97	0.00	0.01	0.46	7.65	25.99	31.63	27.10	15.51	1.61	131.28
1945	4	3.01	3.19	3.02	0.56	1.14	3.32	7.97	10.66	6.20	14.99	16.58	20.38	91.00
1946	4	11.36	3.53	1.22	0.00	0.00	7.80	3.66	13.22	8.11	29.29	11.33	4.86	94.39
1947	4	7.18	2.08	0.33	0.55	2.94	3.85	6.00	19.67	13.73	20.60	13.15	16.45	106.51
1948	4	9.41	1.39	2.43	1.45	0.16	0.81	10.30	6.91	11.47	13.95	15.70	9.19	83.16
1949	4	8.09	5.12	1.49	0.37	0.01	0.76	17.80	2.35	10.56	30.90	3.08	12.85	93.38
1950	4	3.85	8.11	4.43	3.35	0.22	0.43	26.09	11.75	31.77	16.12	9.97	10.49	126.57
1951	4	6.47	9.19	0.05	0.20	1.16	3.86	8.70	13.27	8.52	13.40	22.81	20.95	108.58
1952	4	4.74	10.26	0.65	0.38	0.26	2.68	24.83	25.49	10.59	18.21	16.03	1.76	115.90
1953	4	1.91	6.92	1.33	2.01	2.30	3.80	16.48	28.35	12.20	33.74	16.55	4.25	129.85
1954	4	5.41	1.75	3.82	0.00	11.65	0.95	5.13	2.95	11.29	22.86	30.42	5.04	101.26
1955	4	9.00	8.88	2.53	0.58	0.48	3.32	7.90	15.62	24.25	22.95	23.12	6.53	125.15
1956	4	4.61	0.38	2.97	0.97	7.66	4.59	4.35	33.70	19.56	23.03	16.80	5.33	123.95
1957	4	16.82	1.05	0.00	1.51	10.20	2.96	4.63	19.51	9.62	3.22	14.85	5.05	89.43
1958	4	4.86	3.69	0.00	3.28	1.13	2.82	13.33	37.04	4.33	2.24	10.62	3.87	87.22
1959	5	8.04	0.33	1.28	1.13	0.93	4.52	5.85	17.87	21.07	3.68	3.67	3.32	71.68
1960	5	4.12	0.01	1.14	3.03	1.44	1.50	3.16	10.76	24.20	7.23	16.39	15.97	88.94
1961	5	4.51	0.00	1.37	1.24	4.23	6.41	10.96	4.38	48.99	12.08	19.57	5.84	119.59
1962	5	16.59	2.40	0.29	2.92	0.03	0.72	1.57	7.47	6.74	19.99	21.18	6.33	86.23
1963	5	1.70	7.08	5.02	0.08	10.70	0.59	2.76	8.93	21.04	12.26	13.82	3.05	87.03
1964	5	8.32	8.43	1.23	4.70	6.53	13.48	8.83	19.47	9.87	6.63	16.07	3.88	107.45
1965	5	4.00	0.89	5.81	0.38	1.06	14.17	5.20	6.40	13.84	20.45	12.66	6.05	90.90
1966	5	0.26	2.21	2.32	2.44	0.07	1.30	14.07	11.45	23.42	7.29	6.01	7.75	78.58
1967	5	6.44	6.79	0.48	5.60	0.97	0.00	13.91	17.15	19.38	20.02	10.82	2.00	103.57
1968	5	11.56	2.15	3.13	7.40	0.80	1.35	6.32	0.96	14.89	10.20	13.10	12.94	84.79
1969	5	7.54	0.83	0.51	1.29	1.79	0.26	1.06	24.09	21.92	13.27	14.74	8.42	95.71
1970	5	4.42	2.80	5.24	0.30	0.26	3.62	1.87	6.33	12.24	14.21	18.09	2.98	72.38
1971	5	2.95	0.58	2.65	2.44	2.19	1.61	11.22	11.25	9.61	8.68	10.27	7.35	70.80
1972	5	1.49	0.00	3.57	0.06	0.06	4.41	1.03	8.80	3.10	22.74	7.98	7.54	60.79
1973	5	3.92	1.68	8.20	1.10	0.56	0.91	0.35	15.09	25.28	10.56	37.55	9.26	114.46
1974	5	11.36	6.84	1.24	2.67	1.00	1.10	6.66	28.67	13.12	25.48	10.54	1.53	110.21
1975	5	6.77	4.89	0.42	0.00	0.76	3.72	4.64	6.37	35.36	22.24	8.66	7.29	101.12
1976	5	1.79	13.30	11.25	2.98	5.60	1.84	15.99	28.74	33.82	24.28	24.66	7.99	172.25
1977	5	3.68	2.56	3.55	2.70	2.96	4.04	5.21	12.19	1.59	4.13	18.31	10.43	71.35
1978	5	5.42	1.68	4.24	3.11	8.82	1.15	5.27	14.67	15.71	8.44	10.38	8.95	87.84
1979	5	16.34	0.63	0.11	3.49	2.55	0.64	10.27	14.38	13.90	4.27	10.10	5.81	82.50
1980	5	3.67	13.88	6.56	10.18	0.80	5.53	5.47	4.33	11.79	23.94	11.93	14.32	112.40
1981	5	3.07	3.55	3.35	4.62	0.55	2.10	10.01	10.53	19.50	14.60	9.56	2.56	84.01
1982	5	7.12	3.55	6.10	0.82	6.02	5.09	4.05	26.06	27.71	14.59	8.39	13.21	122.69
1983	5	1.61	1.20	3.90	2.39	0.86	7.38	5.56	28.67	7.76	13.48	7.23	16.36	96.40
1984	5	11.97	0.25	12.83	3.83	5.17	12.10	9.29	7.60	22.57	20.28	13.57	9.65	129.11
1985	5	1.66	1.06	1.17	1.33	1.82	7.50	7.36	7.17	23.45	19.19	21.02	9.14	101.87
1986	5	1.72	2.33	1.50	7.69	1.77	2.45	5.36	20.89	15.62	17.50	19.97	13.16	109.97
1987	5	3.26	1.83	6.61	0.37	0.03	2.33	10.27	13.52	9.93	13.91	14.84	9.57	86.49
1988	3	3.03	1.08	3.22	0.59	4.35	13.38	8.63	13.15	11.97	20.36	16.16	13.63	109.56
1989	3	5.11	7.70	0.67	1.65	6.59	0.25	26.80	11.94	19.80	26.06	7.09	4.31	117.98
1990	3	0.30	3.25	5.12	0.77	1.30	1.05	4.23	18.13	26.17	33.25	6.62	11.75	111.93
1991	3	5.13	1.89	1.07	0.14	4.13	4.99	8.97	13.32	36.10	15.60	10.60	7.64	109.59
1992	3	13.23	2.41	0.31	1.11	4.25	1.00	25.06	23.35	13.53	30.74	12.56	1.71	129.27
1993	3	0.47	1.16	1.97	2.13	0.08	1.49	8.02	5.69	44.61	10.19	4.21	11.84	91.85
1994	3	2.94	1.71	1.80	2.98	0.80	2.34	1.49	13.86	19.84	22.84	16.31	4.43	91.34
1995	3	14.07	1.01	7.63	1.12	5.76	3.95	5.64	9.54	34.45	14.45	17.85	20.11	135.58
1996	3	8.99	10.41	8.65	1.66	0.02	0.82	6.59	9.02	29.29	8.10	17.12	1.78	102.44
1997	3	2.67	8.57	2.68	2.59	0.18	1.75	6.21	26.59	14.75	14.51	6.65	5.67	92.83
1998	2	2.46	8.06	4.07	0.13	0.06	0.01	7.19	12.04	22.10	14.05	25.51	20.19	115.86
1999	2	0.18	3.77	0.62	5.75	0.00	2.44	0.78	12.22	9.23	16.56	12.93	14.05	78.53
2000	2	1.65	4.13	2.03	2.04	2.11	0.01	6.77	23.63	12.51	44.79	29.98	15.13	144.79
2001	2	6.17	1.10	0.93	11.32	4.61	1.25	10.46	17.55	18.52	20.69	16.31	5.90	114.82
2002	2	4.70	2.56	5.26	1.60	0.35	7.00	5.39	4.57	2.62	7.72	21.73	9.97	73.49
2003	2	7.91	0.00	5.25	4.59	0.00	2.34	7.83	1.37	17.66	11.46	11.90	5.44	75.75
2004	1	11.44	0.78	0.11	6.50	0.36	0.36	7.98	17.81	14.80	10.26	18.91	4.31	93.63
AVERAGE		5.67	3.66	2.92	2.42	2.44	3.16	8.13	14.36	17.33	15.96	14.38	8.82	99.23
ADJUSTED		5.71	3.69	2.94	2.44	2.46	3.19	8.19	14.47	17.46	16.08	14.49	8.88	100.00
STD.DEV.		3.91	3.31	2.65	2.43	2.89	3.08	5.96	8.09	10.17	7.96	6.21	5.29	21.72

AVERAGE RAINFALL ON CATCHMENT OF CODE G1H028

DETAILS OF RAINFALL STATIONS USED

SECTION	POSITION	MAP(mm)	PERIOD OF RECORD	LATITUDE	LONGITUDE
41	871	496	1958 TO 2004	33.01	18.60
42	227	474	1927 TO 2004	33.17	19.08
42	250	1127	1984 TO 2004	33.10	19.09
42	11	444	1964 TO 1978	33.11	19.01

RAINFALL INPUT AS PERCENT M.A.P.

YEAR	STNS.	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	YEAR
1927	1	0.76	10.12	2.36	3.12	0.00	3.42	0.42	0.17	28.32	8.96	9.38	7.78	74.82
1928	1	5.02	3.29	1.20	0.00	0.53	1.60	7.04	11.41	14.85	18.56	10.88	4.98	79.35
1929	1	2.95	1.88	5.59	2.64	6.26	2.15	2.47	1.35	1.46	8.12	6.81	23.22	64.89
1930	1	6.83	4.43	0.49	0.00	1.60	1.81	11.30	16.62	4.49	9.89	21.43	11.22	90.11
1931	1	6.92	0.00	3.21	0.86	21.70	0.00	0.00	14.57	14.61	13.88	8.31	11.60	95.66
1932	1	3.96	1.08	1.88	1.35	2.57	3.54	0.00	19.44	23.15	28.03	8.77	6.47	100.25
1933	1	2.43	2.72	6.43	1.56	1.60	7.72	0.91	13.31	12.38	7.44	5.10	17.19	78.79
1934	1	16.45	8.41	0.00	0.86	2.47	5.67	12.13	13.35	15.04	10.86	16.55	7.34	109.13
1935	1	1.14	5.46	0.49	6.05	0.49	4.43	2.02	16.28	5.40	13.71	17.82	20.73	94.01
1936	1	4.20	2.61	10.84	0.76	0.42	10.48	8.22	13.07	23.72	24.38	6.28	0.86	105.86
1937	1	6.24	0.00	2.85	3.06	1.35	1.18	16.43	18.09	8.25	8.75	11.85	10.94	88.99
1938	1	5.21	2.53	3.21	0.00	5.48	0.70	4.24	17.36	7.34	6.54	14.70	9.60	76.89
1939	1	1.43	3.23	1.50	1.18	7.76	1.83	12.32	6.37	14.91	6.83	2.43	9.60	69.38
1940	1	3.75	5.97	2.15	11.03	0.17	0.80	14.85	29.84	25.52	14.51	14.61	25.60	148.80
1941	1	12.63	2.30	2.51	1.73	0.00	0.42	1.08	18.45	43.91	7.21	11.77	1.77	103.77
1942	1	7.55	0.76	2.47	7.55	5.59	6.41	2.76	6.85	16.45	24.19	24.29	10.75	115.63
1943	1	6.39	8.96	0.00	1.98	0.00	4.39	7.95	24.10	30.47	3.77	25.77	11.18	124.97
1944	1	6.03	7.65	4.03	0.00	0.00	0.21	8.96	37.03	30.37	21.15	19.25	0.91	135.60
1945	1	6.33	3.75	1.35	0.38	0.38	4.62	4.93	8.77	6.33	5.67	8.65	26.91	78.07
1946	1	6.58	1.60	1.98	0.00	0.00	11.05	1.16	10.88	2.74	26.99	8.08	6.43	77.50
1947	1	8.71	1.98	0.00	0.80	4.77	17.74	9.62	15.10	10.33	20.52	3.10	21.47	114.13
1948	1	8.08	1.88	1.54	1.08	0.00	0.49	9.81	6.98	11.24	12.10	11.35	12.48	77.01
1949	1	12.53	16.60	2.24	0.00	0.00	1.50	24.38	3.06	5.84	30.05	0.00	27.04	123.22
1950	1	11.30	15.31	4.93	8.20	0.00	0.00	10.65	8.67	33.59	13.45	14.02	9.15	129.29
1951	1	8.39	8.22	0.00	0.63	3.21	3.31	3.65	26.61	15.86	21.85	21.49	10.04	123.26
1952	1	6.68	15.44	1.12	0.00	0.00	1.27	27.73	23.79	5.12	23.98	14.09	0.46	119.68
1953	1	3.58	10.90	6.64	2.00	1.05	3.56	14.87	43.40	11.39	33.07	27.58	4.85	162.91
1954	1	6.54	1.37	7.82	0.00	13.81	3.75	4.83	2.34	22.88	23.15	35.41	4.01	125.92
1955	1	17.19	4.85	2.85	3.54	2.21	1.16	2.11	13.69	20.56	10.86	11.70	5.17	95.89
1956	1	2.85	0.00	5.27	0.00	16.17	6.12	6.54	28.45	22.78	20.67	18.45	6.96	134.25
1957	1	24.57	0.00	0.00	0.95	6.64	0.00	4.85	17.08	9.17	1.58	16.66	5.69	87.20
1958	2	6.75	4.20	0.00	0.66	2.93	2.75	15.37	36.13	5.34	3.36	16.22	6.25	99.95
1959	2	11.61	0.01	4.79	0.00	1.07	5.64	6.74	17.34	17.33	3.91	5.51	3.55	77.50
1960	2	5.03	1.26	4.41	3.51	2.73	2.83	4.23	11.18	13.42	10.47	16.00	16.92	91.99
1961	2	2.73	0.00	0.37	1.88	4.59	7.50	14.43	6.76	35.05	13.81	22.57	6.11	115.81
1962	2	19.02	7.21	0.93	1.02	0.29	1.15	0.80	2.86	17.69	17.02	32.94	3.78	104.71
1963	2	2.84	11.17	4.44	0.07	5.82	3.54	3.49	10.10	18.55	13.46	19.05	7.89	100.42
1964	3	8.16	11.71	0.19	2.72	11.56	11.45	10.30	12.68	7.62	6.40	10.88	3.40	97.06
1965	3	7.17	1.30	5.23	0.07	1.89	8.81	6.31	5.90	17.43	24.06	9.98	9.56	97.73
1966	3	0.22	0.70	0.18	1.89	0.85	0.08	15.44	6.27	30.94	10.81	9.10	7.32	83.79
1967	3	8.42	7.26	0.65	2.77	1.49	0.00	15.96	21.54	19.36	17.68	14.37	1.32	110.82
1968	3	21.50	3.45	1.20	2.21	3.28	2.46	9.93	1.79	9.34	6.01	13.09	9.45	83.72
1969	3	11.91	1.19	0.44	0.16	1.49	0.00	0.56	14.99	24.19	17.85	15.90	7.74	96.41
1970	3	4.92	0.79	2.23	1.26	0.60	8.38	1.64	5.59	12.61	14.60	14.26	1.51	68.40
1971	3	2.68	1.62	1.47	3.00	1.50	3.21	12.78	14.70	14.94	12.61	5.54	7.47	81.53
1972	3	3.21	0.00	9.25	0.00	0.38	7.97	0.98	8.93	3.02	29.07	12.64	12.34	87.79
1973	3	4.91	1.53	5.76	0.67	1.12	1.81	1.81	27.78	24.85	10.71	50.29	8.64	139.86
1974	3	11.67	4.42	1.68	3.58	0.81	2.04	10.44	26.54	6.34	14.11	12.38	1.53	95.55
1975	3	10.89	2.21	1.03	1.23	0.87	1.75	23.23	6.87	32.63	16.35	8.87	4.11	110.04
1976	3	2.49	19.03	12.79	1.47	5.25	4.20	12.15	28.44	27.13	24.36	16.80	8.66	162.78
1977	3	3.67	3.12	3.22	1.50	0.77	6.20	7.49	5.00	2.54	0.69	19.30	8.96	62.45
1978	3	2.49	0.42	6.87	3.48	8.43	0.89	0.82	13.52	13.25	14.30	6.71	10.29	81.45
1979	2	8.15	0.82	0.12	6.14	2.99	0.36	5.98	14.22	12.39	2.94	11.88	2.80	68.80
1980	2	5.22	26.51	6.61	10.29	0.37	4.62	6.61	3.21	7.82	23.88	20.54	17.85	133.54
1981	2	4.59	2.22	0.74	8.73	0.54	8.34	20.02	7.92	15.11	8.76	6.86	1.12	84.95
1982	2	11.23	2.16	7.07	0.83	10.05	4.58	1.89	26.99	19.12	12.83	5.93	7.86	110.53
1983	2	2.44	4.56	2.40	2.02	0.26	13.93	6.46	34.41	3.86	11.07	4.75	18.21	104.35
1984	3	13.75	0.22	12.96	7.79	6.53	17.21	10.65	10.80	15.91	21.97	15.48	9.39	142.66
1985	3	0.87	0.56	4.50	1.26	1.75	7.53	4.50	7.21	16.75	15.10	25.32	8.28	93.62
1986	3	2.78	2.59	0.00	2.32	1.67	1.51	9.05	21.31	19.27	17.75	16.34	8.73	103.33
1987	3	0.55	0.67	4.15	0.43	0.77	2.73	18.06	6.76	17.26	9.58	15.69	10.95	87.60
1988	3	1.69	1.79	1.25	2.29	5.05	15.77	10.28	9.81	13.87	14.13	19.11	17.06	112.10
1989	3	7.84	5.62	0.72	2.40	4.58	1.07	19.46	18.38	16.85	19.24	7.86	1.10	105.11
1990	3	0.53	3.88	5.41	1.01	1.15	1.78	5.54	9.60	26.77	39.00	4.58	14.37	113.62
1991	3	10.34	2.38	1.78	0.00	7.10	2.58	10.66	6.58	25.87	16.96	14.16	6.83	105.25
1992	3	15.14	3.31	0.53	1.42	4.46	1.21	20.56	20.57	15.26	25.04	5.42	2.75	115.67
1993	3	0.44	1.15	3.77	0.44	0.23	1.62	11.31	6.16	33.30	10.79	3.24	12.63	85.09
1994	3	5.71	0.20	0.69	0.80	0.32	4.39	2.52	16.64	13.35	22.78	17.65	3.13	88.18
1995	3	15.33	2.31	10.74	0.19	6.99	4.85	4.52	10.20	21.64	18.18	22.56	23.27	140.78
1996	3	7.87	16.18	9.47	1.78	0.03	2.83	2.55	9.79	30.37	4.96	12.97	0.65	99.44
1997	3	1.13	6.65	4.66	8.72	0.02	0.48	2.53	21.86	8.32	10.87	8.32	3.14	76.70
1998	3	3.52	10.48	7.56	0.00	0.58	0.07	6.46	9.82	12.90	8.07	15.21	18.00	92.66
1999	3	0.28	1.54	3.83	3.17	0.09	1.23	1.00	5.30	9.52	21.91	11.87	18.45	78.19
2000	3	1.17	5.86	0.57	2.13	1.22	0.13	4.75	18.97	6.00	38.58	17.80	16.12	113.31
2001	3	7.51	4.84	0.86	10.43	3.36	2.32	5.71	21.23	8.89	21.17	17.10	9.42	112.85
2002	3	6.60	3.70	1.62	1.90	0.61	5.64	6.63	5.53	1.93	5.05	27.07	5.85	72.13
2003	3	8.15	0.07	5.69	4.54	0.11	1.58	11.17	0.86	13.58	11.25	11.27	4.26	72.53
2004	3	11.68	1.13	0.18	2.44	0.72	0.70	15.14	6.37	18.37	8.86	27.77	6.20	99.56
AVERAGE		6.80	4.45	3.23	2.28	2.89	3.89	8.17	14.13	16.11	15.17	14.43	9.33	100.87
ADJUSTED		6.74	4.41	3.20	2.26	2.87	3.85	8.10	14.00	15.97	15.04	14.31	9.25	100.00
STD.DEV.		5.08	5.06	3.13	2.68	3.93	4.01	6.30	9.24	9.15	8.30	8.18	6.55	22.53

AVERAGE RAINFALL ON CATCHMENT OF CODE G1H029

DETAILS OF RAINFALL STATIONS USED

SECTION	POSITION	MAP(mm)	PERIOD OF RECORD	LATITUDE	LONGITUDE
41	871	496	1958 TO 2004	33.01	18.60
42	166	537	1927 TO 1950	33.16	19.06
42	227	474	1927 TO 2004	33.17	19.08

RAINFALL INPUT AS PERCENT M.A.P.

YEAR	STNS.	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	YEAR
1927	2	0.38	10.95	2.70	2.96	0.00	3.48	0.21	0.08	32.27	8.96	14.34	8.47	84.79
1928	2	5.07	4.08	1.26	0.00	0.36	1.54	9.03	13.14	14.95	20.14	16.89	4.31	90.79
1929	2	3.65	1.22	7.26	2.95	7.27	1.64	2.30	1.60	1.74	8.71	9.50	23.69	71.54
1930	2	6.82	5.22	0.41	0.00	1.92	0.91	12.63	18.26	2.25	9.25	22.76	12.01	92.43
1931	2	7.42	0.26	4.89	1.97	22.93	0.85	0.19	14.59	17.31	13.50	10.63	10.86	105.40
1932	2	5.10	1.58	0.94	1.70	4.32	3.89	0.26	17.26	27.08	31.93	9.59	7.35	111.01
1933	2	4.29	2.59	3.58	0.95	1.72	6.60	0.45	15.23	15.39	7.60	5.37	17.61	81.38
1934	2	14.52	7.52	0.00	0.67	3.20	6.91	12.15	12.88	13.67	10.80	16.85	7.03	106.19
1935	2	1.35	6.05	0.24	5.07	0.78	3.18	1.82	15.75	4.45	13.84	16.48	17.69	86.70
1936	2	4.31	2.59	10.20	0.38	0.21	9.88	10.31	12.76	22.96	21.51	6.48	0.83	102.42
1937	2	5.85	0.00	2.16	3.54	1.45	1.77	15.00	16.12	8.36	8.78	11.32	12.68	87.03
1938	2	4.09	2.46	2.92	0.00	5.26	0.63	5.12	16.55	7.58	6.73	15.58	9.48	76.40
1939	2	1.45	3.20	1.25	0.73	7.03	1.93	10.25	6.37	18.08	6.61	2.70	11.51	71.11
1940	2	4.09	5.89	2.61	11.99	0.08	0.63	13.47	29.13	25.05	13.85	14.54	24.00	145.34
1941	2	13.27	1.46	2.87	1.29	0.00	0.38	1.35	17.71	45.42	8.20	10.59	2.39	104.91
1942	2	8.28	0.66	1.76	6.73	5.07	5.69	3.05	6.85	15.91	23.54	24.54	10.95	113.02
1943	2	6.85	8.65	0.00	2.43	0.00	4.59	7.90	24.60	29.12	4.25	23.36	11.16	122.92
1944	2	6.68	7.71	3.96	0.00	0.00	0.23	8.38	31.38	28.03	18.95	18.47	1.07	124.87
1945	2	5.86	3.93	1.95	0.42	0.19	4.20	5.32	10.17	6.51	5.95	8.36	26.28	79.14
1946	2	6.84	2.24	2.08	0.00	0.00	9.99	1.29	11.52	3.17	25.24	8.70	6.63	77.71
1947	2	10.29	2.29	0.00	0.40	5.39	15.04	9.85	14.23	9.38	21.45	3.64	20.87	112.84
1948	2	7.96	1.55	1.86	1.52	0.00	0.76	10.93	6.76	11.37	11.55	10.86	12.89	78.00
1949	2	13.93	17.43	2.28	0.00	0.00	0.75	23.55	2.74	7.32	30.74	0.00	26.48	125.21
1950	2	11.15	15.55	4.59	7.98	0.00	0.00	11.26	8.19	31.72	13.16	13.68	9.75	127.03
1951	1	8.39	8.22	0.00	0.63	3.21	3.31	3.65	26.61	15.86	21.85	21.49	10.04	123.26
1952	1	6.68	15.44	1.12	0.00	0.00	1.27	27.73	23.79	5.12	23.98	14.09	0.46	119.68
1953	1	3.58	10.90	6.64	2.00	1.05	3.56	14.87	43.40	11.39	33.07	27.58	4.85	162.91
1954	1	6.54	1.37	7.82	0.00	13.81	3.75	4.83	2.34	22.88	23.15	35.41	4.01	125.92
1955	1	17.19	4.85	2.85	3.54	2.21	1.16	2.11	13.69	20.56	10.86	11.70	5.17	95.89
1956	1	2.85	0.00	5.27	0.00	16.17	6.12	6.54	28.45	22.78	20.67	18.45	6.96	134.25
1957	1	24.57	0.00	0.00	0.95	6.64	0.00	4.85	17.08	9.17	1.58	16.66	5.69	87.20
1958	2	6.75	4.20	0.00	0.66	2.93	2.75	15.37	36.13	5.34	3.36	16.22	6.25	99.95
1959	2	11.61	0.01	4.79	0.00	1.07	5.64	6.74	17.34	17.33	3.91	5.51	3.55	77.50
1960	2	5.03	1.26	4.41	3.51	2.73	2.83	4.23	11.18	13.42	10.47	16.00	16.92	91.99
1961	2	2.73	0.00	0.37	1.88	4.59	7.50	14.43	6.76	35.05	13.81	22.57	6.11	115.81
1962	2	19.02	7.21	0.93	1.02	0.29	1.15	0.80	2.86	17.69	17.02	32.94	3.78	104.71
1963	2	2.84	11.17	4.44	0.07	5.82	3.54	3.49	10.10	18.55	13.46	19.05	7.89	100.42
1964	2	7.50	13.94	0.01	1.96	11.78	10.41	10.26	11.49	7.96	5.27	8.01	3.31	91.90
1965	2	8.16	1.24	4.92	0.10	1.41	7.91	6.90	4.95	16.40	20.49	8.47	8.38	89.32
1966	2	0.22	0.81	0.15	1.82	0.89	0.00	15.19	5.98	29.51	9.99	10.11	6.69	81.35
1967	2	7.85	5.54	0.98	3.30	1.79	0.00	14.81	20.21	17.55	16.57	14.40	1.25	104.25
1968	2	23.37	2.64	0.90	3.32	2.79	2.44	9.55	2.40	8.21	5.80	11.57	9.84	82.82
1969	2	14.60	1.16	0.09	0.24	1.42	0.00	0.67	14.89	24.25	16.97	15.45	8.06	97.81
1970	2	4.51	1.19	1.41	1.78	0.85	7.10	2.11	5.34	12.23	14.44	13.16	0.80	64.92
1971	2	2.41	1.58	1.59	3.60	1.94	3.19	13.54	13.83	13.64	11.53	5.22	6.57	78.64
1972	2	3.41	0.00	10.15	0.00	0.57	7.88	0.97	8.11	2.84	28.01	11.98	11.18	85.09
1973	2	5.44	2.30	5.96	1.01	1.67	1.58	2.71	27.75	24.76	10.16	50.47	9.35	143.16
1974	2	11.59	3.30	1.56	3.80	1.22	1.54	10.99	24.54	5.40	14.33	12.26	1.62	92.14
1975	2	10.42	2.07	1.47	0.71	1.31	2.17	20.94	6.19	33.17	15.41	7.72	5.48	107.05
1976	2	2.90	20.60	11.70	1.65	4.33	5.01	12.54	29.02	26.82	24.03	16.86	8.81	164.26
1977	2	3.98	4.67	4.82	2.24	1.16	6.91	7.61	4.51	2.92	1.03	19.16	10.40	69.43
1978	2	3.50	0.63	10.30	3.36	8.82	1.33	1.23	16.22	14.23	9.00	7.42	10.97	87.01
1979	2	8.15	0.82	0.12	6.14	2.99	0.36	5.98	14.22	12.39	2.94	11.88	2.80	68.80
1980	2	5.22	26.51	6.61	10.29	0.37	4.62	6.61	3.21	7.82	23.88	20.54	17.85	133.54
1981	2	4.59	2.22	0.74	8.73	0.54	8.34	20.02	7.92	15.11	8.76	6.86	1.12	84.95
1982	2	11.23	2.16	7.07	0.83	10.05	4.58	1.89	26.99	19.12	12.83	5.93	7.86	110.53
1983	2	2.44	4.56	2.40	2.02	0.26	13.93	6.46	34.41	3.86	11.07	4.75	18.21	104.35
1984	2	13.09	0.20	14.58	8.77	7.43	17.78	11.38	9.76	15.71	21.48	14.10	8.81	143.09
1985	2	0.57	0.68	4.18	1.14	1.82	7.06	4.90	7.39	17.48	15.15	22.82	8.38	91.56
1986	2	3.29	2.50	0.00	2.20	1.87	1.91	10.20	19.92	20.06	18.77	15.80	9.11	105.62
1987	2	0.51	0.20	4.61	0.22	1.16	3.03	17.12	6.54	14.23	9.89	15.81	11.30	84.62
1988	2	1.73	2.01	1.18	3.18	4.99	15.92	12.38	9.29	14.36	15.18	18.82	15.08	114.12
1989	2	8.10	6.24	0.23	2.13	4.56	1.19	22.05	19.45	18.40	15.88	7.66	1.42	107.30
1990	2	0.36	3.47	5.40	1.11	1.65	1.14	5.67	7.08	25.12	40.87	4.26	12.37	108.50
1991	2	10.73	2.49	2.25	0.00	6.50	3.86	9.23	9.87	21.59	17.30	13.44	6.63	103.88
1992	2	13.72	3.44	0.53	1.33	4.56	1.23	22.17	20.90	14.95	22.73	8.14	2.84	116.53
1993	2	0.46	1.26	3.23	0.43	0.00	2.08	12.98	6.03	30.17	10.33	3.55	11.87	82.40
1994	2	6.54	0.16	0.31	0.87	0.36	5.68	2.42	17.58	12.79	24.48	18.11	3.21	92.50
1995	2	13.34	2.01	11.57	0.00	7.99	5.65	4.82	9.13	16.99	16.90	22.70	20.80	131.90
1996	2	6.88	14.71	8.65	1.29	0.00	3.04	1.63	9.87	28.91	4.67	9.66	0.74	90.05
1997	2	0.69	5.96	4.35	9.04	0.00	0.43	2.87	21.94	8.07	10.50	8.51	2.57	74.92
1998	2	4.02	10.04	9.44	0.00	0.67	0.10	9.52	12.64	12.06	12.11	22.81	18.57	111.97
1999	2	0.38	2.30	4.18	3.72	0.00	1.85	0.88	5.09	9.45	21.37	12.24	19.45	80.89
2000	2	1.47	7.38	0.09	2.60	0.84	0.20	5.18	16.43	5.65	37.35	16.89	15.04	109.14
2001	2	9.36	4.21	0.01	10.49	3.44	2.92	8.56	21.91	9.93	18.83	16.71	11.39	117.76
2002	2	7.22	3.72	1.66	2.33	0.77	6.31	7.92	5.06	2.18	4.56	29.03	8.78	79.54
2003	2	7.82	0.00	4.94	4.86	0.02	1.99	11.20	0.57	15.55	11.62	11.12	4.84	74.54
2004	2	13.93	1.19	0.21	2.46	0.66	0.80	14.51	6.96	15.02	8.39	24.67	5.91	94.71
AVERAGE		6.96	4.51	3.27	2.35	2.99	3.87	8.39	13.96	15.91	14.91	14.51	9.33	100.96
ADJUSTED		6.90	4.47	3.24	2.32	2.96	3.83	8.31	13.83	15.76	14.77	14.38	9.24	100.00
STD.DEV.		5.12	5.15	3.32	2.75	4.02	3.83	6.24	9.05	9.04	8.26	8.10	6.31	21.73

AVERAGE RAINFALL ON CATCHMENT OF CODE G1H035

DETAILS OF RAINFALL STATIONS USED

SECTION	POSITION	MAP(mm)	PERIOD OF RECORD	LATITUDE	LONGITUDE
40	604	318	1927 TO 2004	33.04	18.21
41	871	496	1958 TO 2004	33.01	18.60
62	444	444	1927 TO 2004	32.54	18.45

RAINFALL INPUT AS PERCENT M.A.P.

YEAR	STNS.	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	YEAR
1927	2	2.71	9.05	3.94	3.94	0.00	4.23	1.92	0.41	21.13	6.13	12.92	10.90	77.27
1928	2	1.71	5.81	4.91	0.00	0.34	1.52	10.01	17.91	11.87	16.67	12.28	6.21	89.25
1929	2	4.05	1.49	3.03	3.17	0.55	1.06	7.49	3.72	7.23	11.86	10.13	28.11	81.88
1930	2	4.11	9.53	1.30	0.00	1.64	2.70	17.95	14.12	5.56	7.52	24.98	12.71	102.11
1931	2	4.71	0.00	1.83	4.23	11.38	0.42	1.03	23.89	22.06	13.70	8.45	11.36	103.05
1932	2	4.64	1.24	1.98	1.82	4.52	3.14	1.40	11.40	26.54	23.51	13.93	3.21	97.34
1933	2	8.11	1.22	1.71	0.52	1.76	4.08	1.93	11.57	11.82	13.51	14.87	13.02	84.11
1934	2	7.83	7.41	0.00	0.28	0.00	5.52	12.33	13.17	15.58	12.94	13.82	9.70	98.59
1935	2	3.09	4.08	1.10	6.29	1.09	3.96	0.43	14.57	4.68	12.72	16.59	15.43	84.03
1936	2	3.69	2.17	4.60	0.00	0.00	5.94	10.26	11.02	22.40	22.31	6.57	2.56	91.52
1937	2	3.52	0.00	0.52	7.67	0.95	0.89	13.23	14.91	7.71	9.96	12.42	14.82	86.59
1938	2	6.77	2.34	2.80	0.83	5.16	0.00	6.30	14.09	4.52	9.35	16.95	3.35	72.46
1939	2	0.52	2.56	1.32	2.57	6.63	6.97	9.69	7.35	22.19	5.97	4.80	11.09	81.65
1940	2	4.36	7.15	1.90	4.27	0.36	0.32	14.87	31.63	30.57	21.05	17.78	22.54	156.80
1941	2	10.89	1.97	0.63	0.23	0.00	0.93	6.92	18.97	39.34	7.97	21.93	7.95	117.73
1942	2	8.54	0.00	2.95	7.62	5.45	9.65	2.30	5.35	15.80	23.09	20.43	11.48	112.66
1943	2	3.09	5.58	0.00	2.47	0.00	2.56	4.35	14.07	26.88	10.71	26.96	7.65	104.32
1944	2	7.68	3.78	5.03	0.00	0.00	1.00	6.50	29.49	29.37	22.85	16.54	0.82	123.06
1945	2	5.63	1.45	2.03	0.72	0.00	4.67	7.95	13.59	10.36	10.50	11.49	29.53	97.92
1946	2	5.90	3.22	2.66	0.00	0.00	8.51	2.65	12.90	6.97	32.33	10.75	5.31	91.21
1947	2	10.45	1.71	0.87	0.05	1.08	11.92	6.79	15.21	9.76	20.70	5.58	17.31	101.43
1948	2	5.66	4.56	2.02	2.57	0.00	0.53	8.86	9.05	11.16	12.88	17.15	11.70	86.15
1949	2	5.51	8.00	0.13	0.57	0.00	2.31	16.66	4.34	6.71	39.24	2.07	18.06	103.59
1950	2	6.91	7.76	5.88	2.68	0.00	0.35	13.22	6.65	31.52	10.45	10.89	5.38	101.69
1951	2	10.22	10.00	0.41	0.70	2.77	2.73	6.71	14.60	16.55	18.11	22.04	12.27	117.10
1952	2	4.62	14.63	1.43	0.00	0.57	0.97	29.77	36.23	9.98	23.60	23.63	0.00	145.43
1953	2	1.90	4.70	7.10	0.54	4.58	3.18	8.26	29.98	13.58	39.98	19.66	5.20	138.65
1954	2	6.85	0.69	4.92	0.00	10.71	1.04	5.59	4.17	18.09	20.43	32.72	4.47	109.69
1955	2	10.06	3.84	3.43	0.00	0.69	1.65	5.05	15.97	24.67	14.12	15.42	3.16	98.06
1956	2	5.33	0.27	7.93	1.29	12.32	1.52	5.21	32.27	28.88	19.12	16.99	9.13	140.26
1957	2	17.65	1.76	0.00	0.00	7.08	3.20	6.42	21.84	10.75	2.48	19.55	5.37	96.09
1958	3	7.86	2.98	0.00	0.65	1.93	2.76	13.65	38.79	5.58	6.43	16.25	6.58	103.46
1959	3	10.92	0.23	2.87	0.10	1.03	5.70	6.02	17.11	14.61	3.73	6.63	2.59	71.55
1960	3	5.78	0.47	8.00	3.97	2.71	3.67	3.82	10.79	18.26	9.58	15.92	17.11	100.09
1961	3	2.48	0.00	1.07	2.05	3.41	2.22	12.99	6.73	36.59	15.05	21.74	5.87	110.20
1962	3	17.20	7.95	0.38	1.84	0.19	1.05	0.82	3.58	16.34	16.13	32.30	6.51	104.29
1963	3	2.67	8.65	3.16	0.00	7.41	2.57	3.99	8.10	20.73	10.16	14.77	6.58	88.79
1964	3	9.16	10.36	0.01	3.85	8.11	11.76	9.84	7.93	7.81	6.40	10.17	2.97	88.37
1965	3	4.72	0.51	6.44	0.12	1.21	10.73	4.45	4.19	14.23	18.28	9.04	8.47	82.38
1966	3	0.30	0.54	0.45	1.35	0.68	0.00	13.61	5.61	26.31	8.41	7.47	6.09	70.83
1967	3	6.33	5.64	0.65	3.52	1.48	0.00	13.19	22.42	16.03	17.89	14.61	1.21	102.97
1968	3	17.93	1.14	1.75	2.54	2.06	0.82	5.84	2.56	10.23	5.85	11.09	10.83	72.65
1969	3	10.89	0.80	1.23	0.20	1.66	0.00	0.40	15.73	22.59	15.74	14.31	7.54	91.10
1970	3	4.59	1.11	2.20	0.80	0.56	4.92	1.55	4.49	9.70	15.36	18.30	2.00	65.59
1971	3	2.18	0.77	0.77	4.38	1.54	3.31	9.58	9.69	13.22	10.17	7.67	7.73	71.02
1972	3	3.08	0.00	7.80	0.00	1.82	11.81	0.33	9.06	3.34	25.41	12.03	10.87	85.56
1973	3	3.47	0.99	6.04	0.89	1.12	0.91	0.12	25.57	29.98	8.53	46.75	8.90	133.26
1974	3	10.41	3.67	1.36	5.33	1.22	1.49	9.16	24.02	9.00	15.99	12.19	0.70	94.52
1975	3	7.76	3.20	0.94	0.68	0.60	2.06	18.22	6.76	34.94	14.00	8.06	8.51	105.73
1976	3	1.85	17.22	15.04	2.70	6.56	4.80	13.56	30.64	28.22	25.93	18.14	8.21	172.88
1977	3	3.25	3.90	3.23	2.18	1.00	5.27	6.75	5.76	2.20	1.82	16.49	12.45	64.29
1978	3	4.49	2.47	9.11	4.42	4.15	0.92	1.34	15.52	15.02	7.74	9.28	10.46	84.93
1979	3	8.98	1.31	0.01	7.76	2.70	1.11	6.01	18.64	15.96	4.00	12.32	2.71	81.50
1980	3	4.11	23.18	4.02	4.46	0.25	4.25	5.69	2.43	8.42	22.78	25.22	14.46	119.28
1981	3	3.32	2.88	0.49	9.10	0.59	6.40	14.13	7.45	13.19	12.52	14.17	1.08	85.32
1982	3	9.23	3.06	9.18	1.82	9.08	4.76	2.10	25.54	18.72	15.35	6.24	10.76	115.84
1983	3	0.34	4.23	3.28	1.54	0.33	8.68	4.29	36.34	6.10	9.13	5.81	17.09	97.15
1984	3	17.44	0.13	13.83	6.00	5.49	17.22	12.57	10.24	20.59	23.98	13.90	9.56	150.95
1985	3	1.17	0.76	2.01	1.99	0.80	7.40	5.41	9.03	17.34	15.42	22.76	10.30	94.37
1986	3	3.05	2.71	0.00	3.45	2.24	1.13	10.06	18.55	16.73	26.43	22.59	9.18	116.13
1987	3	1.22	1.01	6.16	1.31	0.77	4.46	16.11	7.01	16.30	13.00	20.40	12.14	99.90
1988	3	1.81	1.94	1.46	0.73	4.24	11.58	11.21	10.66	8.65	19.62	18.06	18.13	108.10
1989	3	7.66	7.34	0.72	2.03	3.56	1.56	28.24	22.28	19.92	19.17	7.73	1.78	121.99
1990	3	0.36	2.82	3.55	0.81	1.48	2.09	5.69	11.02	22.41	36.95	3.72	14.35	105.24
1991	3	13.16	2.13	1.32	0.00	6.01	2.35	6.85	9.91	21.96	19.03	10.32	9.59	102.64
1992	3	11.14	2.10	0.03	1.30	5.00	0.64	23.35	21.62	15.60	28.44	9.99	2.41	121.61
1993	3	0.17	0.79	3.46	0.36	0.00	1.75	10.24	5.56	36.34	8.07	3.20	8.73	78.67
1994	3	6.25	0.53	1.19	2.12	0.52	7.97	3.03	10.83	14.17	24.64	14.31	2.39	87.95
1995	3	12.68	1.52	10.40	1.01	9.34	5.24	6.84	13.18	21.44	16.40	21.39	22.74	142.18
1996	3	8.82	13.51	8.46	2.17	0.02	3.62	4.25	10.97	33.67	4.36	14.11	0.57	104.54
1997	3	0.79	5.24	1.58	3.66	0.00	1.13	4.52	19.35	10.73	11.74	8.59	5.08	72.42
1998	3	4.34	12.34	17.64	2.43	0.68	0.07	8.31	11.96	10.85	11.27	27.04	20.75	127.67
1999	3	0.61	1.13	2.58	4.87	0.00	1.19	1.20	7.66	9.21	17.86	13.23	16.35	75.88
2000	3	1.42	6.28	1.35	2.03	0.30	0.19	4.24	16.46	6.76	40.76	17.74	11.17	108.70
2001	3	7.43	3.43	0.41	7.93	6.22	1.26	4.79	18.15	11.98	18.77	12.31	7.39	100.06
2002	3	7.54	2.30	4.08	1.94	0.67	5.84	6.87	6.21	3.43	5.19	30.30	11.71	86.09
2003	3	6.06	0.00	5.28	4.76	0.00	3.11	10.95	2.06	17.71	13.78	11.69	4.29	79.71
2004	3	14.30	0.88	0.49	1.10	0.34	0.39	9.12	9.46	16.68	8.99	21.91	6.63	90.31
AVERAGE		6.12	3.90	3.25	2.22	2.44	3.59	8.04	14.00	16.59	15.67	15.29	9.27	100.39
ADJUSTED		6.10	3.88	3.24	2.21	2.44	3.57	8.01	13.95	16.53	15.61	15.23	9.24	100.00
STD.DEV.		4.29	4.30	3.55	2.22	3.02	3.49	5.93	8.81	8.83	8.59	7.56	6.19	21.71

AVERAGE RAINFALL ON CATCHMENT OF CODE G1H036

DETAILS OF RAINFALL STATIONS USED

SECTION	POSITION	MAP(mm)	PERIOD OF RECORD	LATITUDE	LONGITUDE
21	878	628	1963 TO 1987	33.38	18.60
22	38	763	1927 TO 2004	33.38	19.02
41	417	463	1927 TO 2000	33.27	18.44
41	713	663	1937 TO 1982	33.23	18.54
41	836	465	1941 TO 1978	33.26	18.58

RAINFALL INPUT AS PERCENT M.A.P.

YEAR	STNS.	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	YEAR
1927	2	1.52	9.38	2.04	3.42	0.00	3.80	1.65	0.81	23.51	7.14	11.22	10.44	74.93
1928	2	1.33	1.43	3.73	0.00	0.55	2.67	10.18	17.97	12.53	18.72	9.93	4.02	83.07
1929	2	2.78	2.13	5.80	3.69	3.59	2.03	4.51	0.94	2.79	11.77	10.66	22.65	73.34
1930	2	4.95	6.72	1.74	0.00	4.22	0.00	15.76	12.71	5.93	8.73	20.73	15.33	96.81
1931	2	7.00	0.24	2.21	3.32	15.12	2.12	1.54	21.84	15.76	11.55	9.01	11.01	100.72
1932	2	3.02	0.87	3.18	2.92	1.84	2.05	1.53	10.46	28.38	22.50	11.94	3.52	92.19
1933	2	8.46	1.69	3.45	1.36	4.12	12.23	2.83	14.91	8.21	9.25	10.25	10.54	87.31
1934	2	5.78	7.00	0.42	0.20	0.96	4.44	10.93	13.57	7.99	14.94	12.04	11.48	89.75
1935	2	2.59	5.32	0.70	7.21	2.11	2.56	0.48	10.99	6.16	12.10	11.90	13.23	75.34
1936	2	2.01	2.67	6.68	1.27	0.05	12.10	8.59	12.15	23.33	19.66	5.38	3.15	97.06
1937	3	4.11	0.70	0.50	5.01	2.07	0.95	13.83	13.53	7.52	8.42	9.72	11.43	77.80
1938	3	3.43	3.25	3.84	0.07	2.64	1.53	6.41	18.08	5.94	11.51	16.09	7.71	80.50
1939	3	1.71	3.76	1.86	1.01	7.93	4.69	10.91	12.89	18.75	8.85	6.82	9.82	89.00
1940	3	5.41	9.25	1.80	5.05	2.20	0.57	17.58	32.18	25.77	15.29	18.53	22.90	156.53
1941	4	5.81	2.08	3.47	0.42	0.29	0.31	4.02	24.42	38.62	10.35	17.76	3.07	110.61
1942	4	5.91	0.30	1.75	4.73	3.62	7.91	3.59	7.05	10.98	19.32	21.84	13.28	100.29
1943	4	3.71	7.84	0.00	3.06	0.01	1.79	6.96	18.55	33.49	14.99	18.48	7.91	116.79
1944	4	8.12	4.91	7.23	0.00	0.03	0.91	7.95	25.13	27.43	23.08	17.59	1.37	123.74
1945	4	3.26	2.50	1.22	0.39	0.14	3.46	8.31	12.26	9.46	13.53	14.88	21.34	90.75
1946	4	9.05	3.62	0.89	0.00	0.00	9.57	2.02	9.30	8.87	26.68	10.89	4.24	85.14
1947	4	4.27	2.67	0.13	0.38	1.01	6.21	5.37	13.45	8.77	23.34	9.15	14.26	89.01
1948	4	9.18	1.67	2.10	1.61	0.17	0.66	13.38	9.33	12.62	14.95	16.44	8.75	90.86
1949	4	7.32	6.61	2.91	0.41	0.10	0.76	19.63	3.52	7.69	37.00	2.86	12.88	101.70
1950	4	5.86	7.47	4.79	3.55	0.06	0.07	15.77	9.09	31.14	14.60	16.03	6.31	114.75
1951	4	5.10	9.11	0.04	0.24	1.58	3.04	5.69	17.89	11.46	15.40	22.55	15.61	107.72
1952	4	4.12	11.71	0.54	0.40	0.68	2.46	23.88	26.52	7.49	20.73	20.71	0.96	120.21
1953	4	2.16	6.03	3.00	2.53	1.66	2.37	11.83	36.34	13.83	32.42	18.58	5.72	136.47
1954	4	7.80	0.49	5.20	0.41	9.09	1.28	5.77	4.40	16.59	19.06	30.34	4.72	105.16
1955	4	8.97	6.68	1.65	0.65	1.98	1.90	5.32	13.24	26.69	17.36	20.79	2.44	107.66
1956	4	5.42	0.15	2.20	1.15	11.63	3.06	3.66	26.95	19.24	26.15	13.27	7.52	120.38
1957	4	15.73	1.51	0.00	0.88	7.10	1.45	4.67	18.34	9.82	2.79	17.86	5.94	86.09
1958	4	6.95	4.69	0.00	2.06	2.11	3.79	13.88	42.05	4.78	3.84	16.05	5.74	105.94
1959	4	8.32	0.33	0.88	0.26	1.12	4.58	5.80	17.80	20.02	4.65	4.79	4.31	72.86
1960	4	5.33	0.76	2.40	2.63	1.21	2.05	5.18	10.27	21.41	8.14	13.53	19.73	92.64
1961	4	3.03	0.00	1.09	2.39	6.62	3.75	10.68	3.85	49.83	11.73	21.80	4.46	119.24
1962	4	16.22	2.27	0.25	2.02	0.39	1.94	0.94	3.64	9.81	19.26	21.53	7.17	85.42
1963	5	2.02	7.00	6.09	0.01	8.29	1.19	5.41	8.66	21.65	12.11	16.27	4.69	93.40
1964	5	7.25	7.48	0.92	4.10	8.19	12.12	7.82	12.76	8.63	6.50	11.28	3.51	90.58
1965	5	4.06	0.39	4.89	0.46	0.66	11.51	5.66	5.65	13.92	23.20	10.42	8.88	89.69
1966	5	0.56	1.21	1.07	1.80	0.10	0.75	9.37	8.87	24.22	7.15	8.14	7.15	70.39
1967	5	8.04	6.14	0.50	4.03	0.63	0.08	19.08	17.16	15.25	24.06	12.08	1.90	108.93
1968	5	13.27	2.78	2.38	4.84	0.66	2.02	9.16	1.77	12.39	7.12	13.84	11.32	81.56
1969	5	7.13	0.40	0.41	1.47	1.88	0.16	0.47	18.97	22.26	15.83	12.81	8.86	90.63
1970	5	3.81	1.91	2.72	0.35	0.23	3.33	0.75	4.32	16.45	14.70	17.33	2.33	68.22
1971	5	2.30	0.40	1.17	2.88	2.87	2.61	9.13	14.84	10.41	9.77	8.38	6.98	71.74
1972	5	3.34	0.00	6.94	0.06	0.17	9.75	0.95	8.56	2.20	29.31	12.06	10.41	83.76
1973	5	3.06	2.40	8.05	0.53	0.34	1.45	0.12	20.12	26.68	9.80	47.41	8.85	128.79
1974	5	13.32	3.81	1.55	4.31	1.50	0.30	9.02	27.86	11.12	20.89	10.48	1.99	106.14
1975	5	9.66	4.88	0.45	0.00	0.32	3.11	12.65	7.58	38.03	14.32	7.75	6.94	105.69
1976	5	2.17	16.66	7.39	3.49	6.00	2.18	15.08	29.07	29.06	26.55	22.85	8.42	168.92
1977	5	4.86	3.17	5.53	1.42	1.98	6.81	9.00	8.32	1.49	2.89	19.69	10.01	75.17
1978	5	2.39	1.79	4.63	3.51	10.48	0.52	1.63	15.39	14.37	7.35	12.53	7.91	82.51
1979	4	11.10	1.28	0.04	4.98	2.64	0.51	9.00	17.80	15.13	5.50	12.09	3.42	83.48
1980	4	3.58	17.57	8.50	12.22	0.29	4.80	5.69	2.25	9.36	21.70	17.07	16.17	119.19
1981	4	2.34	2.50	3.43	4.23	0.72	4.49	15.66	11.48	18.92	11.61	9.65	1.72	86.74
1982	4	9.06	3.43	7.99	1.35	6.99	5.68	3.50	27.16	26.03	14.39	7.10	11.34	124.03
1983	3	1.54	4.35	3.27	1.26	0.38	10.40	4.89	35.83	7.13	11.46	5.67	17.87	104.05
1984	3	12.24	0.05	11.34	3.94	6.25	13.35	9.94	8.26	19.46	21.40	13.60	8.30	128.13
1985	3	3.92	1.07	1.66	2.60	1.43	7.41	8.62	7.98	23.58	20.64	19.26	10.31	108.47
1986	3	1.13	4.51	1.67	9.06	1.85	3.04	8.27	19.59	15.34	19.81	18.13	14.51	116.91
1987	3	3.50	1.82	6.99	0.04	0.00	1.98	14.72	8.93	12.79	14.01	14.55	9.80	89.13
1988	2	3.76	2.44	3.52	0.94	4.03	11.70	9.56	13.13	12.02	20.28	18.04	14.99	114.40
1989	2	5.92	5.30	0.59	2.48	5.39	0.05	26.27	17.14	20.50	23.60	10.64	4.43	122.31
1990	2	0.23	3.41	5.68	1.74	2.04	1.09	3.83	15.93	23.12	42.50	7.45	17.03	124.06
1991	2	12.61	2.00	1.77	0.05	4.14	6.50	7.19	12.31	36.74	15.11	9.50	8.38	116.31
1992	2	16.76	2.19	0.41	1.13	4.11	1.13	23.66	21.90	16.25	33.83	12.28	8.74	142.37
1993	2	0.36	1.99	1.42	1.83	0.29	0.78	10.24	6.34	40.53	6.43	4.50	12.23	86.93
1994	2	3.20	1.55	1.98	3.23	1.01	3.06	1.78	11.70	20.34	21.87	15.06	1.63	86.41
1995	2	13.02	0.84	18.94	0.66	6.94	2.98	4.61	10.88	27.30	12.25	16.75	18.62	133.78
1996	2	10.70	8.27	8.59	1.84	0.10	0.16	5.10	9.70	27.56	8.45	16.26	1.79	98.53
1997	2	0.84	7.28	4.48	0.50	0.00	2.04	6.33	22.74	10.81	11.37	7.85	4.81	79.06
1998	2	3.32	9.08	4.94	0.23	0.24	0.29	9.48	10.39	15.09	12.80	23.41	18.02	107.28
1999	2	0.31	3.17	1.93	2.03	0.03	2.31	0.71	7.05	10.53	12.01	9.13	12.72	61.94
2000	2	0.00	3.49	1.09	1.63	1.07	0.05	5.66	19.21	6.98	38.20	19.22	12.39	108.99
2001	1	7.18	7.47	2.04	12.58	5.69	0.59	10.68	17.71	17.30	17.42	17.35	5.49	121.52
2002	1	5.90	2.44	4.95	2.95	1.44	5.57	5.64	7.18	2.88	6.92	22.78	9.94	78.59
2003	1	7.54	0.00	6.36	4.98	0.00	1.51	9.74	0.90	18.68	12.52	9.23	4.48	75.93
2004	1	12.28	0.96	0.03	7.31	1.42	1.70	11.86	14.46	18.15	8.32	17.76	5.11	99.37
AVERAGE		5.71	3.80	3.18	2.36	2.57	3.41	8.19	14.28	17.09	15.84	14.48	8.97	99.90
ADJUSTED		5.72	3.81	3.18	2.36	2.58	3.42	8.20	14.30	17.11	15.86	14.50	8.98	100.00
STD.DEV.		4.00	3.53	3.13	2.52	3.13	3.43	5.69	8.56	9.79	8.28	6.52	5.34	20.78

AVERAGE RAINFALL ON CATCHMENT OF CODE G1H037

DETAILS OF RAINFALL STATIONS USED

SECTION	POSITION	MAP(mm)	PERIOD OF RECORD	LATITUDE	LONGITUDE
22	38	763	1927 TO 2004	33.38	19.02
21	878	628	1963 TO 1987	33.38	18.60
21	879	692	1987 TO 2004	33.39	18.60

RAINFALL INPUT AS PERCENT M.A.P.

YEAR	STNS.	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	YEAR
1927	1	0.83	9.94	2.73	3.78	0.00	4.02	2.44	0.58	21.01	7.47	9.98	11.12	73.88
1928	1	2.23	1.86	3.22	0.00	0.50	2.99	9.92	22.17	12.98	18.68	9.66	4.86	89.07
1929	1	2.60	2.88	5.01	3.00	3.60	2.87	5.18	0.67	1.66	11.80	11.78	20.15	71.20
1930	1	4.97	5.60	1.84	0.00	4.81	0.00	14.52	14.06	6.48	8.68	20.40	15.83	97.18
1931	1	8.73	0.47	3.03	4.46	17.18	2.99	2.19	20.78	16.84	9.70	11.44	10.47	108.28
1932	1	2.69	1.47	3.36	2.77	2.57	2.25	2.06	11.14	29.78	16.66	9.87	3.45	88.06
1933	1	10.26	1.13	2.06	0.26	2.69	9.29	2.49	16.70	6.83	9.67	7.69	9.44	78.52
1934	1	6.53	8.53	0.84	0.39	1.93	4.47	11.31	14.10	6.99	16.32	14.56	11.55	97.52
1935	1	3.36	6.36	0.76	8.06	1.90	4.12	0.96	11.77	6.02	10.08	11.18	12.16	76.72
1936	1	3.09	2.70	7.16	1.77	0.00	15.19	8.02	12.98	24.47	19.05	7.03	4.17	105.62
1937	1	4.89	1.17	0.60	4.31	3.00	1.10	18.31	15.47	8.66	10.81	8.85	12.64	89.82
1938	1	3.98	3.34	2.06	0.00	5.22	1.27	8.06	16.06	6.62	10.29	16.31	8.02	81.23
1939	1	2.49	5.26	3.20	0.39	6.20	4.48	10.39	14.29	17.12	6.99	6.07	12.01	88.88
1940	1	4.71	8.86	2.27	7.76	3.42	1.17	20.55	25.04	25.11	12.49	17.80	22.89	152.06
1941	1	5.86	2.19	5.44	1.39	0.33	0.37	2.57	28.34	33.03	8.52	17.04	4.18	109.25
1942	1	5.52	0.84	1.06	8.01	3.76	6.82	4.97	5.72	10.39	16.29	17.71	12.78	93.87
1943	1	4.10	7.09	0.00	2.81	0.04	1.43	6.79	20.88	29.01	11.56	16.03	9.15	108.89
1944	1	9.41	6.72	6.89	0.00	0.10	0.97	8.66	25.00	28.29	20.97	12.82	2.10	121.94
1945	1	4.71	3.26	1.76	0.72	0.17	4.92	11.36	14.18	9.48	12.28	11.77	16.69	91.30
1946	1	11.08	3.57	2.14	0.00	0.00	9.19	4.10	11.29	7.94	19.35	11.82	4.71	85.17
1947	1	3.76	3.04	0.54	0.89	1.77	6.15	5.94	12.49	9.03	19.35	10.54	11.85	85.35
1948	1	10.83	1.76	4.06	0.90	0.10	1.21	12.40	8.65	10.92	15.43	14.84	8.66	89.76
1949	1	8.09	7.72	1.86	0.46	0.00	1.63	17.34	2.49	9.16	29.26	2.70	14.65	95.36
1950	1	4.00	9.42	4.77	3.66	0.24	0.00	24.51	11.08	26.19	13.96	11.04	6.79	115.65
1951	1	4.99	8.99	0.00	0.10	1.45	3.29	6.92	14.71	9.45	14.13	26.24	20.03	110.32
1952	1	5.73	13.97	1.00	0.76	0.90	3.11	26.45	25.53	9.10	19.96	20.28	1.25	128.04
1953	1	1.68	6.38	3.29	2.18	3.54	4.22	14.52	32.98	10.87	27.37	19.23	4.56	130.82
1954	1	7.58	1.10	5.35	0.16	9.69	2.56	6.07	5.47	17.26	24.67	25.64	3.70	109.23
1955	1	9.03	6.62	2.06	0.24	1.27	3.57	6.63	15.91	22.47	15.99	17.89	3.04	104.72
1956	1	3.79	0.59	3.51	2.25	12.31	4.02	6.74	29.83	16.63	22.06	12.57	8.15	122.47
1957	1	16.36	1.59	0.00	2.46	11.09	3.29	5.62	19.62	11.74	2.65	15.14	6.33	95.90
1958	1	6.59	8.18	0.00	3.54	2.56	2.63	19.44	45.51	3.37	2.33	10.98	6.10	111.23
1959	1	7.00	0.51	2.14	0.98	1.81	6.82	7.37	18.10	19.06	4.72	5.60	3.74	77.83
1960	1	6.71	0.48	2.45	6.49	1.14	1.99	4.71	11.46	21.43	8.77	14.10	18.81	98.55
1961	1	5.18	0.00	1.32	2.40	7.21	4.50	12.23	4.76	45.89	11.68	21.90	5.45	122.52
1962	1	16.19	2.95	0.56	2.31	1.17	0.94	1.74	5.61	8.80	20.23	19.05	6.46	86.00
1963	2	2.63	6.91	6.29	0.02	11.35	1.17	3.73	7.66	18.97	13.34	13.38	4.03	89.48
1964	2	7.51	9.65	1.36	5.60	6.14	12.25	7.41	14.48	7.95	6.59	8.85	3.71	91.51
1965	2	5.13	0.55	4.75	0.59	1.65	12.24	4.25	7.24	14.77	20.41	7.39	7.31	86.28
1966	2	0.82	2.38	1.12	2.10	0.08	1.34	9.74	10.75	22.68	5.01	8.24	6.81	71.07
1967	2	8.59	6.48	0.35	5.57	0.94	0.19	22.04	16.80	15.22	21.45	10.33	1.65	109.61
1968	2	11.76	3.39	2.62	6.33	0.97	2.51	9.37	1.87	13.13	7.86	14.17	11.20	85.17
1969	2	5.53	0.97	0.91	1.11	2.42	0.33	1.00	20.36	23.61	13.63	12.73	8.68	91.28
1970	2	4.53	2.69	4.29	0.50	0.47	4.65	1.41	5.42	15.31	12.81	19.35	2.55	73.98
1971	2	2.83	0.51	2.41	3.41	4.34	3.22	11.39	13.63	10.14	9.86	8.28	6.90	76.93
1972	2	5.08	0.00	9.13	0.15	0.02	8.66	1.37	10.99	2.38	27.68	11.82	8.32	85.60
1973	2	3.61	1.54	9.71	0.88	0.85	1.24	0.29	22.12	23.47	9.97	41.26	10.04	124.98
1974	2	14.38	4.77	1.23	3.03	1.82	0.33	5.36	29.33	11.76	21.31	9.07	1.51	103.91
1975	2	8.31	6.17	0.57	0.00	0.79	3.69	7.02	7.00	42.21	14.14	8.67	8.40	106.98
1976	2	3.75	14.57	7.25	4.38	6.04	2.77	15.57	26.56	25.85	23.63	21.08	10.17	161.61
1977	2	4.68	3.83	6.63	2.17	3.92	5.75	10.89	9.02	1.31	2.71	20.29	9.90	81.10
1978	2	3.28	1.77	4.92	3.37	11.78	0.90	2.45	17.69	11.53	9.06	11.11	7.45	85.31
1979	2	12.79	2.29	0.07	5.30	2.69	0.04	9.36	20.18	16.04	5.65	12.73	4.69	91.83
1980	2	3.75	14.40	7.54	15.34	0.57	5.63	5.26	2.62	12.59	19.77	16.23	15.40	119.11
1981	2	2.06	1.68	3.41	3.91	0.79	2.45	14.81	11.50	20.34	10.46	8.44	2.38	82.23
1982	2	9.87	4.02	5.49	1.02	7.51	7.16	3.09	25.76	25.95	13.29	6.11	12.65	121.91
1983	2	1.48	4.80	3.13	1.19	0.57	11.27	3.88	36.83	7.40	10.81	5.97	16.95	104.27
1984	2	10.75	0.07	11.12	4.29	5.32	12.52	11.23	7.36	23.24	22.32	14.07	8.06	130.36
1985	2	1.44	1.23	1.30	2.44	1.95	7.53	10.39	7.81	23.39	20.59	17.49	9.47	105.01
1986	2	0.99	2.65	2.19	11.00	2.04	3.65	7.40	15.54	14.47	17.72	17.09	13.56	108.28
1987	3	3.87	1.60	7.48	0.03	0.00	2.22	13.30	10.47	13.03	13.37	15.04	9.44	89.85
1988	2	3.18	1.46	3.61	1.06	3.79	12.92	9.81	12.48	12.31	19.72	19.49	13.62	113.46
1989	2	6.69	9.89	0.48	2.69	7.17	0.36	23.86	14.15	20.81	23.12	8.36	4.59	122.16
1990	2	0.33	3.80	7.66	0.84	1.81	1.06	3.82	14.64	23.66	39.11	7.08	14.18	117.99
1991	2	6.47	1.87	2.33	0.27	4.61	5.99	6.81	14.45	35.91	15.69	11.12	8.05	113.58
1992	2	14.95	2.10	0.58	1.53	3.86	0.83	22.99	22.78	14.67	26.06	10.96	2.87	124.18
1993	2	0.37	0.92	2.98	0.98	0.29	0.87	7.55	4.95	35.89	5.62	5.00	10.74	76.16
1994	2	3.99	1.17	1.12	2.82	0.83	2.12	2.57	13.80	19.97	20.97	14.43	2.48	86.26
1995	2	9.34	0.69	17.83	1.18	5.95	3.58	5.17	11.08	22.95	11.44	15.87	16.61	121.70
1996	2	6.78	9.47	8.96	1.69	0.05	0.79	5.24	9.92	27.68	7.41	15.82	1.39	95.19
1997	2	2.56	8.31	4.38	1.06	0.07	1.80	6.53	23.48	13.26	15.50	7.36	6.12	90.41
1998	2	4.41	6.81	5.94	0.28	0.00	0.23	10.87	10.21	17.70	15.33	19.34	16.03	107.17
1999	2	0.03	4.59	0.62	3.18	0.03	1.73	1.24	8.99	12.25	12.04	9.33	11.97	66.01
2000	2	0.47	4.44	1.58	1.74	1.90	0.12	7.36	16.91	8.24	40.56	21.41	13.86	118.60
2001	2	6.68	7.33	1.88	11.41	5.32	0.51	10.32	16.09	17.39	18.59	16.56	6.58	118.66
2002	2	5.78	2.22	4.68	2.49	1.48	5.03	5.20	7.25	2.53	8.16	21.91	11.98	78.71
2003	2	7.85	0.00	5.99	4.55	0.00	1.92	9.04	0.76	19.80	12.67	10.10	4.90	77.58
2004	2	13.97	1.09	0.12	9.18	0.96	1.47	12.85	15.15	17.62	8.40	17.76	5.04	103.60
AVERAGE		5.81	4.12	3.39	2.70	2.91	3.65	8.68	14.63	16.66	14.92	13.70	8.85	100.02
ADJUSTED		5.80	4.12	3.39	2.70	2.91	3.65	8.67	14.63	16.66	14.92	13.70	8.85	100.00
STD.DEV.		3.81	3.55	3.09	2.94	3.43	3.45	6.05	8.50	9.16	7.43	5.95	5.00	18.93

AVERAGE RAINFALL ON CATCHMENT OF CODE G1H040

DETAILS OF RAINFALL STATIONS USED

SECTION	POSITION	MAP(mm)	PERIOD OF RECORD	LATITUDE	LONGITUDE
41	533	391	1988 TO 2004	33.23	18.48
41	684	688	1927 TO 1964	33.24	18.53
41	713	663	1937 TO 1982	33.23	18.54
42	257	445	1961 TO 2004	33.17	19.09

RAINFALL INPUT AS PERCENT M.A.P.

YEAR	STNS.	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	YEAR
1927	1	1.29	7.16	4.87	3.54	0.00	2.73	0.55	0.67	31.07	12.16	11.16	13.15	88.35
1928	1	2.35	1.82	6.75	0.00	0.51	2.40	18.75	18.56	8.53	20.80	12.51	6.30	99.29
1929	1	2.30	1.82	5.08	1.00	2.59	2.40	7.13	0.84	2.48	14.41	14.26	25.97	80.29
1930	1	4.40	8.21	1.19	0.00	3.15	0.83	14.83	12.64	6.90	9.14	19.90	14.06	95.25
1931	1	6.74	0.00	0.49	4.13	12.43	0.74	0.74	21.93	17.78	13.35	9.95	15.34	103.63
1932	1	0.51	0.70	2.00	2.59	0.99	1.55	0.29	9.65	31.75	17.75	10.66	4.10	82.54
1933	1	9.49	4.31	5.29	0.22	0.93	5.80	1.60	12.30	8.48	6.78	8.89	16.17	80.26
1934	1	7.70	10.50	0.00	0.60	0.00	4.69	9.06	9.22	7.19	11.17	17.16	10.08	87.38
1935	1	2.48	3.21	0.74	8.00	2.63	2.03	0.23	12.55	4.46	14.12	17.08	10.52	78.07
1936	1	1.96	2.30	5.17	0.48	0.07	7.06	7.38	18.68	23.08	25.94	5.00	1.99	99.11
1937	2	4.53	0.47	0.23	5.33	0.90	0.87	12.42	14.35	8.77	6.91	11.96	11.29	78.02
1938	2	4.12	4.71	3.26	0.21	1.88	1.51	5.31	21.32	5.53	10.99	19.49	9.17	87.51
1939	2	0.53	1.95	0.67	1.32	5.50	5.93	11.72	13.90	20.20	8.86	10.03	8.96	89.58
1940	2	4.49	10.24	0.71	4.10	0.76	0.27	18.34	37.46	29.40	20.52	21.89	25.58	173.76
1941	2	4.51	1.73	0.82	0.18	0.00	0.18	3.41	25.80	38.25	11.55	19.86	2.20	108.50
1942	2	2.60	0.19	1.79	1.40	1.24	6.47	3.99	8.06	11.09	20.09	24.67	12.73	94.32
1943	2	4.66	7.73	0.00	2.89	0.00	1.27	6.71	14.40	33.25	18.75	15.81	5.84	111.32
1944	2	8.52	4.86	11.25	0.00	0.00	0.40	6.72	20.62	28.47	23.82	17.01	0.77	122.43
1945	2	2.61	2.96	1.79	0.32	0.20	2.32	7.78	14.77	11.84	15.31	17.26	23.51	100.65
1946	2	7.77	5.68	0.37	0.00	0.00	7.54	1.26	9.93	8.54	32.59	12.72	4.09	90.49
1947	2	7.05	3.43	0.00	0.54	0.10	5.20	5.22	15.74	9.41	25.62	14.39	12.41	99.12
1948	2	8.44	0.37	1.38	1.70	0.10	0.60	15.79	7.29	12.97	14.75	16.87	9.06	89.31
1949	2	6.66	3.81	4.20	0.51	0.00	0.28	19.66	3.30	6.40	38.83	3.35	8.84	95.84
1950	2	4.46	5.79	5.47	3.28	0.00	0.00	18.76	10.94	33.45	12.17	20.93	6.22	121.46
1951	2	7.14	10.58	0.04	0.40	0.90	4.38	5.45	18.49	9.67	12.93	19.20	10.83	100.03
1952	2	3.55	9.52	0.78	0.53	0.59	2.71	21.19	34.16	9.72	18.61	21.62	1.08	124.05
1953	2	2.54	6.20	2.67	2.61	1.05	1.52	12.42	33.96	15.58	41.24	16.87	3.37	140.05
1954	2	8.81	0.32	6.37	0.04	7.75	0.86	4.26	3.61	17.46	15.35	32.26	5.84	102.92
1955	2	9.53	5.89	0.89	1.28	2.70	1.38	6.17	8.54	31.81	20.09	27.78	4.01	120.08
1956	2	5.10	0.00	2.18	0.57	11.88	2.37	2.44	21.69	20.88	28.76	13.28	5.93	115.07
1957	2	19.60	2.22	0.00	1.45	6.49	0.47	5.10	17.10	10.26	4.68	21.42	5.53	94.31
1958	2	6.74	2.29	0.00	0.63	3.46	2.83	10.66	40.27	4.89	2.08	17.82	5.73	97.40
1959	2	7.41	0.25	0.52	0.15	0.78	3.62	5.44	21.06	22.52	3.54	4.76	4.51	74.58
1960	2	3.23	0.00	2.36	1.40	0.52	0.34	1.31	10.31	24.24	7.08	16.39	16.25	83.42
1961	3	1.90	0.00	1.39	1.34	5.68	6.80	11.56	4.44	52.29	12.47	23.76	5.16	126.79
1962	3	18.07	3.98	0.00	1.91	0.00	0.37	0.10	1.89	10.46	20.86	24.08	6.73	88.46
1963	3	1.00	7.66	5.98	0.00	6.79	0.75	6.79	8.09	24.25	10.08	19.08	8.11	98.59
1964	3	6.19	6.90	0.53	3.20	11.83	11.72	6.77	13.36	6.88	5.77	14.27	3.74	91.14
1965	2	4.54	1.07	5.30	0.00	0.00	10.56	6.38	5.42	13.54	22.76	8.57	7.48	85.61
1966	2	0.11	0.00	0.60	1.24	0.00	0.00	8.34	7.81	26.88	9.11	9.88	7.81	71.78
1967	2	8.04	4.62	0.30	1.89	0.90	0.00	13.63	21.81	18.32	20.67	11.96	1.81	103.96
1968	2	19.42	2.37	1.51	4.10	0.66	0.79	9.73	1.80	12.43	6.60	14.74	10.05	84.19
1969	2	12.72	1.07	0.00	0.00	0.73	0.00	0.08	18.94	21.54	17.74	14.77	9.29	96.87
1970	2	2.53	0.90	0.71	0.62	0.22	4.76	0.34	3.77	17.50	16.90	11.41	1.14	60.81
1971	2	0.35	0.45	0.72	2.53	1.29	1.00	10.62	14.71	11.20	11.41	7.01	7.22	68.49
1972	2	4.13	0.00	5.69	0.00	0.84	8.98	0.51	6.22	2.56	25.71	15.29	10.71	80.63
1973	2	3.30	1.24	5.77	0.00	0.00	2.69	2.08	18.06	22.44	11.51	51.24	9.78	128.10
1974	2	10.46	2.08	2.95	3.66	1.19	0.82	7.64	26.36	8.86	21.19	10.97	1.24	97.42
1975	2	13.44	2.60	0.75	1.12	2.52	2.98	18.92	5.60	39.37	15.72	6.51	5.48	115.02
1976	2	4.28	22.73	6.30	0.31	3.83	1.43	12.58	31.97	31.03	29.86	20.92	5.28	170.52
1977	2	5.93	0.00	4.09	1.07	0.43	5.65	5.90	5.59	1.93	0.92	19.43	9.01	59.95
1978	2	1.91	1.09	3.26	4.26	8.80	0.63	1.93	12.15	13.67	5.23	11.93	8.50	73.38
1979	2	8.23	0.73	0.00	5.14	2.78	1.15	7.07	13.28	13.81	2.74	9.01	1.28	65.22
1980	2	4.30	24.22	11.41	16.35	0.00	3.53	4.29	1.14	5.45	21.25	15.13	20.35	127.43
1981	2	3.83	2.94	2.66	6.17	0.43	8.69	19.63	8.66	16.17	9.40	5.94	0.34	84.86
1982	2	7.75	4.64	9.53	0.13	9.37	4.09	2.32	28.66	25.37	15.97	6.90	7.91	122.64
1983	1	0.16	6.29	1.24	0.00	0.00	20.31	7.64	37.32	1.73	14.87	5.28	27.03	121.86
1984	1	12.54	0.00	14.22	7.19	11.59	26.62	8.38	7.95	12.63	24.71	19.50	10.20	155.54
1985	1	0.67	0.00	2.18	1.24	1.24	4.83	2.92	2.02	18.98	15.05	24.24	7.32	80.70
1986	1	1.66	3.39	0.00	0.67	1.57	1.06	7.37	27.30	20.04	12.60	11.32	7.53	94.52
1987	1	0.00	0.00	3.19	0.00	0.00	0.67	22.02	5.95	19.68	7.08	14.54	11.93	85.06
1988	2	2.06	0.73	1.66	0.28	3.65	16.00	12.29	11.98	16.20	16.95	18.39	14.58	114.78
1989	2	10.00	6.53	0.22	2.69	6.25	2.65	22.84	21.27	18.80	21.18	7.34	1.94	121.71
1990	2	0.13	3.19	4.33	1.31	0.68	2.45	5.45	10.22	19.05	33.70	5.04	13.80	99.34
1991	2	9.46	4.28	5.02	0.32	6.05	5.93	9.56	10.40	23.44	17.81	11.10	7.04	110.41
1992	2	14.45	2.26	0.93	0.85	5.42	1.11	24.12	24.15	13.43	30.13	9.31	2.46	128.64
1993	2	0.48	3.07	3.50	0.36	0.00	1.16	11.12	6.64	35.01	12.19	3.47	11.83	88.83
1994	2	4.29	0.37	1.59	1.34	0.26	3.88	1.83	13.80	14.14	15.51	14.34	2.40	73.74
1995	2	13.80	2.57	19.80	2.82	8.13	3.86	6.57	8.11	22.51	21.26	17.90	12.00	139.32
1996	2	7.52	11.20	8.89	2.07	0.00	1.52	5.30	8.91	29.96	5.33	10.41	0.92	92.03
1997	2	3.71	12.08	2.95	3.97	0.00	0.58	3.18	21.60	12.35	12.27	7.66	3.30	83.64
1998	2	4.27	12.19	5.25	0.60	0.22	0.00	11.54	9.13	10.51	10.96	20.94	18.52	104.12
1999	2	0.00	0.39	0.20	0.65	0.00	0.70	1.10	5.65	8.00	19.38	8.99	13.64	58.72
2000	2	0.41	5.56	0.54	1.70	1.99	0.00	6.17	19.76	6.49	39.05	17.03	12.59	111.30
2001	2	7.39	5.62	0.64	8.99	6.16	1.72	10.95	21.81	11.42	20.48	18.95	12.00	126.14
2002	2	6.54	3.66	2.69	3.98	0.36	3.70	5.52	6.75	1.63	3.17	32.02	9.14	79.16
2003	2	6.39	0.00	6.95	4.94	0.00	1.53	8.94	1.35	15.62	12.97	8.78	6.20	73.67
2004	2	15.72	1.06	0.38	3.03	0.14	1.06	16.79	11.12	18.26	8.78	28.13	6.02	110.48
AVERAGE		5.74	3.94	3.01	1.99	2.34	3.36	8.22	14.06	16.82	16.03	15.28	8.75	99.54
ADJUSTED		5.77	3.95	3.03	2.00	2.35	3.38	8.25	14.13	16.90	16.10	15.35	8.79	100.00
STD.DEV.		4.58	4.54	3.56	2.57	3.28	4.45	6.17	9.38	10.16	8.71	7.63	5.92	23.11

AVERAGE RAINFALL ON CATCHMENT OF CODE G1H041

DETAILS OF RAINFALL STATIONS USED

SECTION	POSITION	MAP(mm)	PERIOD OF RECORD	LATITUDE	LONGITUDE
22	38	763	1927 TO 2004	33.38	19.02
22	5	624	1931 TO 2004	33.35	19.01
41	836	465	1941 TO 1978	33.26	18.58

RAINFALL INPUT AS PERCENT M.A.P.

YEAR	STNS.	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	YEAR
1927	1	0.83	9.94	2.73	3.78	0.00	4.02	2.44	0.58	21.01	7.47	9.98	11.12	73.88
1928	1	2.23	1.86	3.22	0.00	0.50	2.99	9.92	22.17	12.98	18.68	9.66	4.86	89.07
1929	1	2.60	2.88	5.01	3.00	3.60	2.87	5.18	0.67	1.66	11.80	11.78	20.15	71.20
1930	1	4.97	5.60	1.84	0.00	4.81	0.00	14.52	14.06	6.48	8.68	20.40	15.83	97.18
1931	2	7.78	0.24	2.60	3.65	17.20	3.33	1.66	22.24	16.45	9.43	9.50	11.21	105.29
1932	2	3.03	1.25	2.98	2.31	1.75	2.06	2.13	11.25	28.04	17.83	10.29	3.05	85.97
1933	2	8.39	2.84	2.43	0.17	2.47	8.84	3.60	15.83	7.26	10.28	8.64	9.49	80.23
1934	2	5.28	8.87	0.83	0.20	1.98	4.69	12.11	12.85	8.11	16.28	15.90	10.25	97.34
1935	2	3.58	5.82	0.48	7.53	1.56	3.40	0.78	10.49	5.57	9.62	11.26	13.10	73.21
1936	2	2.28	1.80	6.54	1.40	0.00	13.29	8.12	12.87	26.58	20.82	7.28	4.36	105.34
1937	2	4.35	1.19	0.81	3.58	2.56	1.02	18.82	14.33	8.14	10.12	10.29	11.57	86.77
1938	2	3.94	3.19	2.42	0.00	5.67	1.65	7.36	15.73	7.94	9.25	15.96	8.91	82.03
1939	2	3.90	4.40	2.82	0.20	5.85	4.32	9.09	12.65	17.17	6.91	5.34	11.52	84.16
1940	2	3.67	6.79	2.30	6.75	2.22	1.75	19.37	26.12	23.60	11.30	16.34	24.06	144.28
1941	3	5.14	1.81	4.83	0.46	0.20	0.12	2.56	26.10	33.77	9.72	16.30	2.67	103.68
1942	3	6.41	0.44	1.58	6.95	2.62	6.94	5.33	5.67	13.44	17.79	20.20	14.01	101.39
1943	3	3.40	7.77	0.00	2.76	0.01	2.07	6.13	20.79	30.26	14.19	18.38	9.09	114.85
1944	3	7.30	4.04	5.94	0.00	0.03	0.72	8.75	26.17	27.51	22.33	15.35	2.03	120.19
1945	3	3.82	2.42	0.95	0.24	0.06	4.05	10.56	12.43	8.93	12.41	13.61	19.39	88.87
1946	3	10.51	2.17	0.71	0.00	0.00	9.96	2.00	9.22	8.50	22.51	12.48	3.90	81.95
1947	3	3.33	2.35	0.18	0.49	1.44	7.04	5.08	12.04	7.14	20.64	9.10	11.86	80.69
1948	3	9.43	1.40	2.32	1.42	0.03	0.40	12.19	9.81	11.58	13.71	14.40	7.16	83.85
1949	3	8.32	8.05	1.22	0.15	0.13	1.09	17.18	3.36	8.02	32.76	2.38	13.74	96.39
1950	3	4.49	7.56	3.98	4.56	0.08	0.00	21.09	9.62	28.76	15.61	12.30	7.72	115.77
1951	3	4.44	8.88	0.00	0.03	1.58	3.05	5.49	15.96	12.46	13.87	23.72	18.21	107.70
1952	3	5.35	13.72	0.43	0.25	0.54	2.53	25.75	25.53	8.30	20.30	19.45	1.48	123.62
1953	3	1.59	6.84	3.81	2.44	2.20	2.45	12.46	29.89	12.73	25.23	17.95	4.60	122.18
1954	3	8.22	0.37	3.97	0.52	9.93	1.76	5.93	3.94	18.57	21.25	27.00	3.32	104.79
1955	3	8.19	7.17	1.81	0.19	1.14	2.79	6.06	13.62	23.21	16.94	18.16	2.53	101.79
1956	3	5.85	0.33	3.40	1.78	10.81	3.38	4.65	32.55	15.57	24.71	14.12	6.78	123.92
1957	3	13.83	1.18	0.00	0.98	8.12	2.17	4.94	19.50	9.91	2.56	16.48	6.28	85.95
1958	3	7.01	5.85	0.00	1.81	1.88	3.66	14.10	42.30	4.13	3.96	13.54	5.14	103.39
1959	3	9.16	0.44	1.40	0.65	1.31	5.07	6.12	18.00	18.31	5.12	5.64	3.24	74.45
1960	3	6.58	1.09	2.27	5.03	1.65	2.33	4.82	11.40	20.11	7.62	13.90	19.30	96.10
1961	3	4.08	0.00	1.11	2.34	7.43	4.09	11.67	5.15	47.98	10.81	23.57	4.30	122.51
1962	3	16.83	1.78	0.43	2.92	0.79	1.06	1.18	4.72	10.85	17.18	20.12	7.34	85.22
1963	3	2.13	7.52	5.59	0.01	10.71	1.11	6.27	9.69	20.13	12.34	15.84	4.57	95.91
1964	3	6.67	8.56	1.30	3.44	7.26	12.10	8.88	12.68	8.43	6.92	10.67	3.88	90.79
1965	3	4.53	0.42	5.44	0.55	0.82	11.87	6.13	5.22	15.38	22.35	9.45	9.53	91.68
1966	3	0.46	1.70	0.90	0.98	0.03	1.29	12.12	10.22	24.09	5.90	8.07	6.54	72.31
1967	3	7.66	6.35	0.69	4.56	0.93	0.15	17.55	17.55	15.76	23.60	12.95	1.14	108.89
1968	3	12.88	3.69	2.96	4.96	1.09	2.60	9.09	1.87	11.82	6.71	12.87	9.86	80.42
1969	3	6.54	0.95	0.26	1.53	2.16	0.22	0.44	18.98	24.62	12.61	12.60	8.76	89.69
1970	3	4.89	2.45	3.18	0.34	0.29	4.16	1.21	4.91	14.04	16.44	19.39	3.06	74.36
1971	3	2.88	1.04	2.32	3.92	3.44	4.23	10.61	14.19	10.87	9.63	7.78	6.80	77.71
1972	3	2.90	0.00	8.01	0.09	0.00	8.85	1.23	8.83	2.10	30.17	10.99	8.39	81.55
1973	3	3.28	2.47	8.59	0.28	0.22	0.92	0.10	22.55	26.48	8.77	48.61	9.18	131.46
1974	3	14.00	4.97	1.57	4.02	1.54	0.14	5.94	30.16	9.97	18.49	9.14	2.17	102.11
1975	3	7.37	5.74	1.19	0.00	0.17	2.64	12.44	8.29	40.13	15.15	7.48	8.05	108.64
1976	3	2.89	15.84	8.96	5.26	6.22	2.32	14.20	25.55	26.69	25.04	23.37	8.74	165.06
1977	3	4.72	3.54	5.65	1.45	2.63	10.84	9.44	8.67	1.95	2.02	20.79	10.29	82.00
1978	3	2.18	1.10	4.39	3.19	10.85	0.44	1.94	16.11	14.03	7.76	13.41	8.12	83.50
1979	2	14.17	2.21	0.07	7.63	4.04	0.35	9.47	18.98	14.74	6.31	11.35	4.86	94.18
1980	2	3.23	18.01	7.18	15.26	0.51	4.64	6.26	5.77	12.94	21.62	15.64	16.07	127.13
1981	2	2.58	2.35	2.88	4.34	0.31	2.43	15.92	12.69	20.63	11.40	8.49	2.53	86.55
1982	2	10.53	3.79	5.96	1.57	6.94	6.67	4.57	25.05	27.03	13.65	5.74	11.84	123.33
1983	2	1.35	3.94	3.23	1.59	0.21	13.71	4.08	35.18	8.48	10.91	5.91	16.98	105.58
1984	2	10.37	0.23	12.68	5.20	5.35	14.20	10.74	8.38	21.94	20.30	14.08	8.76	132.24
1985	2	1.28	1.39	1.28	2.32	1.80	7.23	10.29	8.25	23.00	16.95	19.49	7.99	101.27
1986	2	0.70	1.71	2.34	9.43	2.33	4.16	7.94	15.00	14.93	18.39	17.79	13.18	107.91
1987	2	4.11	1.33	8.44	0.00	0.00	2.85	13.87	10.78	14.21	13.98	16.76	10.26	96.58
1988	2	3.61	1.92	2.55	0.76	4.62	13.68	10.55	14.56	13.56	20.07	17.56	13.86	117.28
1989	2	5.44	8.62	0.26	2.91	5.60	0.00	24.13	13.68	19.93	25.54	7.92	4.33	118.36
1990	2	0.21	3.71	4.46	1.06	1.64	0.84	4.54	14.07	23.28	41.12	7.28	13.57	115.79
1991	2	6.94	2.21	2.61	0.25	4.97	5.78	5.45	13.71	35.19	14.31	9.65	8.85	109.93
1992	2	17.21	1.93	0.40	1.95	3.94	0.45	22.34	24.31	15.73	22.97	10.94	2.86	125.03
1993	2	0.64	0.72	3.40	1.28	0.29	2.89	9.29	4.37	35.00	5.14	5.61	10.57	79.19
1994	2	4.25	1.47	1.58	2.58	1.19	2.34	2.55	14.58	18.64	19.39	13.68	2.49	84.73
1995	2	10.39	0.53	20.94	1.06	5.90	2.96	4.84	8.67	23.02	11.71	18.12	18.68	126.82
1996	2	6.77	10.03	9.39	1.11	0.05	0.32	4.99	10.08	27.78	7.36	15.29	1.68	94.85
1997	2	1.56	9.14	4.28	0.39	0.00	1.18	5.74	23.60	12.35	14.52	6.97	5.62	85.34
1998	2	5.34	8.06	7.39	0.23	0.18	0.43	9.42	10.62	16.17	15.03	18.93	16.11	107.89
1999	2	0.03	3.69	0.62	3.83	0.03	1.97	1.79	9.35	12.60	10.51	9.52	12.24	66.19
2000	2	1.04	4.60	1.86	1.89	1.49	0.05	6.00	17.08	7.48	39.25	21.60	13.50	115.84
2001	2	7.84	7.90	1.58	12.62	5.81	0.86	12.47	20.03	17.51	18.89	16.61	6.91	129.03
2002	2	5.79	1.22	6.21	3.08	1.44	5.43	6.66	7.28	2.80	7.95	24.73	12.86	85.46
2003	2	8.50	0.00	6.70	4.62	0.00	1.68	10.89	1.57	23.12	13.19	11.15	5.17	86.58
2004	2	14.43	1.38	0.49	8.18	1.15	1.63	11.67	15.20	18.20	7.47	18.32	5.84	103.96
AVERAGE		5.70	3.98	3.30	2.54	2.70	3.64	8.50	14.46	16.89	15.02	14.14	8.85	99.72
ADJUSTED		5.71	4.00	3.31	2.55	2.70	3.65	8.53	14.50	16.94	15.06	14.18	8.87	100.00
STD.DEV.		3.90	3.72	3.33	2.90	3.30	3.63	5.70	8.31	9.17	7.68	6.55	5.14	19.11

AVERAGE RAINFALL ON CATCHMENT OF CODE G1h043

DETAILS OF RAINFALL STATIONS USED

SECTION	POSITION	MAP(mm)	PERIOD OF RECORD	LATITUDE	LONGITUDE
41	417	463	1927 TO 2000	33.27	18.44
41	279	385	1964 TO 2004	33.09	18.40
41	347	394	1930 TO 1987	33.17	18.42

RAINFALL INPUT AS PERCENT M.A.P.

YEAR	STNS.	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	YEAR
1927	1	2.20	8.82	1.36	3.07	0.00	3.57	0.86	1.04	26.01	6.81	12.47	9.77	75.98
1928	1	0.43	0.99	4.24	0.00	0.61	2.36	10.44	13.77	12.08	18.76	10.20	3.18	77.06
1929	1	2.96	1.38	6.59	4.39	3.57	1.19	3.85	1.21	3.91	11.74	9.53	25.16	75.49
1930	2	4.20	8.06	2.34	0.00	1.82	0.00	15.52	10.84	5.18	8.44	20.54	12.68	89.61
1931	2	4.96	0.00	1.87	1.99	11.44	1.22	0.70	25.39	15.23	12.79	7.07	11.47	94.13
1932	2	2.91	0.46	2.26	2.42	1.43	1.87	1.33	10.66	26.59	24.10	11.61	4.55	90.20
1933	2	6.60	1.80	7.95	2.51	3.63	10.92	1.98	12.35	9.82	9.61	12.32	11.65	91.15
1934	2	6.46	5.32	0.00	0.11	0.03	6.32	9.89	12.85	9.69	14.36	12.74	10.53	88.30
1935	2	1.91	3.69	1.15	6.86	2.29	0.59	0.06	22.60	5.77	13.64	14.25	16.03	88.83
1936	2	1.18	3.98	6.02	0.76	0.05	8.73	10.18	12.53	21.84	22.31	4.37	2.29	94.22
1937	2	5.05	0.48	0.28	6.24	1.63	1.63	13.07	14.45	6.45	8.22	10.05	10.78	78.32
1938	2	2.84	4.89	5.13	0.00	2.98	1.08	5.60	16.05	4.66	11.10	14.33	8.27	76.91
1939	2	1.54	2.97	1.61	0.97	8.27	4.05	12.28	9.87	18.41	7.46	5.32	10.32	83.06
1940	2	5.04	7.67	2.33	3.99	1.65	0.37	15.33	28.98	23.46	14.18	14.34	21.57	138.91
1941	2	7.61	0.79	3.60	0.84	0.33	0.44	5.75	17.85	40.51	8.78	23.89	3.30	113.69
1942	2	6.72	0.06	2.25	3.96	3.60	8.91	2.29	6.26	8.31	18.01	19.49	11.51	91.38
1943	2	4.41	8.18	0.09	2.88	0.09	1.76	7.30	20.36	32.93	8.46	22.29	8.07	116.81
1944	2	9.31	4.14	4.46	0.00	0.00	1.14	4.58	25.20	25.63	21.78	16.96	1.26	114.46
1945	2	2.12	3.71	1.41	0.52	0.55	4.37	5.60	10.90	7.21	10.92	12.19	23.45	82.95
1946	2	8.36	1.73	2.08	0.00	0.00	10.64	2.21	9.27	8.34	25.91	10.35	3.10	81.98
1947	2	6.40	1.69	0.32	0.46	0.59	7.51	5.73	14.21	9.37	24.15	5.48	19.31	95.22
1948	2	9.18	1.77	2.03	2.07	0.19	0.90	11.78	7.98	13.22	15.12	17.61	13.09	94.95
1949	2	7.31	5.63	0.93	0.74	0.00	0.68	20.24	4.16	7.92	38.97	3.62	16.81	107.03
1950	2	5.61	8.00	4.55	2.91	0.01	0.33	12.46	7.56	31.74	13.55	10.92	6.04	103.70
1951	2	5.50	7.06	0.16	0.50	2.47	2.98	5.30	19.74	14.23	17.52	24.58	15.18	115.23
1952	2	4.77	10.50	0.43	0.42	0.67	2.32	26.69	21.36	7.02	22.43	20.36	0.93	117.90
1953	2	1.48	3.55	3.07	1.90	2.89	3.11	10.91	42.06	12.44	32.74	19.61	7.01	140.77
1954	2	6.88	0.70	5.16	0.00	9.11	1.76	6.57	5.55	16.89	22.12	32.38	5.61	112.75
1955	2	8.56	4.25	1.90	0.50	1.99	1.39	4.80	15.52	22.23	15.79	14.87	1.81	93.61
1956	2	6.26	0.08	1.44	0.67	15.13	2.89	3.15	26.38	24.08	25.46	15.01	7.01	127.56
1957	2	18.35	0.63	0.00	0.63	8.51	1.33	5.20	17.70	9.91	1.46	16.94	5.68	86.35
1958	2	7.57	3.29	0.00	1.42	3.17	4.07	12.67	42.17	5.65	6.96	15.25	5.92	108.17
1959	2	9.42	0.08	1.12	0.11	1.25	4.27	5.01	17.24	16.64	5.34	5.41	3.42	69.32
1960	2	6.01	0.00	4.32	1.55	1.58	3.51	6.75	9.63	15.13	9.19	14.77	22.29	94.74
1961	2	1.73	0.00	0.69	2.94	4.14	3.16	9.81	5.09	45.41	12.57	19.46	5.53	110.52
1962	2	16.93	4.59	0.47	1.90	0.70	3.49	1.25	3.42	11.60	15.53	25.22	6.65	91.73
1963	2	1.40	5.93	8.95	0.00	9.30	0.55	3.93	8.12	24.22	15.36	19.60	5.43	102.78
1964	3	10.30	10.75	0.08	2.72	10.88	16.78	8.71	8.59	10.30	5.94	9.28	2.63	96.96
1965	3	3.96	1.10	6.04	0.29	0.23	11.64	4.20	5.70	14.94	20.45	10.18	10.55	89.30
1966	3	0.36	1.55	2.04	3.49	0.15	0.10	13.34	7.96	23.30	8.95	7.86	6.89	75.99
1967	3	8.51	7.24	0.76	4.03	0.92	0.00	11.87	18.75	16.83	22.26	16.08	2.04	109.31
1968	3	18.24	1.07	1.74	3.82	0.70	2.32	7.60	1.70	9.26	5.93	16.42	12.32	81.11
1969	3	11.02	1.43	0.57	1.68	2.24	0.04	0.36	13.93	19.90	14.94	15.57	8.02	89.69
1970	3	4.09	1.26	2.62	0.42	0.07	5.55	0.82	3.83	12.84	12.52	14.35	3.01	61.38
1971	3	2.54	0.77	0.93	2.55	1.65	1.92	9.10	15.25	9.97	9.61	7.49	8.06	69.84
1972	3	1.57	0.00	8.47	0.00	0.32	8.65	0.42	7.91	2.61	24.70	12.18	10.19	77.02
1973	3	3.40	4.26	6.39	0.61	0.21	1.13	0.00	21.32	26.46	9.18	56.02	14.01	142.98
1974	3	12.91	4.71	0.56	4.48	1.33	1.27	10.35	22.31	9.29	16.97	13.56	2.05	99.80
1975	3	9.10	3.46	1.04	0.00	0.19	3.12	16.80	6.68	29.81	12.75	10.55	7.08	100.58
1976	3	1.00	17.59	10.37	4.56	7.54	2.16	15.63	29.91	26.41	30.01	20.24	8.49	173.92
1977	3	4.73	2.98	3.30	2.22	1.39	5.06	7.82	5.63	1.35	3.60	16.96	10.68	65.72
1978	3	3.49	2.96	5.76	3.92	5.91	0.49	2.46	12.15	13.51	8.72	10.23	9.21	78.79
1979	3	9.30	0.53	0.13	5.83	2.77	0.06	8.56	15.24	15.13	6.14	13.02	3.61	80.33
1980	3	3.76	31.56	8.04	6.54	0.07	5.65	6.62	2.91	8.75	22.60	20.28	18.70	135.47
1981	3	3.34	2.71	2.12	4.73	0.71	7.37	16.95	9.83	15.60	14.45	12.24	1.94	92.00
1982	3	9.70	2.68	5.78	1.29	5.90	5.44	3.87	29.63	23.99	13.67	5.43	10.17	117.55
1983	3	1.12	3.16	2.62	1.84	0.88	10.08	4.95	36.82	7.91	12.64	7.04	21.44	110.50
1984	3	14.69	0.00	11.64	4.89	4.08	15.49	10.91	9.42	18.99	21.39	15.61	9.03	136.14
1985	3	4.85	0.91	1.40	2.22	0.74	6.93	5.68	8.42	19.42	18.47	19.43	9.62	98.07
1986	3	1.29	4.74	0.22	4.76	1.25	1.71	9.70	23.62	16.24	22.95	18.19	15.27	119.96
1987	3	2.07	1.21	6.02	0.06	0.00	2.77	14.72	8.28	18.42	14.24	17.57	9.64	95.00
1988	2	3.96	2.94	3.30	0.45	3.59	8.73	8.69	12.93	10.32	17.75	18.50	14.60	105.76
1989	2	7.94	5.03	0.43	2.47	5.46	0.38	27.23	19.45	20.59	20.79	9.87	3.48	123.14
1990	2	0.11	1.93	3.25	1.13	1.49	2.12	5.44	13.34	23.35	30.65	5.46	21.69	109.98
1991	2	17.19	2.17	1.61	0.04	4.40	5.02	6.06	9.02	31.48	16.60	7.78	7.78	109.15
1992	2	15.83	2.01	0.24	0.56	3.52	1.09	23.16	23.12	14.79	32.94	11.77	8.32	137.35
1993	2	0.05	2.38	1.66	1.30	0.00	0.76	9.81	6.40	41.26	9.49	4.15	12.88	90.16
1994	2	2.77	1.32	1.61	2.42	0.48	4.14	2.04	7.47	16.50	21.28	13.08	3.25	76.36
1995	2	13.80	0.51	16.64	0.58	9.93	3.59	6.05	11.67	26.88	15.83	20.91	23.26	149.64
1996	2	10.03	9.32	7.76	1.40	0.05	0.65	4.85	12.47	24.16	8.05	16.07	1.47	96.29
1997	2	2.00	4.67	2.68	1.62	0.00	1.48	5.90	22.38	10.36	11.00	9.31	5.02	76.42
1998	2	4.27	9.72	9.50	0.00	0.24	0.06	8.29	10.41	10.01	13.72	26.62	21.05	113.89
1999	2	0.35	1.93	2.09	1.04	0.00	1.82	0.97	6.44	7.52	17.65	11.10	15.87	66.78
2000	2	1.78	4.55	1.54	2.99	1.65	0.78	7.92	19.52	7.01	39.37	19.59	12.20	118.88
2001	1	5.15	3.25	0.05	15.90	2.73	2.21	5.04	20.40	13.33	23.52	15.98	9.62	117.18
2002	1	6.60	3.56	2.47	4.68	1.04	4.55	7.02	3.64	2.21	5.64	22.45	8.97	72.82
2003	1	8.03	0.00	6.50	5.15	0.00	2.73	10.42	0.78	15.41	11.12	10.81	4.55	75.49
2004	1	16.97	0.70	0.00	2.18	0.13	1.04	12.58	8.52	16.42	5.59	23.39	4.94	92.46
AVERAGE		6.06	3.74	3.11	2.19	2.44	3.49	8.00	13.90	16.19	15.71	14.85	9.62	99.29
ADJUSTED		6.10	3.76	3.13	2.21	2.46	3.52	8.06	14.00	16.30	15.83	14.95	9.69	100.00
STD.DEV.		4.63	4.50	3.19	2.39	3.19	3.55	5.79	8.94	9.25	7.97	7.50	6.12	21.87

AVERAGE RAINFALL ON CATCHMENT OF CODE G1R002

DETAILS OF RAINFALL STATIONS USED

SECTION	POSITION	MAP(mm)	PERIOD OF RECORD	LATITUDE	LONGITUDE
21	778	1076	1927 TO 2004	33.58	18.56
22	113	835	1927 TO 2003	33.53	19.04
22	116	1842	1927 TO 1960	33.56	19.04
9112	301	984	1966 TO 1988	0.01	3642.11

RAINFALL INPUT AS PERCENT M.A.P.

YEAR	STNS.	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	YEAR
1927	3	1.26	9.60	5.31	3.04	0.02	4.55	2.70	0.78	26.79	10.93	12.96	14.82	92.76
1928	3	3.01	3.18	3.30	0.03	0.73	1.11	13.40	12.32	8.91	17.15	12.75	5.33	81.22
1929	3	2.34	3.88	6.97	2.81	3.02	4.51	4.55	0.44	3.13	15.65	15.41	22.44	85.15
1930	3	5.42	7.13	1.74	0.00	3.56	0.00	12.06	15.56	6.75	10.68	17.55	17.97	98.41
1931	3	13.06	0.19	2.41	3.26	9.42	3.85	3.52	16.05	18.01	11.35	9.47	9.96	100.54
1932	3	3.09	0.87	2.74	2.48	2.55	1.47	1.59	8.62	20.91	12.85	13.32	2.89	73.38
1933	3	7.24	0.70	0.00	0.95	2.05	4.26	1.73	15.09	7.52	6.69	9.85	9.15	65.21
1934	3	6.95	5.52	1.28	1.58	2.25	3.76	9.04	14.28	7.04	15.84	10.28	8.61	86.44
1935	3	3.39	6.67	0.81	7.01	2.42	3.82	0.86	10.94	6.89	10.90	13.46	10.60	77.76
1936	3	2.38	2.78	5.72	2.90	0.48	5.81	8.95	15.88	31.41	21.36	8.13	6.27	112.08
1937	3	5.32	1.93	0.21	7.91	1.85	2.12	11.56	15.79	7.78	11.78	9.47	13.45	89.16
1938	3	5.48	6.29	1.30	0.00	7.39	1.05	9.73	18.11	4.39	9.78	15.30	5.49	84.30
1939	3	1.85	5.01	6.81	0.82	6.23	5.85	10.02	12.14	18.89	9.20	7.48	8.08	92.40
1940	3	6.81	8.31	1.70	6.03	2.25	1.81	22.34	20.01	22.57	17.40	13.56	26.64	149.44
1941	3	8.03	2.36	3.59	2.96	0.37	0.49	3.40	20.07	35.62	8.73	17.47	3.48	106.58
1942	3	4.37	0.12	1.32	4.26	2.26	4.97	8.25	8.08	10.36	14.67	19.95	7.38	85.99
1943	3	6.89	5.87	0.54	1.94	0.13	1.89	7.63	19.40	30.82	20.54	16.66	9.11	121.42
1944	3	8.38	4.93	6.26	0.02	0.01	0.62	7.00	26.51	33.61	33.94	15.85	1.37	138.50
1945	3	5.43	3.68	2.62	1.27	1.50	4.01	7.47	10.38	4.84	12.45	15.91	18.71	88.28
1946	3	9.84	3.18	1.38	0.14	0.00	7.34	4.72	17.19	7.70	33.34	11.85	4.88	101.57
1947	3	5.49	1.69	0.24	0.52	1.48	2.08	3.98	18.39	12.78	19.17	12.90	16.62	95.34
1948	3	8.21	1.59	4.64	1.46	0.11	0.80	9.86	7.27	10.03	13.89	13.59	10.55	81.99
1949	3	6.02	6.25	1.43	0.25	0.08	0.87	18.42	2.12	8.46	30.76	3.11	13.20	90.97
1950	3	5.09	8.75	5.66	4.42	0.28	0.19	20.92	13.05	32.62	18.49	9.58	9.68	128.73
1951	3	6.54	7.07	0.12	0.11	1.33	4.40	8.16	11.74	7.21	9.03	19.43	18.48	93.62
1952	3	6.17	9.35	0.56	0.82	1.04	2.23	26.24	23.95	12.58	18.26	13.99	2.62	117.81
1953	3	3.93	7.26	1.33	2.18	2.12	3.49	15.26	28.69	12.75	29.61	19.57	5.16	131.36
1954	3	7.05	2.47	4.09	0.01	13.91	1.13	5.02	2.40	9.71	23.96	27.51	5.59	102.86
1955	3	9.84	8.55	1.58	1.15	0.65	3.68	8.15	16.11	25.05	17.94	20.18	8.32	121.21
1956	3	5.49	0.68	3.08	1.56	9.95	3.72	5.87	30.37	22.60	20.71	16.53	8.24	128.79
1957	3	16.21	1.95	0.01	1.55	8.82	3.78	5.84	23.20	9.71	2.75	17.88	4.99	96.68
1958	3	5.73	4.47	0.02	2.21	1.34	2.23	15.60	33.37	4.61	3.10	12.83	5.09	90.60
1959	3	7.33	0.33	2.39	2.07	1.34	4.36	6.66	14.61	22.48	3.15	3.99	4.02	72.72
1960	3	3.19	0.20	1.80	5.48	1.10	1.19	3.64	9.70	17.45	8.06	15.55	15.63	82.98
1961	2	4.14	0.01	2.53	1.78	5.36	7.64	10.92	4.98	39.83	12.82	25.73	6.87	122.60
1962	2	13.83	2.82	0.87	5.41	0.01	1.03	2.34	6.33	9.51	23.77	20.18	5.23	91.33
1963	2	1.68	7.23	6.41	0.34	8.26	0.72	5.24	12.18	19.27	13.01	14.16	3.76	92.25
1964	2	7.97	7.19	1.55	5.66	6.99	13.43	11.69	19.09	7.85	6.68	12.07	5.68	105.84
1965	2	3.95	1.14	7.11	0.72	2.33	15.76	6.65	9.31	10.87	19.36	13.05	7.49	97.75
1966	3	0.41	2.73	2.42	2.77	0.07	1.44	16.53	9.39	24.14	9.05	7.59	7.39	83.93
1967	3	8.43	7.46	1.05	4.99	2.33	0.03	11.49	19.23	16.60	19.10	11.41	2.62	104.74
1968	3	13.52	1.87	4.59	5.29	2.20	2.67	6.31	1.88	12.69	10.51	13.90	12.33	87.76
1969	3	9.80	1.25	0.81	1.27	2.42	0.48	0.56	19.30	20.86	14.65	17.45	8.93	97.77
1970	3	4.55	3.30	4.43	0.78	0.06	3.22	1.28	8.47	12.18	17.40	17.86	3.07	76.60
1971	3	3.36	1.17	4.24	3.80	1.88	1.48	16.75	13.74	10.79	7.12	10.82	7.19	82.34
1972	3	2.66	0.00	4.33	0.28	0.10	2.90	1.51	6.78	2.96	26.60	9.22	9.41	66.75
1973	3	4.49	2.17	7.75	0.99	0.65	1.64	0.29	17.34	21.24	11.81	41.20	10.75	120.31
1974	3	13.10	4.61	1.40	3.05	1.79	1.13	7.71	24.56	12.24	23.87	12.65	2.46	108.58
1975	3	7.16	4.02	0.50	0.03	0.45	4.04	4.40	8.17	36.96	24.77	10.40	8.96	109.85
1976	3	3.35	14.10	6.37	2.95	5.17	2.90	17.87	27.48	35.61	29.38	23.95	8.02	177.15
1977	3	4.01	2.76	2.83	1.92	1.99	5.94	6.00	7.66	3.05	4.06	21.94	9.87	72.05
1978	3	7.81	1.32	4.79	3.35	8.31	1.11	1.61	18.64	16.78	9.16	10.29	10.31	93.49
1979	3	13.62	0.48	0.19	3.81	3.43	0.62	7.84	17.15	18.31	4.17	12.13	5.95	87.70
1980	3	5.00	13.66	8.43	10.29	1.03	6.68	7.26	3.48	10.52	24.98	12.24	14.61	118.19
1981	3	4.23	4.19	3.04	4.49	0.24	1.53	11.70	9.88	17.24	17.26	8.41	2.87	85.09
1982	3	7.70	4.18	6.47	1.03	8.24	5.00	1.96	26.27	23.87	14.93	7.81	14.23	121.70
1983	3	1.50	1.81	2.72	1.96	0.90	7.93	6.94	28.06	8.72	14.43	7.27	15.74	97.98
1984	3	12.21	0.44	12.11	4.37	5.71	11.94	11.24	7.49	21.27	20.91	13.64	9.11	130.44
1985	3	3.00	1.08	1.88	2.05	2.75	8.24	7.70	7.54	24.42	16.03	25.58	7.66	107.93
1986	3	2.47	2.38	0.88	5.89	2.19	2.45	6.37	19.47	16.68	16.36	18.05	12.38	105.59
1987	3	2.26	1.59	7.02	0.58	0.00	2.39	11.18	11.63	9.09	14.76	17.10	10.19	87.78
1988	3	3.78	1.64	3.24	0.87	4.05	15.88	7.24	13.69	10.47	18.20	14.98	12.25	106.30
1989	2	7.15	6.60	0.56	1.83	4.18	0.56	24.13	10.30	19.00	20.88	7.54	4.13	106.86
1990	2	1.02	3.62	6.01	0.31	1.04	1.76	4.83	16.39	24.19	31.74	6.74	12.54	110.19
1991	2	5.84	1.91	0.82	0.04	4.37	3.82	14.70	11.85	28.51	13.88	9.11	6.68	101.54
1992	2	12.25	3.11	1.32	1.25	4.76	1.26	34.64	22.22	14.65	26.98	11.00	1.23	134.67
1993	2	0.43	1.25	2.24	2.63	0.40	0.53	4.84	6.37	40.14	13.87	6.89	8.41	88.00
1994	2	2.81	1.79	1.92	3.57	0.69	2.20	3.43	16.98	22.15	20.93	16.96	4.21	97.62
1995	2	12.36	1.95	6.91	0.77	5.10	4.65	5.68	7.37	30.75	15.31	16.77	14.59	122.22
1996	2	12.48	11.36	9.50	0.82	0.22	1.28	7.13	8.76	27.33	6.81	11.57	1.26	98.52
1997	2	3.28	16.57	1.88	1.97	0.00	2.23	7.24	32.60	10.56	12.83	5.75	3.08	98.00
1998	2	1.87	8.05	5.89	0.26	0.16	0.00	8.23	7.51	16.32	7.29	11.78	9.05	76.39
1999	2	1.09	3.05	0.20	3.15	0.00	3.17	1.09	10.26	8.98	16.66	13.92	14.77	76.33
2000	2	1.74	1.82	2.23	2.03	1.38	0.18	4.59	17.09	8.77	35.93	20.17	13.07	109.00
2001	2	6.74	2.33	1.24	13.36	2.50	1.58	8.83	15.73	17.06	17.92	15.51	6.97	109.79
2002	2	5.14	3.80	4.51	1.52	0.88	12.73	5.09	7.37	4.05	7.37	26.35	11.88	90.69
2003	2	6.87	0.00	5.99	4.70	0.00	2.75	10.47	1.51	14.34	12.71	12.69	5.76	77.80
2004	1	6.64	1.25	2.24	7.57	0.43	3.32	8.83	15.96	19.45	8.75	17.39	5.09	96.91
AVERAGE		5.96	3.95	3.16	2.56	2.53	3.46	8.55	14.10	16.69	15.89	14.29	8.88	100.01
ADJUSTED		5.95	3.95	3.16	2.56	2.53	3.46	8.54	14.10	16.69	15.88	14.29	8.88	100.00
STD.DEV.		3.62	3.47	2.59	2.46	2.87	3.40	6.25	7.61	9.48	7.64	5.94	5.01	19.71

APPENDIX C:

PATCHED OBSERVED FLOW SEQUENCES

APPENDIX NUMBER	FLOW FILE
C1	G1H003.PAT
C2	G1H004.PAT
C3	G1H008.PAT
C4	G1H008.INC
C5	G1H011.PAT
C6	G1H013.PAT
C7	G1H013.INC
C8	G1H019.PAT
C9	G1H020.PAT
C10	G1H020.INC
C11	G1H021.PAT
C12	G1H028.PAT
C13	G1H029.PAT
C14	G1H035.PAT
C15	G1H036.PAT
C16	G1H037.PAT
C17	G1H040.PAT
C18	G1H041.PAT
C19	G1H043.PAT
C20	G1R002.PAT

File: G1H003.PAT
Units: $10^6 \times m^3$
Description: Observed flow sequence at G1H003 for 1959 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1959	1.07	0.44	0.13	0.03	0.01	0.01	0.42	1.43	6.79	1.94	1.14	0.95	14.36
1960	0.69	0.25	0.05	0.03	0.02	0.00	0.02	0.59	3.37	1.53	2.96	6.39	15.90
1961	1.44	0.53	0.16	0.02	0.00	0.21	0.73	0.43	10.77	7.47	11.88	4.52	38.16
1962	6.85	2.62	0.64	0.17	0.03	0.02	0.17	0.26	1.03	4.54	7.63	2.76	26.72
1963	1.29	0.62	0.28	0.06	0.33	0.10	0.21	0.62	2.80	2.88	4.03	2.17	15.39
1964	1.66	1.37	0.31	0.83A	0.12	0.36	0.62	3.23	3.99	3.30	4.58	2.41	22.78
1965	1.42	1.07	0.41	0.08	0.02	0.39	0.49	0.49	1.48	7.14	4.64	3.37	21.00
1966	1.31	0.28	0.09	0.06	0.01	0.00	0.38	1.43	6.40	2.36	2.62	1.56	16.50
1967	1.66	0.48	0.16	0.08	0.04	0.01	0.13	4.75A	4.78	4.69	4.35	2.09	23.22
1968	3.45	1.39A	0.21	0.14	0.05	0.05	0.14	0.20	1.39	2.49	3.44	3.80	16.75
1969	2.65	0.63	0.10	0.01	0.00	0.00	0.00	0.86	3.56	4.65	5.43	3.40	21.29
1970	1.56	0.59	0.41	0.08	0.01	0.02	0.08	0.48	0.54	4.37	4.17	1.95	14.26
1971	0.72	0.21	0.08	0.01	0.00	0.00	0.01	0.44	1.02	0.81	1.92	1.64	6.86
1972	0.66	0.10	0.01	0.00	0.00	0.00	0.00	0.01	0.09	4.79A	2.25	1.40	9.31
1973	0.85	0.16	1.03A	0.00	0.00	0.00	0.00	1.84A	4.58A	1.20	11.94	4.10	25.70
1974	1.71	1.08	0.30	0.04	0.00	0.43A	1.95A	4.67A	3.65	6.71	5.28	1.51	27.33
1975	1.40A	0.50	0.13	0.01	0.00	0.00	0.03	0.14	5.85	6.42	3.38	1.68	19.54
1976	1.01	3.06	1.63	0.83	0.28	0.24	0.89	5.86	11.19	9.77	14.14	7.82A	56.72
1977	6.54	2.78	0.62	0.40	0.40	0.38	0.56	1.73	0.84	0.83	3.54	2.83	21.45
1978	1.96	0.99	0.44	0.36	0.19	0.41	0.34	1.35	4.46	3.59	4.32	2.60	21.01
1979	4.50	1.35	0.27	0.19	1.04A	0.54A	0.36	1.96	2.72	2.07	1.88	1.56	18.44
1980	0.72	0.78	1.15	1.12	0.47	0.27	0.31	0.33	0.70	4.48	5.22	6.32	21.87
1981	1.43	0.40	0.11	0.09	0.03	0.01	0.22	0.91	2.32	2.21	2.79	1.29	11.81
1982	1.05	0.45	0.19	0.05	0.08	0.09	0.08	1.41	7.10	4.79	2.67	5.97	23.93
1983	2.37	0.67	0.22	0.04	0.00	0.04	0.08	7.00	5.54	8.52	2.59	5.53	32.60
1984	3.24	0.47	0.47	0.22	0.14	0.76	0.68	0.76	4.94A	4.95A	4.26A	2.73A	23.62
1985	1.34	0.66	0.24	0.11	0.03	0.07	0.33	1.26	3.18	5.75	6.90	3.46	23.33
1986	1.21	0.50	0.91A	1.42A	1.05A	1.05A	0.91A	2.14	5.20	4.21	6.13	3.58	28.31
1987	1.52	0.48	0.43	0.11	0.01	0.03	0.40	1.68	2.45	3.78	3.89A	3.46	18.24
1988	1.55	0.40	0.07	0.02	0.02	0.17	0.33	1.37	1.92	5.18	4.68	5.08	20.79
1989	2.22	1.12	0.33	0.35A	0.08	0.06	0.86	2.40	3.41	8.30	4.86	1.69	25.68
1990	0.69	0.25	0.12	0.03	0.02	0.03	0.07	0.74	3.38	9.61	5.97	5.51	26.42
1991	2.08	0.81	0.15	0.01	0.02	0.05	0.25	0.91	9.17	8.68	2.82	3.12	28.07
1992	3.29	1.34	0.66	0.31	0.08	0.03	2.56	3.33	4.66	13.87	4.27	1.18	35.58
1993	0.56	0.13	0.12	0.04	0.01	0.04	0.07	0.15	6.87	6.07	3.55	1.97	19.58
1994	1.24	0.29	0.02	0.01	0.01	0.01	0.01	0.28	1.38	4.88	4.95	1.72	14.80
1995	2.43A	0.84	0.40	0.15	0.12	0.11	0.13	0.27	5.58	5.93	4.05	6.04	26.05
1996	3.89	2.62	1.28	0.63	0.37	0.39	0.52	0.71	3.83	2.92	3.75	2.00	22.91
1997	0.87	0.91	0.66	0.33	0.02	0.02	0.11	3.72	2.63	4.43	2.09	1.27	17.06
1998	0.69	0.72	0.26	0.09	0.03	0.03	0.14	0.96	1.60	4.83	5.90	7.42	22.67
1999	1.90	0.51	0.11	0.08	0.05	0.06	0.05	0.79	1.51	2.36	3.00	3.60	14.02
2000	1.05	0.32	0.06	0.06	0.03	0.03	0.08	1.83	1.98	9.63	7.25	7.13	29.45
2001	1.90	0.85	0.36	0.57	0.35	0.29	0.52	1.70	3.35	6.61	4.88	2.98	24.36
2002	1.75	0.77	1.07A	0.72A	0.07	0.28	0.35	0.35	0.33	0.57	3.59	4.03	13.88
2003	3.05	1.26	1.04	0.83	0.38	0.47	0.62	0.67	0.61	1.07	5.87	1.10	16.97
2004	1.48	0.45	0.15	0.16	0.09	0.03	0.32	1.14	5.58	4.53	5.99	3.34	23.26
Ave:	1.91	0.84	0.39	0.24	0.13	0.17	0.38	1.51	3.71	4.82	4.73	3.31	22.13
SD:	1.36	0.69	0.37	0.32	0.23	0.22	0.48	1.53	2.60	2.80	2.55	1.85	8.15

File: G1H004.PAT
Units: $10^6 \times m^3$
Description: Observed flow sequence at G1H004 for 1980 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1980	10.24A	12.26A	13.52A	11.40	5.34	5.13	3.35	2.31	7.04	27.93	22.69	27.28	148.49
1981	3.14	2.97	12.58	14.14	5.80	7.28	7.00	10.40	15.40	13.45	15.37	10.58A	118.11
1982	11.89	4.25	6.77	5.68	3.26	4.16	2.84	30.40	47.84	35.62	11.19	18.36	182.26
1983	3.94	2.50	4.82	6.30	4.20	2.61	2.19	28.85	9.36	24.18	13.55	18.51	121.01
1984	11.19	2.46	7.80	6.12	5.54	11.80	5.76	7.33	27.71	18.26	21.34	9.57	134.88
1985	6.02	6.40	11.04	8.04	6.40	4.83	5.74	11.71	30.17A	49.50	30.01	15.54A	185.40
1986	2.83	5.19	7.03	7.50	2.86	4.14	1.90	26.61	24.49	30.65	41.95A	21.18	176.33
1987	6.26	2.41	5.61	6.49	5.47	4.36	6.04	10.64A	10.40	17.01	15.54	14.11	104.34
1988	4.80	4.42	7.85	8.38	7.69	8.86	4.95	11.41	9.93A	20.54	15.07	11.57	115.47
1989	6.07	5.62	5.98	7.74	7.27	3.85	33.98	52.44	18.82	41.26	22.84	6.12	211.99
1990	2.88	5.48	6.47	7.10	5.62	5.41	2.67	22.63	42.30	41.22	22.02	45.34	209.14
1991	25.30	11.76	12.06	14.74	16.72	13.87	21.85	17.87	51.91	45.31	16.31	17.90	265.60
1992	37.11	8.57	10.35	14.26	8.17	6.95	10.25	15.57	31.15	64.30	16.25	4.18	227.11
1993	3.35	8.90	10.72	11.14	9.65	12.21	8.23	5.87	58.19	21.76	9.27	9.07	168.36
1994	5.12	10.00	10.69	11.01	10.40	12.45	2.21	4.78	11.48	28.47A	24.51A	5.11	136.23
1995	14.32	4.29	9.16	10.95	7.11	5.53	3.54	10.48A	48.47	19.66	22.75	30.41	186.67
1996	20.89	11.98	7.51	5.15	7.36	5.78	1.29	5.51	38.00	10.17	16.18A	6.39	136.21
1997	2.39	9.65	6.39	9.01	8.14	6.78	5.39	30.52	12.81	32.41	8.64	7.02	139.15
1998	3.07	9.37	7.87	10.18	10.51	8.66	6.64	8.47	18.91	28.09A	23.85	17.12	152.74
1999	3.32	4.62	10.36	13.27	10.45	11.60	5.95	18.20	12.26	16.21	9.76	17.26	133.26
2000	3.72	5.25	9.96	11.14	8.97	9.58	5.51	7.31	13.67	44.49	19.61	47.98	187.19
2001	9.10	4.00	5.42	9.97	6.04	7.15	4.48	12.11	15.12	35.13	20.18	7.28	135.98
2002	7.15	6.61	9.95	11.53	9.81	9.26	3.62	2.24	2.46	5.21	24.69	15.33	107.86
2003	6.62	6.19	10.37	10.94	10.98	9.48	5.51	1.31	12.17	10.65	29.81	3.16	117.19
2004	5.12	3.04	9.14	10.59	8.29	8.32	5.06	11.38	33.32	17.92	23.61	4.84	140.63
Ave:	8.63	6.33	8.78	9.71	7.68	7.60	6.64	14.65	24.14	27.98	19.88	15.65	157.66
SD:	8.23	3.12	2.40	2.79	2.95	3.11	6.96	11.79	15.89	14.18	7.51	11.72	41.09

File: G1H008.PAT
Units: $10^6 \times m^3$
Description: Observed flow sequence at G1H008 for 1967 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1967	8.07	2.30	2.30	0.19	0.36	0.37	0.84	11.28	15.53	14.64	14.53	5.01	75.42
1968	13.81	2.20	2.20	0.32	0.11	0.12	0.98	1.40	2.54	3.05	4.34	8.01	39.08
1969	7.34	1.71	1.71	0.14	0.19	0.27	0.33	2.05	10.49	15.50	17.30	13.71	70.74
1970	4.40	0.76	0.76	0.21	0.20	0.46	0.46	0.70	0.89	12.83	9.56	4.15	35.38
1971	0.83	0.36	0.36	0.12	0.19	0.24	0.46	8.02	6.94	4.62	7.19	5.16	34.49
1972	1.64	0.34	0.34	0.15	0.16	0.51	0.32	0.64	0.84	10.44	13.58	7.33	36.29
1973	4.64	0.87	0.87	0.09	0.08	0.21	0.31	2.89	13.70	5.35	88.66	30.48	148.15
1974	8.86	5.09A	1.84A	1.07A	0.40A	0.47A	1.51A	14.58A	8.52A	16.48A	15.17A	4.24A	78.23
1975	4.86	1.15	1.15	0.13	0.31	0.33	0.90	1.01	24.67	18.51	11.49	4.34	68.85
1976	2.10	14.64	14.64	5.05	1.33	0.72	2.25	24.32	37.64	47.20	35.73	14.08	199.70
1977	6.32	0.95	0.95	0.18	0.18	0.34	1.34	2.11	1.13	0.68	4.85	7.10	26.13
1978	4.90	1.08	1.08	0.17	0.37	1.02	0.55	3.23	10.62	5.20	8.51	3.96	40.69
1979	10.29	1.62	1.62	0.75	0.39	0.32	0.75	2.52	5.18	3.38	4.24	2.51	33.57
1980	1.81	8.99	8.99	2.52	0.73	0.57	0.79	1.34	2.17	13.68	22.56	23.13	87.28
1981	8.31	2.79	2.79	0.96	0.24	0.30	2.92	2.43	10.64A	7.43A	6.47A	2.63	47.91
1982	5.47	1.54A	2.17A	0.24	0.54	0.60	0.39	11.09	23.13	32.52A	9.40	6.98	94.07
1983	2.95	0.67	0.67	0.11	0.00	0.90	0.65	40.27	3.42	14.93	7.44	21.38	93.39
1984	10.97	1.24	1.24	1.94	0.42	4.68	3.44	4.05	17.80	31.64	29.20	8.47	115.09
1985	3.29	0.65	0.65	0.24	0.22	0.53	2.00	4.04	6.22	12.97	33.01	9.36	73.18
1986	3.03	0.98	0.98	1.23A	0.35	0.32	0.53	7.62	15.82	14.66	19.72	9.21	74.45
1987	3.93	0.77	0.77	0.22	0.13	0.21	2.36	2.96	12.57	10.91	7.75	13.85	56.43
1988	3.82	1.03	1.03	0.05	1.09A	4.18A	2.22	4.01	6.96	11.14	19.95	27.51	82.99
1989	7.78	2.11	2.11	0.15	0.18	0.26	2.24	9.48	13.86	31.25	14.52	3.63	87.57
1990	1.04	0.52	0.52	0.28	0.16	0.26	0.42	1.49	11.14	35.36	24.20	19.85	95.24
1991	7.89	2.79	2.79	0.86A	0.27	0.31	2.34	3.72	32.31	25.57	12.34	9.08	100.27
1992	10.14	4.92	4.92	0.28	0.29	0.21	4.10	12.58	15.01	42.44	15.78	4.53	115.20
1993	1.36	0.34	0.34	0.09	0.06	0.14	0.72	0.84	29.23	20.23	5.90	7.76	67.01
1994	5.21	0.95	0.95	0.10	0.07	0.00A	0.18	1.81	2.80	13.63	14.54	4.71	44.95
1995	8.68	2.48	2.48	0.45	0.17	0.12	0.62	0.65	16.95	27.77	27.63	33.07	121.07
1996	14.81	12.18	12.18	1.36	0.35	0.32	0.71	1.25	18.51	9.19	12.43	6.29	89.58
1997	1.04	1.26	1.26	0.42	0.01	0.05	0.15	9.81	7.42	8.91	6.23	2.54	39.10
1998	1.53	5.29	5.29	0.11	0.02	0.12	0.54	1.91	4.46	7.57	15.16	19.10	61.10
1999	5.25	0.76	0.76	0.04	0.03	0.10	0.16	0.68	1.52	7.49	3.31	14.62	34.72
2000	2.23	0.50	0.50	0.07	0.05	0.11	0.26	2.33	2.58	35.86	18.44	25.65	88.58
2001	5.52	2.47	2.47	1.11	0.12	0.09	0.35	4.85	6.89	21.29	18.98	7.94	72.08
2002	7.82	2.82	2.82	0.25	0.05	0.15	0.31	0.52	0.33	0.42	7.49	6.74	29.72
2003	3.10	0.73	0.73	0.10	0.00	0.00	0.46	0.22	1.97	1.87	9.16	1.86	20.20
2004	2.29	0.33	0.33	0.01	0.01	0.01	0.30	0.66	7.26	7.58	18.60	6.93	44.31
Ave:	5.46	2.43	2.36	0.57	0.26	0.52	1.06	5.40	10.78	15.90	16.19	10.71	71.64
SD:	3.58	3.16	3.13	0.93	0.28	0.96	1.00	7.70	9.24	12.01	14.53	8.42	37.07

File: G1H008.INC
Units: $10^6 \times m^3$
Description: Observed flow sequence (incremental) at G1H008 for 1967 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1967	5.34	0.77	1.58	0.00	0.21	0.37	0.26	5.63	9.39	7.91	9.07	2.31	42.84
1968	7.24	0.48	1.51	0.00	0.00	0.00	0.19	0.55	1.50	1.52	1.24	3.55	17.78
1969	3.75	0.22	1.12	0.00	0.00	0.06	0.19	1.30	6.38	10.30	11.61	9.64	44.57
1970	2.37	0.00	0.21	0.00	0.06	0.27	0.31	0.37	0.18	7.63	3.84	1.45	16.69
1971	0.00	0.00	0.04	0.00	0.01	0.11	0.00	5.11	4.02	3.15A	4.27	3.18	19.89
1972	0.30	0.00	0.00	0.00	0.01	0.16	0.24	0.48	0.58	4.20	8.53	4.08	18.58
1973	2.60	0.10	0.17	0.00	0.07	0.20	0.31	1.86	7.35	2.23	75.96	24.65	115.50
1974	5.42	3.23	1.02A	0.65	0.27	0.45	1.26	10.31	6.01	11.23	10.24	2.18	52.27
1975	2.61	0.23	0.68	0.00	0.13	0.20	0.66	0.47	15.57	11.78	6.82	2.42	41.57
1976	0.92	10.72	11.34	2.52	0.00	0.11	1.20	15.62	25.68	36.81	26.81	10.15	141.88
1977	4.14	0.19	0.07	0.00	0.00	0.10	0.77	0.87	0.60	0.36	2.33	3.38	12.81
1978	2.72	0.20	0.69	0.00	0.18	0.54	0.31	1.99	8.07	3.35	5.63	1.77	25.45
1979	4.78	0.00	0.99	0.02	0.05	0.13	0.07	0.67	2.56	1.83	1.79	0.64	13.53
1980	0.28	4.64	6.18	1.25	0.10	0.00	0.18	0.63	0.32	9.72	18.44	17.77	59.51
1981	6.40	1.88	2.19	0.00	0.00	0.00	1.01	0.47	6.82	3.87	3.37	1.42	27.43
1982	2.42	0.42	0.92	0.00	0.00	0.00	0.00	6.32	14.68	22.55	5.33	3.90	56.54
1983	1.35	0.00	0.13	0.00	0.00	0.43	0.23	31.26	1.03	8.49	3.85	14.73	61.50
1984	6.88	0.16	0.00	0.39	0.00	1.88	1.40	1.88	11.09	22.95	21.03	5.21	72.87
1985	1.55	0.00	0.10	0.00	0.00	0.02	0.55	1.23	2.11	6.57	22.03	4.91	39.07
1986	1.10	0.05	0.54	0.59	0.06	0.06	0.20	3.78	10.21	8.39	12.86	5.54	43.38
1987	1.91	0.00	0.14	0.00	0.00	0.00	0.94	0.72	6.20	5.21	4.11	8.35	27.58
1988	1.71	0.00	0.53	0.00	0.62	2.32	1.06	1.52	3.95	5.54	12.85	19.02	49.12
1989	4.54	0.49	1.40	0.00	0.00	0.02	0.97	6.06	9.02	21.11	8.98	1.83	54.42
1990	0.30	0.08	0.11	0.03	0.00	0.12	0.16	0.24	6.75	25.41	17.50	12.29	62.99
1991	4.62	1.14	2.06	0.45	0.00	0.00	1.10	1.79	19.39	16.96	8.27	5.16	60.94
1992	5.91	2.46	4.03	0.00	0.00	0.00	2.49	8.03	9.56	30.94	10.70	2.94	77.06
1993	0.55	0.00	0.00	0.00	0.00	0.01	0.45	0.49	19.36	13.68	3.20	4.73	42.47
1994	2.89	0.00	0.50	0.00	0.00	0.00	0.03	0.78	0.93	8.11	9.36	2.62	25.22
1995	4.95	0.72	0.87	0.05	0.00	0.00	0.01	0.11	9.91	20.46	20.28	23.41	80.77
1996	9.07	7.50	9.94	0.14	0.00	0.00	0.23	0.48	13.01	5.31	6.93	3.37	55.98
1997	0.05	0.16	0.58	0.00	0.00	0.00	0.00	6.21	4.14	3.76	2.66	0.67	18.23
1998	0.27	1.90	4.35	0.00	0.00	0.00	0.02	0.47	1.98	2.78	8.63	11.61	32.01
1999	2.74	0.00	0.29	0.00	0.00	0.00	0.03	0.01	0.32	4.40	0.59	8.44	16.82
2000	0.79	0.00	0.17	0.00	0.00	0.00	0.09	0.67	0.55	24.20	10.99	16.94	54.40
2001	3.09	1.01	1.84	0.00	0.00	0.00	0.00	2.30	3.24	13.68	11.90	5.24	42.30
2002	5.15	1.64	2.28	0.00	0.00	0.00	0.03	0.17	0.00	0.00	3.38	2.80	15.45
2003	1.11	0.00	0.04	0.00	0.00	0.00	0.06	0.00	0.55	0.00	3.37	0.26	5.39
2004	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.66	2.62	10.63	3.24	18.75
Ave:	2.96	1.06	1.54	0.16	0.05	0.20	0.45	3.18	6.44	10.24	10.77	6.73	43.78
SD:	2.35	2.21	2.56	0.47	0.12	0.48	0.55	5.75	6.28	9.24	12.60	6.44	28.53

File: G1H011.PAT
Units: 10^6 x m^3
Description: Observed flow sequence at G1H011 for 1963 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1963	1.31A	1.80A	1.20A	0.54A	0.54A	0.54A	0.79A	0.82	2.01	1.74	3.72	1.45	16.46
1964	1.05	1.09	0.11	0.03	0.05	0.32	1.03A	1.43	1.21	0.83	2.22	0.85	10.22
1965	0.55	0.07	0.02	0.00	0.00	0.36	0.46	0.16	0.43	4.68	1.59	1.41	9.73
1966	0.46	0.09	0.01	0.00	0.00	0.00	0.40	0.49	4.99	1.62	1.80	1.05	10.91
1967	1.48	0.47	0.16	0.04	0.01	0.00	0.13	3.53	3.02	3.69	2.99	0.91	16.43
1968	2.67	0.45	0.14	0.10	0.02	0.00	0.28	0.39	0.55	0.91	1.84	1.83	9.18
1969	1.15	0.27	0.08	0.01	0.00	0.00	0.00	0.22	2.37	2.72	3.19	2.24	12.25
1970	0.89	0.27	0.14	0.03	0.00	0.00	0.00	0.03	0.24	2.42	2.74	0.98	7.74
1971	0.35	0.12	0.04	0.00	0.00	0.00	0.00	2.12	1.59	1.47	2.13	1.40	9.22
1972	0.60	0.17	0.20	0.04	0.01	0.17	0.02	0.16	0.26	4.37	3.20	1.89	11.09
1973	1.04	0.35	0.38	0.06	0.01	0.01	0.00	0.97	3.75	1.61	8.86	3.58	20.62
1974	2.05	1.00	0.33	0.14	0.05	0.02	0.14	2.27	1.44	3.01	2.78	0.84	14.07
1975	1.27	0.37	0.10	0.01	0.00	0.00	0.06	0.25	5.65	3.71A	2.41A	0.88	14.71
1976	0.49	2.01	1.12	0.71	0.65A	0.12A	0.57A	3.85	6.25	4.94	3.58	1.80	26.09
1977	1.05	0.22	0.36	0.03	0.01	0.00	0.15	0.76	0.21	0.10	1.46	1.68	6.03
1978	0.84	0.30	0.05	0.02	0.00A	0.21	0.03	0.96	2.19	1.39	2.32	1.20	9.51
1979	3.15	0.61	0.14	0.26	0.05	0.01	0.43	1.07	1.55	0.78	1.27	0.83	10.15
1980	0.40	1.34	0.91	0.44	0.11	0.11	0.19	0.23	1.15	3.07	3.32	3.35	14.62
1981	0.82	0.32	0.21	0.45	0.05	0.04	1.19	1.11	1.88	1.77	2.31	0.75	10.90
1982	2.20	0.41	0.61	0.13	0.20	0.14	0.05	1.80	4.10	3.88	1.87	1.43	16.82
1983	0.42	0.16	0.12	0.02	0.00	0.16	0.07	4.73	0.94	3.17A	1.67A	2.80	14.26
1984	1.46	0.23	0.57	0.73	0.13	1.23	0.92	0.75	3.20	3.99	4.14	1.41	18.76
1985	0.49A	0.17	0.13A	0.07A	0.04	0.18	1.08	1.94	2.39	3.42	5.20	1.80	16.91
1986	0.61	0.26	0.10	0.35	0.08	0.07	0.11	2.17	3.27	3.70	3.36A	1.84	15.92
1987	0.81	0.26	0.22	0.07	0.02	0.02	0.66	1.59	3.15	3.40	2.05	2.89	15.14
1988	0.84	0.48	0.13	0.04	0.24A	1.25	0.67	1.51	1.66	3.34	3.39	3.55	17.10
1989	1.51	0.70	0.18	0.06	0.04	0.02	0.70	1.80	2.92	5.29	2.51	0.80	16.53
1990	0.27	0.13	0.10	0.02	0.01	0.02	0.04	0.63	2.28	5.48	3.32	4.15	16.45
1991	1.41	0.54	0.17	0.05	0.03	0.04	0.56	0.92	8.23	4.54	1.62	1.54	19.65
1992	1.72	0.84	0.22	0.07	0.03	0.00	0.66	2.76	2.65A	5.30A	2.27A	0.61	17.13
1993	0.25	0.10	0.07	0.01	0.00	0.00	0.04	0.09	6.74	2.92	1.36	1.93	13.51
1994	1.05	0.38	0.11	0.03	0.00	0.00	0.00A	0.58A	1.20	3.48	2.79	0.88	10.50
1995	1.47	0.43	0.89	0.01A	0.10A	0.10A	0.23A	0.15	3.82	3.54	3.55	3.97	18.26
1996	2.25	1.68	0.69	0.36	0.09	0.04	0.03	0.29	2.81	1.41	2.68	1.06	13.39
1997	0.25	0.45	0.16	0.07	0.01	0.00	0.00	2.57	1.85	3.40	1.83	0.89	11.48
1998	0.63	1.86	0.34	0.07	0.01	0.00	0.21	0.87	1.68	2.77	3.42	3.94	15.80
1999	0.75	0.27	0.08	0.02	0.01	0.00	0.00	0.27	0.63	1.81	1.22	3.59	8.65
2000	0.48	0.16	0.04	0.01	0.01	0.00	0.03	0.89	1.25	6.12	4.05	4.13	17.17
2001	0.96	0.58	0.14	0.57	0.05	0.02	0.07	1.46	2.22	4.40	3.29	1.12	14.88
2002	1.22	0.42	0.12	0.05	0.01	0.01	0.03	0.06	0.10	0.24	2.37	1.98	6.61
2003	0.88	0.25	0.21	0.09	0.01	0.00	0.08	0.03	0.90	1.10	3.23	0.70	7.48
2004	0.93	0.23	0.07	0.02	0.00	0.00	0.02	0.39	3.43	2.54	4.29	1.39	13.31
Ave:	1.06	0.53	0.27	0.14	0.06	0.12	0.29	1.17	2.43	2.95	2.84	1.84	13.71
SD:	0.66	0.51	0.30	0.20	0.13	0.28	0.35	1.11	1.85	1.51	1.32	1.09	4.22

File: G1H013.PAT
Units: $10^6 \times m^3$
Description: Observed flow sequence at G1H013 for 1987 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1987	41.57	8.53	8.60	3.63	2.35A	2.91	16.59	33.21	66.94	104.04	69.47	131.36	489.20
1988	31.81	9.30	3.66	4.07	3.61	14.17	18.74	35.90	49.43	118.17	161.78	199.19	649.83
1989	53.83	23.41	5.53	4.23	7.09	2.71	34.62	116.00	109.35	307.93	177.01	38.05	879.76
1990	13.37	4.85	5.32	4.41	3.83	3.19	4.10	32.81	160.90	229.42	169.62	183.10	814.92
1991	61.18	21.83	4.07	3.88	4.66	3.93	24.05	34.15	284.66	236.68	87.60	80.29	846.98
1992	111.43A	32.69	7.62	6.14	5.22	4.57	53.23	92.72	121.48	414.00	154.15	34.71	1037.96
1993	13.37	6.24	6.13	5.32	3.43	7.52	10.42	10.82	222.74	142.15	43.06	36.95	508.15
1994	22.75	9.54	5.45	4.91	5.42	4.59	4.32	13.95	35.61	116.71	119.44	30.25	372.94
1995	65.57A	16.13	17.09	7.32	6.64	7.42	9.36	7.20	165.00	138.26	166.74	237.33	844.06
1996	127.16	67.96	32.96	10.68	7.54	7.62	7.25	14.38	154.07	79.30	97.96	56.95	663.83
1997	10.92	17.05	9.55	7.86	7.47	7.70	7.69	83.40	59.58	102.53	43.56	24.86	382.17
1998	13.19	28.23	7.84	7.68	7.04	7.85	10.07	19.59	50.16	99.43	127.41	132.86	511.35
1999	35.22	9.79	8.87	9.77	9.95	8.15	7.46	14.83	49.44	62.42	41.59	77.98	335.47
2000	15.43	9.55	9.21	10.09	6.26	5.30	4.47	23.19	39.20	308.51	171.52	232.15	834.88
2001	44.63	23.85	5.53	27.21A	11.72A	6.47A	5.78	39.14	59.62	149.40	136.63	58.13	568.11
2002	40.96	14.01	8.49	7.89	6.55	7.39	5.95	6.74	7.64	8.15	70.18	47.75	231.70
2003	23.50	5.79	9.08	7.26	5.98	6.04	8.23	4.98	24.24	25.02	100.19	15.04	235.35
2004	25.43	6.21	7.69	7.48	4.78	3.32	6.04	13.66	106.51	78.36	141.35	38.70	439.53
Ave:	41.74	17.50	9.04	7.77	6.09	6.16	13.24	33.15	98.14	151.14	115.51	91.98	591.46
SD:	32.92	15.12	6.67	5.33	2.31	2.77	12.77	31.96	74.60	107.47	47.75	74.65	241.34

File: G1H013.INC
Units: $10^6 \times m^3$
Description: Observed flow sequence (incremental) at G1H013 for 1987 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1987	7.560	2.000	0.000	0.000	0.000	0.000	0.000	0.000	9.670	12.870	3.490	31.830	67.42
1988	6.550	2.600	0.000	0.000	0.000	0.000	3.580	2.560	3.140	11.410	16.530	24.150	70.52
1989	8.180	4.290	0.000	0.000	0.000	0.000	0.000	18.200A	5.710	30.050	16.650	5.980	89.06
1990	4.650	0.280	0.000	0.000	0.000	0.000	0.370	0.000	27.410	19.270	12.740	5.030	69.75
1991	8.830	7.370	0.000	0.000	0.000	0.000	0.000	3.640	8.390	19.530	7.020	9.980	64.76
1992	11.480	8.530	0.000	0.000	0.000	0.000	0.000	2.230	6.280	40.600	18.170	5.500	92.79
1993	3.970	0.000	0.000	0.000	0.000	0.000	0.240	1.440	0.000	28.680	5.970	3.070	43.37
1994	7.100	2.860	0.000	0.000	0.000	0.130A	0.950A	2.680A	3.480	14.530A	29.170A	7.210A	68.11
1995	21.750	5.460	4.030	0.000	0.000	0.000	1.130	1.510	17.990	37.840	25.350	25.640	140.70
1996	16.940	7.300	0.000	0.000	0.000	0.000	0.460	3.920A	4.760	19.340	6.230A	11.960	70.91
1997	3.160	0.000	0.230A	0.200A	0.000	0.000	0.370	6.850A	4.890	7.550	4.540	2.470	30.26
1998	3.610A	0.480A	0.240A	0.000	0.000	0.000	0.000	2.570A	5.410A	11.290A	15.490A	26.390A	65.48
1999	9.910A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	13.990	8.570	4.890	15.910A	53.27
2000	2.580	0.000	0.260A	0.220A	0.000	0.000	0.000	0.000	4.880	73.540	44.310A	40.180	165.97
2001	2.960	2.430	0.000	11.610	4.240	0.240A	0.000	4.840	5.380	25.680	23.730	9.700	90.81
2002	2.690	0.000	0.000	0.000	0.000	0.000	0.000	0.310	0.780	0.000	6.960	4.080	14.82
2003	1.250	0.000	0.000	0.000	0.000	0.000	0.500A	0.000	0.920	1.190	23.820A	1.450	29.13
2004	7.820	0.000	0.000	0.000	0.000	0.000	0.000	0.000	19.250	11.280	31.970	5.670	75.99
Ave:	7.28	2.42	0.26	0.67	0.24	0.02	0.42	2.82	7.91	20.73	16.50	13.12	72.40
SD:	5.30	2.95	0.94	2.73	1.00	0.06	0.86	4.32	7.29	17.41	11.43	11.54	36.62

File: G1H019.PAT
Units: 10^6 x m^3
Description: Observed flow sequence at G1H019 for 1967 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1967	2.67A	1.96A	1.42A	1.46A	1.22A	1.22A	2.09A	4.30	3.71	4.06	3.44	1.36	28.91
1968	2.34	0.40	0.23	0.74	0.20	0.09	0.49	0.31	1.32	2.00	1.89	2.80	12.81
1969	4.32	0.49	0.20	0.12	0.09	0.12	0.09	2.48	4.73	4.75	6.00	4.11	27.50
1970	1.99	0.94	0.99A	0.35	0.04	0.07	0.32	1.21	1.38	3.96	3.90	1.64	16.79
1971	0.86	0.23	0.13	0.36A	0.28A	0.11	0.21	2.88	1.86	0.96	2.41	2.31	12.60
1972	1.13A	0.60A	0.61A	0.29A	0.21A	0.46A	0.13A	0.22	0.11	2.83	2.46	1.44	10.49
1973	0.85	0.33	0.77	0.14A	0.05A	0.02	0.02	0.95	4.24A	1.45	7.76A	2.93	19.51
1974	2.10	0.91	0.62A	0.48A	0.32A	0.07	1.90A	5.40A	4.11A	5.27	3.46	0.99	25.63
1975	1.29	0.90A	0.26	0.09A	0.05A	0.03	0.30A	0.43	7.52	5.26	3.20	2.04	21.37
1976	2.00A	2.40A	1.62	0.89A	0.82A	1.01A	2.35A	4.36	10.22	7.20	6.43	2.46A	41.76
1977	1.73	0.54	0.96A	0.67A	0.38A	0.11	0.79	1.81	0.55	0.59	3.44	3.46	15.03
1978	1.51	0.88	0.33	0.23	0.14	0.31	0.33	1.97	3.64	1.86	2.44A	1.28	14.92
1979	3.20	0.79	0.23	0.29	0.11	0.04	1.15	1.86	2.92	1.64	1.88	1.28	15.39
1980	0.66	1.43	1.47	1.05	0.22	0.17	0.34	0.42	1.35	3.87	4.35	3.88	19.21
1981	0.93	0.54	0.25	0.24	0.07	0.03	0.81	0.64	1.24	1.71	1.62	1.01	9.09
1982	1.63	0.61	0.91	0.25	0.42	0.39	0.13	2.80	6.64	5.76	2.72	2.65	24.91
1983	1.07	0.31	0.26	0.09	0.02	0.10	0.26	4.56	1.19	4.31	2.64	3.10	17.91
1984	2.81	0.47	1.35	0.67	0.68	1.44	1.07	1.50	4.91	4.19	3.30	1.76	24.15
1985	0.81	0.35	0.17	0.15	0.05	0.26	1.50	2.10	3.83	5.60A	5.98	2.84	23.64
1986	0.86	0.35	0.18	0.35	0.11	0.11	1.16A	3.45	3.18	4.00	4.42	10.37	28.54
1987	1.34	0.48	0.93	0.17	0.07	0.08	0.91	1.73	2.30	3.20	2.37	3.06	16.64
1988	1.26	0.68	0.18	0.07	0.07	1.33	0.89	1.99	2.35	4.59	3.53	3.72	20.66
1989	1.65	1.26	0.33	0.12	0.14	0.04	2.60	2.45	3.04	6.37	2.86	0.89	21.75
1990	0.51	0.31	0.24	0.10	0.04	0.05	0.21	0.91	2.18	3.02	2.04	2.99	12.60
1991	1.70	0.63	0.27	0.08	0.18	0.20	2.06	1.35	4.18	4.70	2.14	2.26A	19.75
1992	3.42	1.26	0.59	0.15	0.13	0.08	2.79	1.57	3.79	8.36	3.70	1.23	27.07
1993	0.59	0.27	0.23	0.19	0.17A	0.39A	0.33	0.49	6.24	3.34	1.01	1.19	14.44
1994	0.71	0.27	0.12	0.06	0.03	0.02	0.04	0.85	2.31	4.34	3.92	1.45	14.12
1995	2.12	0.56	0.57	0.18	0.15	0.23	0.57	0.36	5.11	2.93	3.39	4.49	20.66
1996	4.82	2.30	1.63	0.76	0.27	0.22	0.36	1.08	4.79	2.21	3.70	1.93	24.07
1997	0.73	1.77	0.27	0.18	0.08	0.90A	1.74A	4.20A	2.95A	3.83A	2.02A	1.56A	20.23
1998	1.23A	1.77A	1.47A	1.11A	0.98A	0.99A	1.28A	1.34A	1.89A	0.99A	1.18A	0.82A	15.05
1999	0.18A	0.22A	0.30A	0.26	0.12	0.10	0.04	1.61	1.09	1.18	1.68	2.02	8.80
2000	0.63	0.27	0.18	0.15	0.10	0.05	0.20	1.43	1.44	6.66	4.61	4.19	19.91
2001	2.02	1.16	0.39	1.16	0.22	0.12	0.56	1.79	3.12	3.71	2.89	1.57	18.71
2002	1.24	0.48	0.25	0.13	0.06	0.50	0.38	0.48	0.61	0.59	1.88	1.26	7.86
2003	0.82	0.27	0.32	0.24	0.12	0.08	0.24	0.08	0.62	0.40	1.31	0.36	4.86
2004	0.38	0.12	0.05	0.04	0.02	0.01	0.06	0.60	2.41	1.63	2.17	1.18	8.67
Ave:	1.58	0.78	0.56	0.37	0.22	0.30	0.81	1.79	3.13	3.51	3.16	2.37	18.58
SD:	1.05	0.60	0.48	0.36	0.27	0.40	0.79	1.37	2.15	1.98	1.52	1.72	7.18

File: G1H020.PAT
Units: $10^6 \times m^3$
Description: Observed flow sequence at G1H020 for 1967 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1967	24.01	7.73	2.70	3.18	1.71	1.27	5.67	59.55	67.18	79.10	62.59	20.32	335.01
1968	41.08	5.58	3.17	5.54	2.02	1.54	5.65	3.94	19.37	29.70	43.53	43.42	204.54
1969	27.17	4.07	1.92	1.37	1.17	0.70	0.07	34.19	67.53	62.61	62.73	43.51	307.04
1970	18.44	5.22	5.67	2.30	2.09	1.89	2.59	9.61	12.60	71.20	55.85	20.66	208.12
1971	7.48	4.11A	2.57	1.74	3.87A	2.00A	0.38	26.39	22.62	11.79	29.64	26.69	139.28
1972	7.78A	3.34A	2.42	1.32	0.31	1.64	0.05	2.49	3.58	61.94	39.18	22.68	146.73
1973	12.20	2.22	8.53	1.87	1.42	0.63	0.08	7.87	71.94	29.78	176.27	59.31	372.12
1974	29.73	11.87	3.67	2.49	2.23	1.70	14.46	81.21	54.06	114.43	72.91	15.28	404.04
1975	15.87	5.74	2.76	2.20	1.33	1.06	0.83	3.97	134.94	116.74	51.43	21.90	358.77
1976	12.22	52.40	34.88	13.15	4.85	4.25	22.93	77.53	209.38	146.84	161.35	36.84	776.62
1977	16.53	3.44	6.46	3.01	2.39	2.71	8.15	24.21	7.01	7.84	49.87	36.31	167.93
1978	19.33	10.07	3.80	3.76	2.94	2.86	3.64	25.70	61.08	29.46	40.10	18.65	221.39
1979	51.72	9.75	3.37	3.70	2.14	1.38	10.48	29.97	39.41	24.76	30.24	18.05	224.97
1980	7.42	15.90	17.92A	16.96A	5.17	3.78	3.57	5.01	15.07	64.12	62.69	70.65	288.26
1981	12.14	4.64	9.21	13.07	4.25	5.70	8.92	18.96	36.34	32.15	40.76	17.07	203.21
1982	20.72	5.78	7.90	3.98	2.78	4.22	2.73	59.76	130.86	112.20	45.57	60.60	457.10
1983	16.57	3.67	3.61	4.37	2.34	2.61	2.51	80.85	19.54	100.30	45.63	69.40	351.40
1984	42.90	4.32	14.73	6.45	5.73	21.38	12.54	16.79	94.26	112.79	83.79	26.61	442.29
1985	12.29	5.58	6.42	5.21	5.47	5.01	12.11	22.07	64.97	106.37	124.47	62.53	432.50
1986	10.97	5.70	5.40	7.28	2.43	3.26	2.96	48.34	60.68	66.67	89.14	52.79	355.62
1987	18.74	5.77	8.29A	4.57	3.68	3.52	10.84	27.43	30.58	60.26	43.74	44.54	261.96
1988	14.61	5.23	5.49	4.80	4.55	12.23	9.79	26.70	32.92	70.21	63.52	70.32	320.37
1989	21.71	11.76	4.94	5.07	7.01	3.25	46.56	49.27	59.82	133.75	80.86	19.29	443.29
1990	6.62	5.69	6.65	4.90	4.36	4.13	2.64	37.15	97.31	105.37	73.00	99.79	447.61
1991	32.55	10.68	5.50	5.62	6.31	5.67	22.52	23.82	143.33	120.18	33.31	37.57	447.06
1992	52.96	13.87	6.92	6.67	5.63	5.57	33.77	47.21	67.76	216.67	69.55	17.56	544.14
1993	7.08	7.03	7.81	7.74	5.33	6.68	8.88A	11.36A	146.94	70.87	27.92	20.43	328.07
1994	10.77	8.03	6.39	6.29	6.75	7.81	2.10	9.94	29.92	81.98	69.97	19.23	259.18
1995	35.30	8.61	10.81	8.67	6.01	4.61	4.92	4.61	115.33	62.87	70.18	103.97	435.89
1996	64.15	30.83	15.80	6.23	5.87	4.61	3.05	9.71	87.07	36.81	61.67	27.64A	353.44
1997	5.74	13.69	5.47	5.98	4.76	4.78	5.44	54.72	33.48	72.95	25.51	17.37	249.89
1998	8.11	15.90	6.71	6.58	6.78	5.72	8.50	15.06	36.51	68.52	77.23	66.06	321.68
1999	14.30	7.29	7.56	10.05	7.58	8.88	4.76	28.41	33.68A	40.82	33.36	46.27	242.96
2000	10.10	5.38	6.68	7.80	5.68	6.39	5.96	25.42	31.98	168.07	141.33	119.03	533.82
2001	26.21	12.31	5.64	13.57	5.25	5.58	6.46	24.92	41.98	83.36	53.23	22.78	301.29
2002	17.89	8.59	9.45	9.04	7.20	8.74	4.89	4.20	5.15	8.77	46.77	33.61	164.30
2003	17.38	6.37	9.21	7.90	7.11	6.98	6.74	1.98	18.80	21.52	77.21	11.03	192.23
2004	14.90	4.10	7.30	8.26	6.26	5.41	5.97	20.50	79.10	61.90	81.49	23.45	318.64
Ave:	20.68	9.27	7.47	6.12	4.28	4.74	8.27	27.92	60.11	75.41	65.73	40 61	330.60
SD:	14.14	8.88	5.80	3.63	2.04	3.77	9.41	22.35	46.71	45.98	34.84	26.79	130.14

File: G1H020.INC
Units: $10^6 \times m^3$
Description: Observed flow sequence (incremental) at G1H020 for 1967 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1967	9.29	0.10	0.00	0.11	0.00	0.00	0.00	11.39	31.40	29.47	36.80	11.76	128.77
1968	16.11	1.64	1.26	1.78	0.78	0.74	1.96	1.45	4.48	11.32	17.43	18.17	77.12
1969	7.25	1.22	0.80	0.66	0.66	0.25	0.00	0.00	16.87	24.27	27.34	16.55	93.01
1970	9.39	1.27	0.26	0.62	1.46	1.08	0.81	0.00	0.00	12.40	20.71	10.99	57.64
1971	3.06	1.87	1.29	0.31	2.52	1.50	0.00	0.08	4.88	5.12	9.29	8.88	38.23
1972	3.14	1.12	0.58	0.54	0.00	0.00	0.00	0.00	1.48	0.00	13.07	6.07	23.45
1973	3.39	0.00	0.00	0.95	1.04	0.19	0.00	0.00	11.49	6.80	62.54	35.82	119.67
1974	15.77	6.32	1.15	1.07	0.63	0.60	0.00	28.58A	13.71	49.90	35.47	8.15	156.87
1975	5.03	1.56	1.24	1.50	0.92	0.58	0.00	0.00	17.42	46.49	32.86	13.25	115.44
1976	4.48	39.66	14.69	6.52	2.09	1.83	2.54	5.27	67.63	73.01	77.05	22.98	317.75
1977	6.88	0.00	1.19	0.24	0.61	1.18	0.81	0.00	2.65	1.51	6.00	13.85	32.26
1978	8.57	3.56	0.02	0.00	0.00	0.00	0.00	0.00	9.70	0.00	0.00	0.00	0.00
1979	10.92	0.00	0.00	0.00	0.00	0.80	1.32	12.44	16.79	4.83	8.39	0.00	44.12
1980	0.00	1.43	1.78	3.39	0.00	0.00	0.00	1.95	5.98	27.84	30.43	33.17	98.69
1981	6.64	0.73	0.00	0.00	0.00	0.00	0.89	7.01	17.38	14.78	20.98	4.19	64.20
1982	6.15	0.47	0.03	0.00	0.00	0.00	0.00	25.15	69.28	66.03	28.99	33.62	226.00
1983	9.19	0.19	0.00	0.00	0.00	0.00	0.00	40.44	3.45	63.29	26.85	42.26	179.88
1984	25.66	0.92	5.11	0.00	0.00	7.38	5.03	7.20	56.70	85.39	54.89	12.55	259.64
1985	4.12	0.00	0.00	0.00	0.00	0.00	4.54	7.00	27.79	45.52	81.58	40.69	200.13
1986	6.07	0.00	0.00	0.00	0.00	0.00	0.00	16.14	27.81	27.81	36.64	17.66	122.44
1987	9.62	2.40	1.32	0.00	0.00	0.00	3.49	13.38	15.43	36.27	21.94	23.91	122.74
1988	7.00	0.00	0.00	0.00	0.00	1.87	3.62	11.93	18.72A	39.90	40.24	49.95	163.45
1989	11.77	3.76	0.00	0.00	0.00	0.00	9.12	0.00	34.55	77.82	50.30	10.59	183.87
1990	2.54	0.00	0.00	0.00	0.00	0.00	0.00	12.87	49.45	51.52	42.97	45.95	199.45
1991	3.47	0.00	0.00	0.00	0.00	0.00	0.00	3.69	78.07	61.49	12.04	14.29	133.64
1992	9.14	2.70	0.00	0.00	0.00	0.00	18.17	26.74	28.16	130.14	45.33	10.97	254.38
1993	2.58	0.00	0.00	0.00	0.00	0.00	0.25	4.85	75.64	39.70	14.09	8.20	125.69
1994	3.70	0.00	0.00	0.00	0.00	0.00	0.00	4.03	14.75	44.29	36.59	10.95	94.03
1995	16.43	2.92	0.68	0.00	0.00	0.00	0.68	0.00	56.17	34.35	39.99	63.03	202.51
1996	34.55	13.93	5.38	0.00	0.00	0.00	0.88	2.41	40.45	21.51	38.04	17.32	170.25
1997	1.75	1.36	0.00	0.00	0.00	0.00	0.00	16.28	15.09	32.28	12.76	7.52	73.45
1998	3.12	4.04	0.00	0.00	0.00	0.00	0.44	4.29	14.11	34.61	46.30	40.70	131.22
1999	8.90	1.94	0.00	0.00	0.00	0.00	0.00	7.81	18.82	21.07	18.92	23.39	86.88
2000	4.70	0.00	0.00	0.00	0.00	0.00	0.17	14.85	14.89	107.29	109.86	59.73	297.27
2001	13.19	6.30	0.00	1.87	0.00	0.00	0.90	9.32	20.39	37.91	25.28	10.95	122.24
2002	7.75	0.73	0.00	0.00	0.00	0.00	0.54	1.13	1.75	2.40	16.61	12.99	34.70
2003	6.89	0.00	0.00	0.00	0.00	0.00	0.37	0.00	5.40	9.40	40.22	6.41	53.21
2004	7.92	0.49	0.00	0.00	0.00	0.00	0.53	7.38	37.79	37.82	49.72	14.09	146.08
Ave:	8.32	2.70	0.97	0.51	0.28	0.47	1.50	8.03	24.91	37.25	33.91	20.57	130.27
SD:	6.63	6.69	2.60	1.23	0.61	1.27	3.35	9.49	22.03	29.98	22.44	16.22	76.93

File: G1H021.PAT
Units: 10^6 x m^3
Description: Observed flow sequence at G1H021 for 1975 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1975	0.99A	0.55	0.37	0.26	0.18	0.13	0.18	0.29	3.45	3.02	2.26	1.04	12.72
1976	0.69	1.91	2.18	1.82	0.69	0.49	0.48	4.85	5.71	5.45	5.34	2.13	31.74
1977	1.13	0.54	0.52	0.28	0.22	0.24	0.42	0.48A	0.32	0.22	1.06	2.04	7.47
1978	1.34	0.58	0.34	0.25	0.19	0.27	0.21	0.28	0.36	0.46	0.56	0.99	5.83
1979	2.36	1.12A	0.49A	0.48A	0.29	0.18	0.25	0.78	1.07	0.77	1.18	1.04	10.01
1980	1.13	3.01	1.90	0.83	0.52	0.46	0.42	0.48	0.70	0.89	0.80	2.01	13.15
1981	1.09	0.59	0.39	0.55	0.42	0.52	0.72	0.85	1.94	1.78A	0.79	0.46	10.10
1982	0.85A	0.71	0.64	0.39	0.47	0.50	0.42	2.97	4.35	6.09	2.20	1.65	21.24
1983	1.18	0.56	0.42	0.30	0.24	0.31	0.35	4.28	1.45	3.27	1.92	3.85	18.13
1984	2.63A	0.85	0.81	0.82	0.37	1.57	1.12	1.42	3.51	4.70	4.03	1.85	23.68
1985	1.25	0.61	0.42	0.30	0.19	0.33	0.37	0.87	1.72	2.98	5.78	2.65	17.47
1986	1.32	0.67	0.34	0.29	0.21	0.19	0.22	1.67	2.34	2.57	3.50	1.83	15.15
1987	1.21	0.59A	0.41A	0.29	0.19	0.19	0.76	0.65	3.22	2.30	1.59	2.61	14.01
1988	1.27	0.59	0.37	0.26	0.23	0.61	0.49	0.98	1.35	2.26	3.71	4.94	17.06
1989	1.73	0.92	0.53	0.36	0.29	0.22	0.57	1.62	1.92	4.85	3.03	1.00	17.04
1990	0.47	0.31	0.31	0.23	0.15	0.12	0.22	0.62	2.11	4.47	3.38	3.41	15.80
1991	1.86	1.11	0.56	0.36	0.37	0.35	0.68	1.01	4.69	4.07	2.45	2.38	19.89
1992	2.51	1.62	0.67	0.41	0.28	0.21	0.95	1.79	2.80	6.20	2.81	0.98	21.23
1993	0.56	0.32	0.31	0.22	0.16	0.13	0.23	0.26	3.13	3.63	1.34	1.10	11.39
1994	1.27	0.59	0.34	0.27	0.18	0.15	0.15	0.45	0.67	2.04	2.39	1.21	9.71
1995	2.26	1.33	0.72	0.39	0.32	0.27	0.38	0.39	3.22	3.77	3.80	5.69	22.54
1996	3.49	3.00	1.55	0.86	0.49	0.41	0.45	0.48	2.69	2.47	2.82	1.86	20.57
1997	0.74	0.65	0.52	0.35	0.26	0.19	0.20	1.03	1.43	1.75	1.74	0.98	9.84
1998	0.63	1.53	0.60	0.35	0.22	0.19	0.31	0.57	0.80	2.02	3.11	3.55	13.88
1999	1.76	0.66	0.39	0.29	0.21	0.19	0.13	0.40	0.57	1.28	1.50	2.59	9.97
2000	0.96	0.46	0.29	0.22	0.21	0.12	0.14	0.77	0.78	5.54	3.40	4.58	17.47
2001	1.47	0.88	0.49	0.59	0.32	0.25	0.29	1.09	1.43	3.21	3.79	1.58	15.39
2002	1.45	0.76	0.42	0.32	0.20	0.24	0.25	0.29	0.26	0.30	1.74	1.96	8.19
2003	1.11	0.67	0.48	0.31	0.19	0.17	0.32	0.21	0.52	0.80	2.56	0.90	8.24
2004	0.76	0.43	0.28	0.18	0.13	0.13	0.39	0.44	2.17	2.42	3.68	2.30	13.31
Ave:	1.38	0.94	0.60	0.43	0.28	0.31	0.40	1.08	2.02	2.85	2.61	2.17	15.07
SD:	0.69	0.68	0.46	0.32	0.13	0.27	0.24	1.12	1.41	1.74	1.30	1.29	5.77

File: G1H028.PAT
Units: 10^6 x m^3
Description: Observed flow sequence at G1H028 (including G1H058) for 1971 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1971	6.80A	5.86A	5.74A	6.03A	5.49A	5.65A	10.91A	4.88A	1.54	0.00	0.25	0.13	53.28
1972	4.59	2.62	5.36	2.09	1.58	2.17	1.74	2.26	2.45	26.68A	20.83A	12.23	84.60
1973	8.67	3.00	2.96	1.95	1.61	1.77	1.79	7.60	42.46	27.29A	44.09A	15.93	159.12
1974	5.42	4.31	3.45	2.89	2.04	2.03	5.22	25.73	10.50	25.61	21.69	10.00	118.89
1975	7.87	3.75	2.63	2.12	1.77	1.82	2.54	2.96	30.62	26.47	16.14	8.25A	106.94
1976	5.21	30.35	18.36	8.14	1.59	1.96	4.48	50.74A	48.50	49.91	43.93	12.71	275.88
1977	8.92	3.78	5.33	2.79	2.27	4.63A	6.87	8.52	4.73	2.52	16.92	19.21	86.49
1978	8.83	3.36	2.56	2.21	1.74	1.73	1.94	6.10	21.37	12.19	14.17	8.01	84.21
1979	18.10	4.89	2.36	4.22	2.03	2.00	2.76	8.63	13.51A	7.13	12.31	6.97	84.91
1980	5.83	21.22	8.70	3.35	1.94	2.04	2.05	2.65	6.80	25.88	23.27A	23.10A	126.83
1981	4.78	3.79	2.75	3.66	1.84	12.33A	21.09A	24.68A	32.52A	28.18A	17.93A	11.31A	164.86
1982	12.24A	8.01A	5.04A	1.69	3.08	3.27	2.64	30.98	51.42	68.51	14.35	14.59	215.82
1983	7.23	3.27	2.44	2.24	1.97	2.60	2.98	36.80	6.28	19.65	6.56	16.32	108.34
1984	14.84	3.53	7.01	4.71	2.73	23.69A	7.70	14.56	18.82	19.30	17.77	11.24	145.90
1985	6.38	3.29	3.11	2.29	1.91	2.99	4.70	8.07	18.49	18.22	40.53	16.31	126.29
1986	5.72	3.41	2.54	2.80	2.11	2.17	2.69	21.44	26.17	26.78	15.00	11.26	122.09
1987	5.56	3.45	3.40	2.45	1.99	2.15	8.70	8.18	32.03	13.57	10.02	9.21	100.71
1988	6.03	4.36	2.62	2.24	2.04	8.49	4.90	9.00	10.76	24.38	31.67	36.11	142.60
1989	10.36	6.97	3.39	2.53	2.27	2.13	6.51	22.74	19.78	39.95	12.28	3.71	132.62
1990	2.98	2.70	3.02	2.17	1.88	2.09	2.37	7.39	32.79	51.37	21.12	22.64	152.52
1991	12.21	5.96	3.08	2.20	2.58	3.28	7.68	11.17	48.25	26.51	19.75	15.37	158.04
1992	20.83	5.78	3.80	2.84	2.49	2.36	16.53	27.10	25.87	45.71	10.64	5.68	169.63
1993	3.64	3.03	2.84	2.09	1.76	1.89	2.59	2.96	40.93	22.28	8.96	11.27	104.24
1994	8.98	2.87	2.48	2.11	1.76	1.87	1.88	6.55	11.05	34.07	23.58	7.72	104.92
1995	18.80A	3.43	3.78	2.95	2.44	2.30	2.53	3.09	29.63	26.19	27.22	38.66	161.02
1996	18.96	22.09	9.82	4.66	3.32	2.95	4.32	5.39	42.96	10.80	25.87	9.13	160.27
1997	3.55	6.57	5.11	2.71	2.25	2.30	2.32	20.36	16.85	18.19	17.35	6.30	103.86
1998	6.10	19.58	4.04	2.99	2.25	2.28	3.71	8.39	14.59	25.22	35.18	32.46	156.79
1999	5.10	4.74	4.13	3.22	2.49	2.30	2.17	4.50	9.82	25.00	15.72	33.00	112.19
2000	7.21	4.73	3.45	3.04	2.61	2.40	2.53	9.99	10.05	57.03	34.11	36.63	173.78
2001	9.00	4.03	4.24	4.13	2.88	2.84	3.05	15.21	16.90	38.08	17.43	11.71	129.50
2002	10.75	5.85	3.76	3.05	2.30	2.89	2.72	2.74	3.01	3.75	24.88	17.03	82.73
2003	9.46	4.64	4.06	3.31	2.43	2.46	4.67	2.89	10.24	12.31	25.92	7.40	89.79
2004	8.88	4.57	3.63	2.92	2.25	2.43	3.60	5.35	26.42	23.65	41.58	13.70	138.98
Ave:	8.82	6.58	4.44	3.08	2.29	3.60	4.85	12.64	21.71	25.95	21.44	15.16	130.55
SD:	4.67	6.49	3.00	1.29	0.71	4.12	4.22	11.42	14.50	15.43	10.82	9.86	42.91x

File: G1H029.PAT
Units: 10^6 x m^3
Description: Observed flow sequence at G1H029 (including G1H059) for 1975 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1975	0.90A	0.27	0.25	0.11	0.08	0.09	0.25	0.47	4.69A	3.47A	1.68	0.70	12.96
1976	0.45	3.11A	2.51A	1.42A	0.53A	0.70A	1.42A	7.07A	7.23	6.69	5.92	2.90	39.95
1977	1.28	0.35	0.53	0.18	0.18	0.14	0.54	0.62	0.34	0.13	2.09A	2.45A	8.83
1978	0.85	0.16	0.02	0.03	0.05	0.23	0.18	0.64A	1.81A	1.41A	1.66A	1.59A	8.63
1979	2.66A	0.76	0.09	0.38A	0.11	0.00	0.15	1.11A	1.55A	0.66	1.33A	0.73	9.53
1980	0.35	2.72A	1.05	0.30	0.10	0.05	0.10	0.14	0.50A	1.89A	1.90A	2.48A	11.58
1981	0.45	0.29	0.11	0.14	0.03	0.47A	1.13A	1.60A	2.83A	2.65A	1.81	0.95A	12.46
1982	1.26A	0.81A	0.47	0.13	0.21	0.28A	0.06	3.00A	4.41A	5.41	2.26	2.45	20.75
1983	1.19	0.31	0.08	0.02	0.00	0.05	0.12	6.05	0.96	3.16A	1.68A	3.26A	16.88
1984	2.44A	0.38	0.68	0.79	0.20	4.26	1.06	1.82	4.82A	5.29A	3.72A	1.28	26.74
1985	0.79A	0.32A	0.38A	0.08	0.03	0.11	0.50	1.30	3.44A	4.05A	6.12	2.38	19.50
1986	0.71	0.28	0.04	0.04	0.02	0.03	0.12	3.14A	3.42	4.27	3.61	2.04	17.72
1987	0.71	0.20	0.23	0.04	0.00	0.07	1.06	1.69A	4.99A	2.78A	1.87	3.02	16.66
1988	1.10A	0.44A	0.17	0.15	0.17	2.19	1.20	1.77	2.35A	4.18	4.17	4.64	22.53
1989	2.17	1.14	0.49	0.24	0.22	0.13	0.99	3.25A	3.50	7.10A	4.17	0.88	24.28
1990	0.40	0.31	0.37	0.16	0.23	0.14	0.36	0.77	4.28	9.55	3.80	5.07	25.44
1991	2.33	0.99	0.38	0.15	0.28	0.34	1.44A	1.83	8.58	5.59	2.68	2.27	26.86
1992	3.15	1.17	0.36	0.13	0.11	0.04	1.36	3.70	3.19	5.25	2.38	0.75	21.59
1993	0.31	0.12	0.14	0.02	0.01	0.03	0.30	0.34	6.32A	4.12A	1.22	1.51	14.44
1994	1.53	0.30	0.08	0.01	0.00	0.00	0.05	1.20A	1.44	4.38A	3.55A	1.01	13.55
1995	3.12	0.56	0.31	0.12	0.12	0.08	0.37	0.42	5.56A	5.10A	4.60	5.87	26.23
1996	2.84	3.44	1.35	0.56	0.27	0.23	0.38	0.83	4.70	1.91	3.93	1.59	22.03
1997	0.41	0.56	0.47	0.17	0.06	0.07	0.09	1.51	1.97	2.27	2.42	0.95	10.95
1998	0.63	1.98	0.22	0.09	0.03	0.04	0.24	1.38	2.25A	3.06A	4.26A	4.56A	18.74
1999	1.27	0.54	0.32	0.14	0.09	0.07	0.07	0.87A	1.49A	3.30A	2.58A	4.06A	14.80
2000	0.92	0.31	0.13	0.06	0.01	0.00	0.10	2.36A	2.44A	8.88A	5.63A	6.84	27.68
2001	0.84	0.64	0.21	0.42	0.15	0.11	0.22	2.42A	2.35	5.79A	4.34	1.42	18.91
2002	1.22	0.43	0.13	0.09	0.06	0.07	0.39	0.49	0.36	0.46	4.87	2.35	10.92
2003	1.48	0.27	0.17	0.10	0.03	0.14A	0.31	0.21	1.50	1.91	3.40A	0.63	10.15
2004	0.87A	0.24	0.06	0.02	0.00	0.00	0.34	0.69	3.72A	3.24A	5.34A	1.84	16.36
Ave:	1.25	0.73	0.38	0.15	0.11	0.31	0.47	1.68	3.02	3.71	3.23	2.31	17.40
SD:	0.14	0.02	0.06	0.01	0.04	0.01	0.04	0.22	0.47	0.79	0.47	0.39	1.69

File: G1H035.PAT
Units: $10^6 \times m^3$
Description: Observed flow sequence at G1H035 for 1975 to 1997

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1975	0.10	0.00	0.00	0.00	0.00	0.00	6.78A	0.74	9.49	6.70	2.86	0.98	27.65
1976	0.15	0.75	0.34	0.19	0.00	0.03	0.97	5.34	13.12	14.55	16.61	1.96	54.01
1977	0.59	0.14	0.72	0.00	0.00	0.00	0.22	0.26	0.15	0.13	0.26	0.37	2.84
1978	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.07	7.32A	0.81A	4.20A	5.48A	18.16
1979	0.75	0.01	0.00	0.01	0.00	0.00	0.00	0.98	1.98	0.37	0.97	0.22	5.29
1980	0.05	1.30	0.56	0.00A	0.00A	0.00A	0.00A	0.00A	0.00A	10.16A	13.63A	0.00A	25.70
1981	0.27	0.01	0.00	0.32	0.00	0.38	1.41	0.57	1.17	2.70	6.38A	0.13	13.34
1982	0.16	0.00	0.00	0.00	0.00	0.00	0.00	1.69	5.82	7.24	1.55	0.42	16.88
1983	0.18	0.00	0.00	0.00	0.00	0.00	0.00	22.45	0.54	1.84	1.26	3.12	29.39
1984	3.65	0.01	0.09	0.01	0.01	1.50	1.12	0.93	11.04	19.81	7.60	1.06	46.83
1985	0.15	0.01	0.00	0.00	0.00	0.00	0.00	0.20	1.52	2.64	9.21	2.90	16.63
1986	0.17	0.01	0.00	0.00	0.00	0.00	0.00	0.89	2.76	6.61	14.98A	1.85	27.27
1987	0.33	0.01	0.00	0.00	0.00	0.00	0.47	0.30	4.04	3.77	5.35	4.30	18.57
1988	0.31	0.02	0.00	0.00	0.00	0.05	0.77	0.20	1.00	5.68	5.65	9.37	23.05
1989	0.78	1.02	0.00	0.00	0.14	0.00	6.31	12.17	17.63	16.06	4.19	0.43	58.73
1990	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.07	4.09	32.12	7.89	2.97	47.20
1991	1.90	0.24	0.00	0.00	0.00	0.00	0.03	0.16	3.88	6.44	2.89	1.21	16.75
1992	1.38	0.26	0.00	0.00	0.00	0.00	5.08	4.22	12.61	36.62	6.99	0.71	67.87
1993	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.05	12.22	2.90	0.63	0.22	16.08
1994	0.32	0.01	0.00	0.00	0.00	0.00	0.00	0.17	0.00A	9.94	16.25	0.52	27.21
1995	0.42	0.05	15.51	0.00	0.00	0.00	0.10	0.06	3.05	13.98A	11.60	34.04	78.81
1996	1.79	1.21	0.28	0.10	0.00	0.01	0.10	0.76	62.73	3.41	2.46	0.66	73.51
1997	0.04	0.00	0.00	0.49	0.00	0.00	0.00	8.31	3.27	1.20	1.20	0.13	14.64
Ave:	0.60	0.22	0.76	0.05	0.01	0.09	1.02	2.63	7.80	8.94	6.29	3.18	31.58
SD:	0.85	0.42	3.22	0.12	0.03	0.32	2.06	5.29	12.99	9.68	5.20	7.08	21.92

File: G1H036.PAT
Units: $10^6 \times m^3$
Description: Observed flow sequence (cumulative) at G1H036 for 1979 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1979	59.80A	10.64A	2.51A	2.72	1.20	0.01	12.22	38.78	53.01	33.38	35.61	19.86	269.74
1980	6.78	19.60	20.44	18.39	6.78	3.88	2.43	5.03	16.75	100.71	125.98	107.56	434.33
1981	19.52	5.67	14.13	13.26	3.85	7.04	12.08	28.42	47.26	46.52	53.68	19.03	270.46
1982	24.42	5.51	6.25	3.64	3.07	3.88	2.19	62.24	160.57	151.41	58.90	68.57	550.65
1983	19.57	2.76	2.43	1.89	0.69	2.49	2.02	107.06	18.20	100.94	52.49	85.08	395.62
1984	53.62	3.45	13.58	4.70	4.51	23.44	5.49A	0.85A	81.61A	93.53	79.05	17.67	381.50
1985	6.41	2.60	3.44	2.38A	2.99	2.77	13.06	25.72	73.84	143.31	160.33	77.90	514.75
1986	13.76	4.30	2.44	5.11	1.38	1.52	3.10	58.27	78.11	95.97	126.07	83.34	473.37
1987	26.64	5.68	7.34	1.59	1.04	1.53	11.82	32.88	40.87	76.16	48.18	72.57	326.30
1988	20.03	5.12	2.16	1.23	1.58	11.15	13.77	29.32	41.52	98.01	97.61	109.17	430.67
1989	30.15	13.95	2.52	1.72	5.42	1.27	39.85	83.29	86.78	194.41	121.01	28.49	608.86
1990	8.06	3.58	4.74	1.50	1.57	1.74	2.63	39.05	105.61	155.85	110.96	132.81A	568.10
1991	43.15	11.72	2.40	1.97	3.90	2.49	24.23	27.75	203.70	168.31	54.80	56.03	600.45
1992	74.38	18.45	4.14	2.94	3.51	2.74	44.45	67.15	90.05	275.07	111.87	25.21	719.96
1993	8.40	4.19	4.40	3.53	2.03	3.70	7.11	8.44	168.68	93.35	35.49	26.75	366.07
1994	13.50	5.71	2.65	2.26	3.53	4.73	1.44	10.90	31.15	94.18A	82.56A	21.02A	273.63
1995	36.27A	7.22A	10.64A	7.10A	4.71	2.48	5.02	3.74	122.07	73.69A	95.93A	134.87	503.74
1996	76.58A	38.52A	18.96A	7.34A	5.82A	4.61A	3.72	10.38A	103.48	53.80	78.18	39.88	441.27
1997	6.39	13.17	2.50	2.37	1.75	1.81	4.90	68.09	45.82	87.25	34.74	21.53	290.32
1998	8.83	17.63	4.34	2.20	3.06	2.60	7.95	17.82	42.90	77.93	97.44	89.29	371.99
1999	20.02	6.26	3.56	4.85	4.58	5.55	2.62	18.38	31.35	41.85	33.81	49.81	222.64
2000	10.87	2.97	1.80	3.18	1.83	1.90	4.12	22.93	33.21	182.64	143.67	131.52	540.64
2001	33.39	17.78	3.58	11.75	2.67	2.59	6.27	27.52	48.99	97.44	74.32	35.35	361.65
2002	25.47	8.66	6.69	4.91	3.47	5.83	4.95	5.00	5.66	8.46A	51.88	38.67	169.65
2003	20.66	4.18	4.89	2.64	2.54	3.01	6.77	1.37	20.04	21.40	71.92	13.04	172.46
2004	16.62	2.22	1.63	3.21	3.55	1.65	6.08	19.69	81.09	53.74	86.71	32.11	308.30
Ave:	26.28	9.29	5.93	4.55	3.12	4.09	9.63	31.54	70.47	100.74	81.66	59.12	406.43
SD:	20.15	8.09	5.26	4.10	1.57	4.54	10.86	27.46	50.07	60.08	35.67	39.61	142.07

File: G1H037.PAT
Units: $10^6 \times m^3$
Description: Observed flow sequence at G1H037 for 1978 to 1991

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1978	1.56	0.51	0.15	0.15	0.11	0.61	0.56	1.73	2.68	1.59	2.82	1.03	13.50
1979	2.09A	0.84	0.05	0.15	0.03	0.02	0.60	1.43	1.80A	1.53A	1.61	1.09A	11.24
1980	0.49	1.29A	0.89A	1.02A	0.83A	1.01A	1.27A	1.59A	2.13A	3.94A	4.26A	2.43A	21.15
1981	0.65A	0.43	0.16	0.28	0.24	0.13	0.92	1.97	3.28	3.46	3.26	1.54	16.32
1982	1.13	0.61	0.51	0.34	0.63	0.87	0.50	3.76	9.00	6.12	3.35	3.07	29.89
1983	1.16	0.42	0.27	0.04	0.00	0.25	0.09	6.27	1.42	4.03	2.44	3.91	20.30
1984	2.29	0.24	0.82	0.45	0.30	1.10	0.75	1.39	6.28	6.01	4.67	2.15	26.45
1985	1.04	0.17	0.03	0.04	0.01	0.19	1.19	1.82	3.62	5.74	6.06	3.12	23.03
1986	1.09	0.41	0.06	0.31	0.30	0.29	0.38	2.16	3.39	3.86	5.14	3.46	20.85
1987	1.92	0.37	0.69	0.07	0.01	0.05	0.67	2.21	2.92	3.70	2.59	3.88	19.08
1988	1.19	0.41	0.05	0.01	0.03	0.85	1.04	1.61	2.21	5.84	5.09	5.32	23.65
1989	2.05	1.34	0.23	0.03	0.32	0.12	2.45	3.61	4.54	9.58	6.11	2.19	32.57
1990	0.90	0.40	0.38	0.04	0.10	0.25	0.59	2.25	5.53	8.66	5.49	5.27	29.86
1991	2.71	0.89	0.19	0.05	0.13	0.15	1.15	1.65	8.47A	4.94A	2.07A	2.28A	24.68
Ave:	1.45	0.60	0.32	0.21	0.22	0.42	0.87	2.39	4.09	4.93	3.93	2.91	22.33
SD:	0.66	0.36	0.29	0.27	0.25	0.38	0.57	1.34	2.40	2.30	1.52	1.36	6.19

File: G1H040.PAT
Units: $10^6 \times m^3$
Description: Observed flow sequence at G1H040 for 1979 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1979	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.12A	0.21	0.00	0.04	0.01	0.39
1980	0.00	0.06	0.00	0.04	0.00	0.00	0.01	0.03	0.02	0.18	0.48	0.41	1.23
1981	0.00	0.00	0.00	0.00	0.00	0.01	0.12	0.03	0.34	0.69	0.24	0.03	1.46
1982	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.74A	0.82A	0.35A	0.12A	2.16
1983	0.04A	0.00	0.00	0.00	0.00	0.00	0.00	0.77	0.03	0.28	0.28	0.18	1.58
1984	0.45	0.00	0.00	0.00	0.00	0.07	0.00	0.04	0.82	1.68	1.51	0.12	4.69
1985	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.70	1.09	0.16	1.98
1986	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.44	0.93	1.34	0.41	3.16
1987	0.05	0.00	0.00	0.00	0.00	0.00	0.04	0.01	0.13	0.60	0.32	0.27	1.42
1988	0.02	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.15	0.69	0.48	0.59	1.96
1989	0.09	0.08	0.00	0.00	0.00	0.00	0.15	0.72	1.27	2.92	0.88	0.12	6.23
1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	1.78	0.64	0.94	3.96
1991	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.02	1.39	2.37	0.43	0.63	4.94
1992	0.59	0.04	0.00	0.00	0.00	0.00	0.01	0.39	0.44	1.62	1.26	0.10	4.45
1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.54	0.48	0.05	0.14	2.21
1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.17	0.48	0.01	0.67
1995	0.00	0.00	0.29	0.00	0.21	0.00	0.02	0.05	0.92	1.12	1.43	1.31	5.35
1996	0.28	0.03	0.00	0.00	0.00	0.00	0.00	0.00	1.18	0.23	0.75	0.15	2.62
1997	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.40	0.60	0.12	0.01	1.60
1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.27	0.91	1.24
1999	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.03	0.07	0.28
2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.10	1.08	1.31	4.49
2001	0.13	0.02	0.00	0.00	0.00	0.00	0.00	0.15	0.38	1.35	1.04	0.21	3.28
2002	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.02	0.30
2003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.01	0.25	0.00	0.37
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.48	0.33	1.20	0.28	2.31
Ave:	0.07	0.01	0.01	0.00	0.01	0.00	0.01	0.12	0.44	0.82	0.63	0.32	2.45
SD:	0.14	0.02	0.06	0.01	0.04	0.01	0.04	0.22	0.47	0.79	0.47	0.39	1.69

File: G1H041.PAT
Units: $10^6 \times m^3$
Description: Observed flow sequence at G1H041 for 1979 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1979	3.00	0.40	0.01	0.13	0.00	0.00	0.24	1.15	1.62	1.01	1.09	0.76	9.41
1980	0.18	1.53	0.61	0.80	0.08	0.03	0.06	0.15	0.79	4.99	7.01	4.32	20.55
1981	0.80	0.11	0.03	0.11	0.00	0.00	0.28	1.26	3.61	4.41	3.84	0.75	15.20
1982	1.76	0.18	0.17	0.00A	0.02	0.02	0.01	2.36	9.29	7.05	2.50	2.04	25.40
1983	0.50	0.07	0.06	0.01	0.02	0.21	0.04	8.67	0.96	6.75	2.16	4.53	23.98
1984	2.62	0.16	0.44	0.21	0.02	0.77	0.60	1.16	6.85	9.05	7.10	1.82	30.80
1985	0.63	0.12	0.01	0.00	0.00	0.02	0.45	1.33	2.07	8.69	11.23	3.11	27.66
1986	0.63	0.15	0.00	0.36	0.00	0.02	0.08	2.01	4.50	7.10	7.89	4.05	26.79
1987	1.27	0.24	0.15	0.00	0.00	0.00	0.73	1.76	3.96	4.86	4.46	5.03	22.46
1988	1.20	0.30	0.03	0.00	0.00	0.83	1.16	2.03	3.06	8.16	8.79	8.40	33.96
1989	2.17	0.69	0.12	0.00	0.03	0.00	1.46	4.20	5.88	14.69	6.90	1.30	37.44
1990	0.41	0.15	0.14	0.00	0.00	0.03	0.02	0.75	6.17	12.01	4.70	7.44	31.82
1991	2.16	0.60	0.14	0.00	0.02	0.01	0.33	0.83	14.47	8.45	2.64	3.04	32.69
1992	3.09	0.77	0.14	0.01	0.01	0.00	1.02	5.04	5.30	16.05	6.86	1.11	39.40
1993	0.33	0.07	0.02	0.00	0.00	0.00	0.26	0.08	11.42	5.44	1.70	1.53	20.85
1994	0.74	0.10	0.01	0.00	0.00	0.00	0.00	0.23	1.91	6.08	5.60	1.19	15.86
1995	1.32	0.32	0.45	0.03	0.00	0.00	0.04	0.05	6.65	5.62	8.64	8.81	31.93
1996	2.77	1.83	0.55	0.20	0.00	0.00	0.00	0.35	6.48	2.80	5.00	2.44	22.42
1997	0.23	0.37	0.06	0.00	0.00	0.00	2.34A	3.69	1.95	5.02	2.05	1.10	16.81
1998	0.60	1.29	0.33	0.01	0.00	0.00	0.12	0.56	2.37	3.90	6.60	9.09	24.87
1999	0.97	0.18	0.02	0.00	0.00	0.00	0.00	0.19	0.68	1.21	1.01	3.49	7.75
2000	0.28	0.05	0.00	0.00	0.00	0.00	0.00	0.71	0.87	17.50	9.62	8.46	37.49
2001	1.32	0.74	0.11	0.62	0.03	0.01	0.15	1.98	3.03	8.68	5.78	1.77	24.22
2002	0.94	0.22	0.03	0.00	0.00	0.00	0.03	0.09	0.08	0.14	2.52	1.53	5.58
2003	0.80	0.08	0.05	0.00	0.00	0.00	0.07	0.00	0.74	0.66	2.64	0.36	5.40
2004	0.91	0.05	0.00	0.00	0.00	0.00	0.01	0.34	4.08	2.56	9.43	1.61	18.99
Ave:	1.22	0.41	0.14	0.10	0.01	0.08	0.37	1.58	4.18	6.65	5.30	3.43	23.45
SD:	0.89	0.48	0.18	0.20	0.02	0.22	0.57	1.96	3.53	4.54	2.94	2.79	9.74

File: G1H043.PAT
Units: $10^6 \times m^3$
Description: Observed flow sequence at G1H043 for 1979 to 2001

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1979	0.22A	0.00A	0.00A	0.00A	0.00A	0.00A	0.00A	0.67A	0.20	0.01	0.07	0.01	1.18
1980	0.00	0.32	0.19	0.00	0.00	0.00	0.00	0.00	0.00	1.22A	1.49A	0.54	3.76
1981	0.00	0.00	0.00	0.00	0.00	0.09	0.36	0.00	0.27	0.69	0.27	0.04	1.72
1982	0.00	0.00	0.00	0.00A	0.00	0.00	0.00	0.45	3.63	2.61	0.45	0.17	7.31
1983	0.05	0.00	0.00	0.00	0.00	0.00	0.00	4.31	0.18	0.50	0.43	0.69	6.16
1984	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.36	2.91	2.64	0.23	7.56
1985	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	1.25	0.15	1.72
1986	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.67	2.36	2.13	0.74	5.91
1987	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.52	0.80	0.41	1.97
1988	0.01	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.21	0.59	0.82	1.20	2.89
1989	0.10	0.02	0.00	0.00	0.00	0.00	0.45	2.07	2.57	5.38	0.91	0.14	11.64
1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.52	3.89	1.79	1.20	10.40
1991	0.16	0.01	0.00	0.00	0.00	0.00	0.00	0.00	5.97	2.20	0.39	0.34	9.07
1992	0.88A	0.01	0.00	0.00	0.00	0.00	0.02	0.56	1.06	11.72	2.17	0.17	16.59
1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.16	1.61	0.27	0.44	7.48
1994	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.78	0.06	0.97
1995	0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.00	2.32	2.74	2.29	1.57	9.13
1996	0.33	0.05	0.00	0.00	0.00	0.00	0.00	0.00	1.08	0.42	0.42	0.10	2.40
1997	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.26	0.46	0.14	0.01	1.24
1998	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.05	0.72	0.86
1999	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.42	1.04	1.55	8.01
2001	0.13	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.55	0.77	0.18	1.66
Ave:	0.09	0.02	0.02	0.00	0.00	0.00	0.03	0.34	1.09	1.75	0.84	0.39	4.57
SD:	0.19	0.06	0.05	0.00	0.00	0.02	0.11	0.91	1.68	2.55	0.79	0.48	4.31

File: G1R002.PAT
Units: 10^6 x m^3
Description: Observed flow sequence at G1R002 for 1973 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1973	4.13	1.47	3.91	0.66	0.21	0.58	0.34	1.83	15.47	6.11	45.43	11.45	91.59
1974	8.11	3.90	1.81	0.97	0.81	0.25	2.86	15.48	8.67	20.08	14.09	3.84	80.87
1975	4.80	1.72	1.13	0.64	0.24	0.26	0.19	0.79	26.61	25.73	9.03	4.69	75.83
1976	2.80	10.27	8.99	5.22	1.59	1.10	3.85	23.00	27.97	32.47	30.82	8.05	156.13
1977	5.10	2.01	2.05	0.64	0.35	0.76	2.79	5.95	1.41	1.14	12.63	8.68	43.51
1978	4.42	2.35	1.16	0.89	0.82	1.13	0.87	9.16	13.78	5.77	11.22	5.51	57.08
1979	12.27	2.22	0.62	0.73	0.58	0.39	2.52	9.03	8.15	6.50	6.32	3.57	52.90
1980	2.45	6.79	6.37	4.16	1.42	1.21	1.30	1.26	3.09	16.27	13.76	18.29	76.37
1981	3.37	2.33	1.70	2.16	0.94	0.96	2.37	6.44	10.27	7.59	8.38	3.13	49.64
1982	7.00	1.64	3.01	1.62	2.27	2.61	0.92	14.48	25.29	18.94	8.26	12.67	98.71
1983	3.89	1.86	1.10	0.64	0.85	0.73	1.76	22.09	7.30	18.11	10.13	16.42	84.88
1984	10.50	2.44	3.22	2.91	1.54	6.99	3.46	4.89	15.56	15.67	17.53	7.15	91.86
1985	3.04	1.79	1.07	0.81	0.50	1.21	3.65	6.42	15.89	20.08	24.21	8.85	87.52
1986	2.79	1.93	0.73	1.31	0.98	1.55	1.23	13.32	13.64	12.74	15.85	9.29	75.36
1987	4.71	1.66	2.73	0.49	0.17	0.17	3.24	7.44	6.89	10.77	9.50	11.02	58.79
1988	2.89	1.65	0.78	0.26	0.49	4.10	2.12	7.07	7.08	13.57	14.67	15.13	69.81
1989	5.63	2.23	0.95	0.63	0.79	0.62	10.02	9.04	10.81	27.77	17.35	3.83	89.67
1990	1.64	1.14	1.81	1.06	0.75	0.88	0.92	10.80	23.54	26.95	13.73	22.04	105.26
1991	5.52	2.47	1.58	1.05	1.54	1.67	4.39	6.46	37.81	23.05	8.04	8.33	101.91
1992	11.22	3.94	2.02	1.22	1.19	0.89	13.06	12.46	12.14	45.00	12.84	3.83	119.81
1993	2.18	1.12	1.06	0.92	0.50	0.55	0.99	1.47	32.58	14.41	5.21	6.38	67.37
1994	3.31A	0.85A	0.60A	1.10A	0.41A	0.86A	1.52A	6.00A	9.83A	17.90A	15.73A	4.03A	62.14
1995	8.95A	2.20A	2.61A	0.80A	1.82A	1.84A	2.19A	3.01A	22.21A	17.93A	12.46A	17.76A	93.78
1996	11.07A	8.50A	4.95A	1.49A	0.73A	1.34A	3.34A	4.50A	16.96A	8.33A	11.30A	4.21A	76.72
1997	2.67A	6.17A	2.27A	1.27A	0.08A	0.92A	2.75A	18.31A	8.91A	13.69A	5.43A	3.34A	65.81
1998	1.94A	3.88A	2.19A	0.37A	0.12A	0.32A	2.75A	5.01A	8.02A	13.61A	16.00A	19.08A	73.29
1999	2.43A	1.16A	0.23A	1.06	0.76	0.73	0.56	4.59	5.82	10.76	8.15	13.59	49.84
2000	1.89	1.17	0.56	0.78	0.33	0.04	1.09	9.65A	7.59	34.06	25.66	19.95	102.77
2001	5.10	3.12	1.09	3.93	1.30	0.62	1.65	6.98	8.86	15.92	15.28	6.51	70.36
2002	4.95	2.24	1.21	0.67	0.37	1.65	1.37	0.96	1.11	1.90	13.46	9.76	39.65
2003	6.12	2.78	2.01	0.80	0.53	0.43	1.54	0.68	4.90	5.27	14.40	2.87	42.33
2004	3.96	1.18	0.99	1.15	0.84	0.78	2.52	6.56	16.41	10.60	18.53	5.22	68.74
Ave:	5.00	2.80	2.03	1.31	0.80	1.17	2.61	8.19	13.45	15.99	14.52	9.18	77.05
SD:	2.93	2.16	1.82	1.14	0.53	1.30	2.57	5.89	8.94	9.71	7.87	5.69	24.41

APPENDIX D:

NATURALISED FLOW SEQUENCES

APPENDIX NUMBER	FLOW FILE
D1	G1H003
D2	G1H004
D3	G1H008
D4	G1H011
D5	G1H013
D6	G1H019
D7	G1H020
D8	G1H021
D9	G1H028
D10	G1H029
D11	G1H035
D12	G1H036
D13	G1H037
D14	G1H040
D15	G1H041
D16	G1H043
D17	G1R002

Incremental Naturalised Flows at G1H003

File : G1H003.NAT
Units : Mm3
Descrip. : Simulated for 1927 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1927	0.722	0.702	0.562	0.382	0.262	0.232	0.252	0.262	4.722	3.172	2.582	4.042	17.9
1928	2.652	1.302	0.672	0.352	0.222	0.192	0.472	0.912	1.342	2.872	4.442	3.052	18.5
1929	1.872	1.112	0.622	0.382	0.272	0.252	0.302	0.322	0.312	1.302	2.062	5.502	14.3
1930	3.302	1.542	0.842	0.412	0.262	0.212	0.382	1.302	1.422	1.612	3.252	6.002	20.5
1931	3.752	1.782	0.792	0.392	0.362	0.362	0.352	1.282	2.482	2.762	3.302	3.032	20.6
1932	2.242	1.222	0.562	0.312	0.242	0.222	0.202	0.332	2.622	2.562	2.822	2.462	15.8
1933	1.862	1.172	0.552	0.282	0.202	0.212	0.222	0.622	0.852	1.122	1.492	1.752	10.3
1934	1.632	1.142	0.612	0.322	0.232	0.222	0.352	0.972	1.322	2.492	2.912	2.802	15.0
1935	2.132	1.272	0.652	0.412	0.332	0.262	0.232	0.382	0.622	1.192	2.182	2.492	12.1
1936	1.972	1.142	0.642	0.412	0.272	0.242	0.422	1.592	7.512	9.522	4.552	2.562	30.8
1937	1.922	1.132	0.532	0.362	0.312	0.262	0.422	1.182	1.442	2.072	2.512	3.112	15.2
1938	2.452	1.532	0.812	0.392	0.302	0.282	0.392	2.182	1.832	1.742	3.152	2.792	17.8
1939	1.872	1.112	0.692	0.422	0.332	0.352	0.492	1.192	2.802	3.292	2.992	2.682	18.2
1940	2.172	1.582	0.902	0.522	0.372	0.282	2.352	3.432	6.912	8.232	6.102	9.802	42.6
1941	4.682	1.632	0.792	0.412	0.262	0.202	0.202	1.552	8.662	5.152	6.332	3.582	33.4
1942	1.752	1.012	0.502	0.312	0.252	0.252	0.372	0.582	1.082	2.232	6.322	3.872	18.5
1943	2.182	1.452	0.762	0.372	0.232	0.202	0.262	1.472	6.852	9.142	7.942	3.822	34.7
1944	2.252	1.552	0.932	0.512	0.272	0.202	0.232	4.092	8.832	15.092	9.132	3.312	46.4
1945	1.692	1.092	0.612	0.342	0.232	0.222	0.332	0.792	1.042	1.582	2.872	5.572	16.4
1946	3.892	2.052	0.942	0.402	0.232	0.272	0.332	1.172	1.402	8.522	6.552	3.062	28.8
1947	1.872	1.152	0.562	0.282	0.202	0.192	0.212	1.502	1.752	3.752	4.832	5.912	22.2
1948	3.422	1.662	0.822	0.422	0.252	0.192	0.302	0.502	0.952	1.912	2.982	3.012	16.4
1949	2.482	1.702	0.902	0.422	0.232	0.192	1.082	0.822	0.792	5.612	3.602	2.832	20.7
1950	2.372	1.742	1.082	0.602	0.352	0.232	2.912	2.132	5.962	6.902	3.792	2.612	30.7
1951	2.072	1.352	0.702	0.332	0.212	0.202	0.272	0.602	0.892	1.292	3.532	5.442	16.9
1952	3.102	1.612	0.872	0.402	0.232	0.202	4.232	4.992	3.642	6.912	6.192	3.132	35.5
1953	1.772	1.182	0.682	0.372	0.252	0.232	1.082	6.072	5.132	11.322	10.252	4.152	42.5
1954	2.062	1.322	0.702	0.372	0.662	0.502	0.392	0.402	0.652	3.752	9.592	4.682	25.1
1955	2.172	1.682	0.972	0.462	0.262	0.222	0.342	1.332	4.882	7.692	8.812	4.382	33.2
1956	2.332	1.362	0.652	0.352	0.422	0.432	0.452	5.522	6.902	9.162	8.552	4.072	40.2
1957	2.982	1.992	0.872	0.372	0.362	0.362	0.372	2.232	2.062	1.782	3.002	2.702	19.1
1958	1.942	1.272	0.672	0.342	0.232	0.202	0.632	6.802	3.652	1.742	2.042	2.022	21.5
1959	1.622	1.022	0.512	0.292	0.222	0.212	0.272	0.752	3.912	2.922	1.962	1.582	15.3
1960	1.212	0.762	0.412	0.282	0.242	0.212	0.212	0.402	1.562	1.902	2.882	5.492	15.6
1961	3.152	1.282	0.602	0.332	0.262	0.332	0.672	0.822	10.222	6.882	9.232	4.692	38.5
1962	3.162	2.152	0.962	0.422	0.262	0.202	0.192	0.262	0.602	3.782	6.442	3.652	22.1
1963	1.972	1.252	0.742	0.422	0.442	0.412	0.412	0.822	2.672	4.102	5.312	3.162	21.7
1964	1.872	1.332	0.772	0.452	0.382	0.532	0.902	2.882	2.752	2.802	4.692	3.192	22.5
1965	1.922	1.172	0.702	0.412	0.262	1.322	0.962	1.052	1.992	6.792	6.692	3.632	26.9
1966	2.082	1.132	0.592	0.372	0.262	0.202	0.912	1.262	4.952	3.732	2.772	2.572	20.8
1967	2.142	1.442	0.742	0.402	0.292	0.232	0.752	3.602	4.222	7.572	5.912	2.992	30.3
1968	2.682	1.812	0.862	0.492	0.362	0.262	0.282	0.342	1.082	1.642	2.832	4.232	16.9
1969	3.092	1.702	0.742	0.332	0.232	0.202	0.182	1.842	4.402	4.962	7.252	4.072	29.0
1970	2.172	1.312	0.732	0.412	0.252	0.202	0.222	0.382	1.182	3.032	6.852	3.792	20.5
1971	1.792	1.022	0.522	0.322	0.252	0.212	0.272	0.602	1.332	1.632	1.872	1.982	11.8
1972	1.602	0.922	0.472	0.282	0.202	0.182	0.192	0.242	0.332	3.362	2.512	1.802	12.1
1973	1.442	0.952	0.612	0.392	0.252	0.202	0.182	0.612	2.192	2.392	9.922	5.502	24.6
1974	2.662	1.782	0.912	0.442	0.272	0.212	0.282	4.012	3.422	9.722	6.122	2.762	32.6
1975	1.802	1.172	0.612	0.302	0.202	0.192	0.222	0.322	8.002	8.022	4.202	2.662	27.7
1976	1.862	2.012	1.332	0.682	0.422	0.332	1.702	6.962	15.872	15.632	12.802	5.092	64.7
1977	2.132	1.242	0.662	0.382	0.262	0.242	0.282	0.412	0.522	0.602	3.262	2.722	12.7
1978	2.082	1.362	0.712	0.412	0.352	0.322	0.282	1.212	2.622	2.742	3.622	3.472	19.2
1979	3.142	1.962	0.822	0.382	0.302	0.262	0.412	1.642	2.942	2.702	2.912	2.692	20.1
1980	2.092	1.752	1.212	0.932	0.612	0.452	0.462	0.522	0.972	3.612	3.682	4.112	20.4
1981	2.732	1.462	0.742	0.402	0.272	0.212	0.342	0.702	2.272	5.242	4.172	2.622	21.1
1982	1.882	1.272	0.802	0.472	0.322	0.312	0.312	4.402	6.412	6.762	3.882	5.392	32.2
1983	3.092	1.252	0.602	0.342	0.242	0.252	0.342	3.972	2.562	2.282	2.552	4.092	21.6
1984	3.162	1.742	1.092	0.672	0.462	0.642	0.842	1.022	4.592	9.042	6.562	3.402	33.2
1985	2.222	1.312	0.632	0.342	0.242	0.282	0.462	0.912	3.682	6.602	9.562	4.672	30.9
1986	2.112	1.162	0.562	0.362	0.302	0.262	0.292	2.372	2.672	4.392	7.362	4.732	26.6
1987	2.442	1.312	0.762	0.462	0.272	0.212	0.432	1.262	1.612	2.612	4.922	3.482	19.8
1988	2.192	1.252	0.612	0.332	0.252	0.472	0.582	1.392	1.922	5.482	6.652	4.352	25.5
1989	2.542	1.592	0.862	0.402	0.272	0.242	3.012	1.902	3.062	10.192	5.242	2.452	31.8
1990	1.672	0.962	0.562	0.342	0.232	0.202	0.222	1.432	7.702	10.802	4.992	4.712	33.8
1991	2.972	1.412	0.652	0.312	0.222	0.242	0.452	0.992	8.222	9.212	4.252	2.542	31.5
1992	2.632	1.822	0.862	0.392	0.252	0.222	2.602	3.642	4.482	11.612	6.532	2.642	37.7
1993	1.462	0.772	0.422	0.282	0.222	0.192	0.222	0.322	9.672	6.142	3.012	2.712	25.4
1994	2.152	1.212	0.572	0.322	0.242	0.212	0.212	0.572	2.342	7.112	6.832	3.372	25.1
1995	2.422	1.642	0.832	0.432	0.292	0.272	0.312	0.502	6.842	5.862	6.282	7.792	33.5
1996	3.942	2.032	1.282	0.662	0.332	0.222	0.242	0.402	4.522	3.012	2.792	2.432	21.9
1997	1.772	1.212	0.772	0.472	0.292	0.222	0.312	4.312	3.102	4.842	3.452	2.372	23.1
1998	1.742	1.122	0.742	0.442	0.262	0.192	0.232	0.662	2.392	3.482	7.722	6.172	25.1
1999	2.752	1.192	0.572	0.352	0.272	0.222	0.202	0.882	1.142	1.882	3.382	3.912	16.7
2000	2.502	1.252	0.602	0.332	0.242	0.202	0.222	2.222	1.822	9.412	10.232	6.192	35.2
2001	2.882	1.362	0.622	0.422	0.362	0.282	0.352	1.032	2.252	6.202	5.532	3.092	24.4
2002	2.222	1.532	0.832	0.432	0.262	0.252	0.312	0.392	0.482	0.642	2.762	2.662	12.8
2003	2.122	1.442	0.812	0.492	0.322	0.232	0.312	0.562	1.622	2.512	5.752	3.512	19.7
2004	2.082	1.342	0.632	0.412	0.322	0.232	0.242	1.222	3.372	6.412	7.822	3.962	28.0
AVE :	2.32	1.38	0.73	0.40	0.29	0.27	0.56	1.62	3.43	5.00	5.08	3.71	24.8
SD :	0.66	0.32	0.18	0.10	0.08	0.15	0.71	1.59	2.87	3.38	2.50	1.41	9.4

Incremental Naturalised Flows at G1H004 (including G1H038)

File : G1H004.NAT
Units : Mm3
Descrip. : Simulated for 1927 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1927	0.693	8.203	6.663	2.833	0.713	3.343	2.933	1.153	40.883	30.393	18.163	17.773	133.7
1928	5.993	1.383	1.783	0.703	0.263	0.293	9.713	17.283	13.613	24.053	21.163	8.373	104.6
1929	3.563	1.923	3.173	2.313	1.613	6.083	4.043	1.193	1.223	16.463	22.453	32.613	96.6
1930	13.963	7.543	2.503	0.373	1.723	0.763	9.143	7.343	4.763	9.593	17.483	14.353	89.5
1931	14.193	4.143	0.373	0.313	5.293	2.033	0.393	18.873	19.323	16.683	12.413	10.553	104.6
1932	3.873	0.753	0.403	0.313	0.483	0.373	0.343	8.903	23.473	19.843	15.463	5.553	79.7
1933	4.823	1.793	0.313	0.243	0.373	1.663	0.873	14.633	10.513	10.023	8.013	8.233	61.5
1934	8.043	3.583	0.803	0.293	1.473	2.593	10.903	16.953	12.073	16.633	12.373	8.533	94.2
1935	2.903	2.033	0.823	6.093	2.573	0.653	0.423	6.553	7.943	10.443	18.053	16.393	74.9
1936	5.693	4.913	4.993	3.173	0.883	3.183	8.393	16.943	40.503	36.443	19.043	9.403	153.5
1937	6.403	2.973	0.723	6.553	2.663	0.593	11.603	22.523	14.313	15.703	14.793	20.503	119.3
1938	10.333	6.383	1.923	0.293	6.993	2.613	8.463	24.653	12.443	11.393	21.583	11.653	118.7
1939	3.393	4.763	6.813	2.083	4.233	6.443	13.793	17.653	24.843	19.723	14.503	12.743	130.9
1940	11.173	12.153	3.743	4.553	2.283	0.693	25.353	32.303	34.763	31.373	28.583	39.073	226.0
1941	18.663	4.633	2.463	1.643	0.553	0.283	2.413	23.823	52.693	29.923	22.883	9.833	169.8
1942	5.893	1.933	0.423	3.353	1.903	3.283	7.413	9.903	12.433	28.003	23.743	13.143	111.4
1943	10.803	6.113	1.403	0.683	0.413	0.653	8.803	30.993	38.833	36.583	24.143	18.763	178.2
1944	11.563	7.193	4.483	1.163	0.253	0.253	5.683	33.023	52.343	46.283	29.733	7.913	199.9
1945	6.913	4.623	1.863	0.863	0.473	2.683	7.313	14.183	14.093	17.853	22.353	29.953	123.1
1946	16.683	4.333	0.813	0.303	0.243	5.623	6.123	17.133	15.123	36.293	26.563	10.353	139.6
1947	8.313	2.863	0.453	0.263	0.373	1.533	4.533	19.473	21.743	26.323	18.593	22.323	126.8
1948	14.903	3.563	1.753	0.973	0.363	0.283	10.103	9.543	11.853	16.703	21.523	15.543	107.1
1949	9.223	9.083	2.753	0.343	0.253	0.303	19.663	8.323	11.613	44.623	18.233	16.153	140.5
1950	9.233	9.893	6.423	4.933	1.483	0.273	20.483	19.763	47.263	33.333	19.993	18.043	191.1
1951	11.623	9.583	2.673	0.283	0.313	3.923	8.003	13.833	11.393	17.603	33.143	27.813	140.2
1952	11.483	11.433	3.543	0.333	0.283	0.773	27.993	34.123	22.343	28.143	26.373	8.103	174.9
1953	3.333	8.043	2.803	0.773	0.773	2.143	15.663	38.963	28.583	44.493	36.113	12.133	193.8
1954	8.793	3.823	2.613	0.923	15.773	5.743	4.443	3.193	15.973	33.003	44.023	19.043	157.3
1955	13.483	12.733	3.553	0.483	0.313	2.523	9.583	19.873	36.553	38.673	31.543	15.913	185.2
1956	7.903	2.133	2.213	0.973	7.913	5.243	6.003	37.253	33.113	33.053	27.973	18.813	182.6
1957	18.743	5.653	0.483	0.873	8.103	4.023	6.163	30.323	21.813	10.903	20.053	11.113	138.2
1958	7.603	6.093	1.623	0.563	0.433	1.123	17.313	41.753	19.923	6.003	13.353	12.333	128.1
1959	10.023	2.873	0.973	1.393	0.793	5.743	4.743	16.303	32.353	12.603	6.473	6.493	100.7
1960	4.103	1.223	0.923	4.023	1.543	0.403	1.543	12.763	28.293	19.623	25.393	20.253	120.1
1961	8.633	1.833	1.033	0.703	3.243	8.413	12.753	7.713	46.643	32.133	36.433	17.683	177.2
1962	17.393	9.023	1.643	1.993	0.833	0.313	0.743	5.323	13.873	30.553	35.073	17.053	133.8
1963	3.993	5.563	7.183	2.063	9.183	3.323	3.333	13.693	24.203	21.673	23.423	10.403	128.0
1964	9.883	8.813	2.433	4.313	6.743	14.463	13.153	24.393	15.253	9.653	21.823	12.693	143.6
1965	5.043	1.533	5.643	2.063	0.623	15.133	10.773	10.243	18.463	28.093	23.683	13.853	135.1
1966	3.743	2.143	1.843	2.433	0.873	0.383	15.863	17.703	34.213	21.083	11.303	11.453	123.0
1967	12.003	8.743	2.253	4.713	2.313	0.483	14.983	20.093	25.763	27.633	21.033	7.593	147.6
1968	13.793	4.913	2.863	7.383	3.203	1.213	6.903	3.653	15.043	16.593	19.673	20.043	115.2
1969	14.003	3.673	0.453	0.423	0.533	0.353	0.313	25.043	33.643	25.473	26.913	16.923	147.7
1970	6.163	3.283	4.653	1.633	0.303	1.253	1.603	7.843	18.783	24.383	25.733	10.453	106.1
1971	5.613	1.893	1.903	3.223	1.473	0.633	17.203	18.313	16.293	12.603	12.933	12.163	104.2
1972	5.363	1.173	3.023	1.193	0.253	3.593	1.633	6.983	7.603	24.153	16.983	13.953	85.9
1973	8.093	3.133	6.433	2.223	0.303	0.313	0.343	18.453	30.313	21.163	42.553	22.593	155.9
1974	14.993	8.473	1.983	0.873	0.583	0.533	3.093	26.833	24.633	36.493	25.903	7.613	152.0
1975	7.583	4.533	1.013	0.283	0.253	2.533	5.053	7.433	36.033	37.183	21.213	15.113	138.2
1976	8.373	18.473	16.153	4.943	3.083	2.213	19.133	33.293	58.983	48.613	40.003	19.773	273.0
1977	6.813	1.703	3.523	2.363	1.013	2.043	9.253	12.333	5.683	6.193	29.203	21.213	101.3
1978	13.313	4.523	6.273	2.713	5.813	2.793	2.083	15.303	28.073	18.613	14.443	12.513	126.4
1979	19.493	6.203	0.443	2.483	3.613	1.203	8.693	18.543	28.123	12.333	14.783	11.603	127.5
1980	7.473	13.923	9.913	11.733	3.553	4.983	7.793	4.293	13.703	29.953	24.633	18.983	150.9
1981	8.413	5.063	2.253	2.543	0.953	0.373	12.033	14.653	20.423	26.403	17.073	7.133	117.3
1982	7.903	4.823	6.103	2.863	5.543	4.673	2.263	33.413	43.453	25.173	12.943	18.663	167.8
1983	6.733	0.903	0.553	0.523	0.353	5.943	7.473	26.873	13.373	15.613	9.323	13.783	101.4
1984	13.163	3.513	13.613	6.533	4.403	9.553	10.863	7.293	25.433	26.813	16.413	11.113	148.7
1985	5.643	1.493	0.503	0.793	0.973	5.963	7.143	6.653	19.473	18.313	34.733	20.023	121.7
1986	4.633	1.143	0.533	5.523	2.423	1.543	6.113	22.313	25.823	28.023	25.953	21.263	145.3
1987	7.983	2.073	6.343	2.243	0.273	1.333	12.023	16.653	17.003	22.463	24.433	18.543	131.3
1988	8.263	2.143	1.253	0.543	1.923	18.053	12.913	16.863	17.223	28.853	25.003	19.613	152.6
1989	12.393	8.973	2.403	0.443	2.783	1.123	26.483	19.573	29.733	37.063	17.573	6.473	165.0
1990	2.173	2.753	4.783	1.543	0.303	0.363	3.903	19.283	33.083	48.443	20.433	14.233	151.3
1991	8.693	2.393	0.513	0.273	2.263	3.003	12.333	13.733	39.803	29.393	16.953	13.263	142.6
1992	16.713	7.403	1.283	0.353	3.283	1.353	36.493	35.053	34.013	43.133	23.313	5.383	207.7
1993	0.983	0.443	0.553	0.873	0.443	0.283	3.193	5.643	38.543	28.003	11.033	10.973	100.9
1994	5.083	1.243	0.513	1.373	0.643	0.373	1.113	16.473	23.583	27.073	30.493	12.143	120.1
1995	15.343	5.413	6.113	2.203	3.523	4.043	5.843	5.763	34.703	32.773	25.893	24.143	165.7
1996	21.593	14.703	14.413	4.013	0.283	0.303	5.603	11.733	27.683	20.623	17.503	6.673	145.1
1997	3.063	18.573	6.463	1.423	0.613	0.683	6.313	38.363	28.873	21.003	14.713	7.653	147.7
1998	3.153	8.413	5.993	1.343	0.253	0.243	7.553	9.923	20.393	14.863	16.473	14.483	103.1
1999	4.423	1.873	0.743	2.313	1.273	0.683	0.473	11.553	14.013	21.353	22.243	22.373	103.3
2000	7.463	1.333	0.523	0.683	0.543	0.313	2.923	23.173	17.273	52.153	42.013	23.473	171.8
2001	11.963	3.363	0.633	12.193	6.203	1.063	7.173	18.693	26.213	35.273	23.343	12.313	158.4
2002	9.393	4.333	3.393	1.253	0.343	12.513	7.753	7.673	7.173	10.563	33.713	23.073	121.1
2003	12.673	3.253	4.203	4.453	1.253	0.803	10.673	4.483	16.603	17.183	20.833	11.813	108.2
2004	14.103	4.683	0.523	0.553	4.253	1.843	6.353	10.513	24.033	20.063	26.283	12.883	126.1
AVE :	9.07	5.18	3.13	2.20	2.14	2.83	8.59	17.12	24.13	25.18	22.47	15.06	137.1
SD :	4.69	3.95	3.20	2.37	2.66	3.57	6.99	9.88	12.11	10.71	8.07	6.42	35.6

Incremental Naturalised Flows at G1H008

File : G1H008.NAT
Units : Mm3
Descrip. : Simulated for 1927 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1927	1.715	1.285	0.815	0.515	0.425	0.415	0.405	0.405	13.245	2.885	5.205	5.955	33.2
1928	4.425	2.205	0.895	0.485	0.415	0.405	0.445	0.935	2.275	6.995	10.805	9.445	39.7
1929	5.415	2.255	0.985	0.615	0.525	0.485	0.445	0.445	0.445	0.585	1.015	6.575	19.7
1930	3.945	2.215	0.905	0.485	0.415	0.405	0.645	2.355	1.815	2.305	8.645	8.655	32.7
1931	6.805	2.965	1.035	0.585	4.045	0.895	0.565	1.225	3.325	5.455	7.415	7.995	42.3
1932	5.875	2.545	0.885	0.495	0.445	0.435	0.425	1.545	9.275	27.705	14.115	11.255	74.9
1933	6.845	2.875	1.065	0.555	0.435	0.445	0.435	1.125	2.265	3.115	3.555	6.115	28.8
1934	6.985	4.285	1.485	0.575	0.445	0.465	0.775	1.455	3.005	4.805	8.655	8.525	41.4
1935	5.055	2.295	0.945	0.535	0.455	0.425	0.415	1.195	1.015	2.195	5.145	8.755	28.4
1936	6.605	2.795	1.345	0.725	0.455	0.505	0.705	1.405	7.065	12.465	12.125	7.925	54.1
1937	4.535	2.045	0.765	0.505	0.435	0.415	0.985	1.985	2.475	3.525	5.115	6.665	29.4
1938	5.135	2.275	0.905	0.505	0.445	0.425	0.425	1.475	1.425	2.015	4.235	5.195	24.4
1939	3.665	1.645	0.735	0.465	0.445	0.435	0.545	0.685	2.785	3.065	3.085	3.515	21.0
1940	3.055	1.725	0.845	0.795	0.555	0.435	0.785	10.535	12.475	13.875	21.465	36.145	102.6
1941	11.875	5.365	1.515	0.645	0.445	0.405	0.405	1.605	39.615	8.105	9.015	7.225	86.2
1942	4.765	2.345	0.835	0.555	0.505	0.495	0.495	0.565	1.855	8.105	18.335	13.015	51.8
1943	8.845	4.455	1.585	0.615	0.455	0.425	0.485	5.665	14.545	9.205	20.265	13.055	79.5
1944	8.865	4.325	1.675	0.675	0.445	0.405	0.435	12.525	14.005	23.125	31.035	10.075	107.5
1945	5.525	2.655	1.015	0.525	0.425	0.415	0.435	0.615	0.885	1.225	1.785	10.135	25.6
1946	5.655	2.665	0.955	0.505	0.415	0.475	0.465	0.705	0.835	7.285	5.155	5.085	30.1
1947	4.455	2.455	0.865	0.475	0.435	1.035	0.925	2.035	2.965	8.895	8.215	11.705	44.4
1948	8.945	3.835	1.175	0.565	0.435	0.405	0.525	0.615	1.175	2.345	3.875	5.495	29.3
1949	6.305	6.175	2.425	0.775	0.465	0.415	4.285	1.185	1.385	15.045	6.775	14.505	59.7
1950	10.005	7.005	2.835	1.155	0.655	0.455	0.595	0.795	14.705	8.005	10.875	10.675	67.7
1951	7.775	4.185	1.495	0.575	0.445	0.435	0.435	6.995	4.285	11.355	31.715	12.625	82.3
1952	8.445	5.705	2.225	0.715	0.455	0.415	7.715	7.255	5.385	13.125	17.475	9.855	78.7
1953	4.985	2.925	1.545	0.735	0.485	0.435	1.035	34.935	7.565	46.275	54.695	11.245	166.8
1954	6.815	2.975	1.195	0.645	0.895	0.635	0.575	0.585	4.725	9.245	52.655	11.255	92.1
1955	9.785	5.235	1.675	0.715	0.495	0.435	0.415	0.855	3.935	4.355	6.325	6.075	40.2
1956	3.815	1.625	0.735	0.495	1.225	0.695	0.695	9.845	10.565	26.865	31.165	11.605	99.3
1957	15.715	6.445	1.515	0.585	0.485	0.445	0.435	1.645	1.675	1.945	3.955	4.195	39.0
1958	3.175	1.765	0.765	0.465	0.425	0.425	1.065	15.635	5.155	4.575	6.915	6.925	47.2
1959	5.885	2.965	1.055	0.575	0.425	0.425	0.465	0.935	3.135	3.345	3.265	2.915	25.3
1960	2.145	1.155	0.615	0.475	0.425	0.405	0.425	0.515	0.745	1.525	3.385	7.145	18.9
1961	5.115	1.955	0.715	0.465	0.435	0.665	0.855	1.165	29.925	11.875	51.755	11.285	116.2
1962	15.015	7.135	2.075	0.675	0.445	0.415	0.405	0.405	0.915	2.165	17.345	8.055	55.0
1963	4.365	2.735	1.485	0.675	0.465	0.425	0.435	0.555	4.435	4.755	12.785	12.365	45.4
1964	8.695	4.685	1.735	0.655	0.755	0.945	1.055	2.075	2.645	3.095	4.025	3.935	34.2
1965	2.945	1.595	0.765	0.495	0.415	0.485	0.545	0.675	3.035	9.035	8.735	8.005	36.7
1966	4.945	1.835	0.695	0.455	0.415	0.395	0.685	0.665	13.255	6.435	7.815	7.385	44.9
1967	5.685	3.245	1.225	0.545	0.435	0.405	0.735	3.755	6.985	11.095	14.455	9.895	58.4
1968	11.925	5.585	1.585	0.615	0.455	0.425	0.515	0.535	0.715	1.045	2.175	3.065	28.6
1969	4.365	2.545	0.875	0.475	0.415	0.405	0.395	1.125	6.225	6.245	10.525	10.125	43.7
1970	6.555	2.675	0.885	0.505	0.415	0.465	0.455	0.475	0.985	2.955	4.635	4.255	25.2
1971	2.425	1.145	0.575	0.445	0.415	0.405	0.715	1.815	2.865	5.125	5.705	5.005	26.6
1972	3.655	1.645	0.795	0.535	0.425	0.425	0.425	0.475	0.545	9.345	5.145	6.405	29.8
1973	5.025	2.265	0.965	0.565	0.425	0.405	0.405	5.155	5.125	6.535	90.785	13.685	131.3
1974	10.165	5.015	1.595	0.665	0.475	0.425	0.455	7.695	2.885	4.765	7.265	6.285	47.6
1975	4.815	2.645	0.905	0.495	0.435	0.415	3.525	1.325	18.865	12.735	13.235	9.595	68.9
1976	5.585	7.055	3.495	1.355	0.675	0.535	0.725	10.475	12.395	50.545	30.975	11.785	135.5
1977	7.145	2.855	0.955	0.515	0.425	0.425	0.475	0.515	0.545	0.545	2.815	2.275	19.4
1978	1.845	0.935	0.545	0.455	0.475	0.445	0.415	0.585	1.275	2.845	3.775	4.065	17.6
1979	3.555	1.805	0.695	0.485	0.445	0.415	0.425	0.635	1.235	1.575	2.415	2.495	16.1
1980	1.875	11.805	3.185	4.125	1.395	0.705	0.635	0.625	0.705	6.225	6.255	12.325	49.8
1981	8.455	3.315	1.035	0.575	0.475	0.475	5.725	2.085	3.815	5.105	4.945	3.485	39.4
1982	2.585	1.635	0.795	0.495	0.535	0.545	0.515	15.165	10.275	12.325	11.845	9.045	65.7
1983	5.555	2.465	0.975	0.505	0.415	2.215	0.915	22.975	5.535	6.565	7.065	14.275	69.4
1984	10.935	4.805	2.155	1.255	1.005	4.085	2.175	2.425	3.845	12.035	23.875	12.455	81.0
1985	7.185	2.505	0.885	0.515	0.425	0.425	0.435	0.455	2.265	3.485	10.545	9.305	38.4
1986	5.645	2.345	0.865	0.475	0.415	0.405	0.435	6.145	6.925	8.585	10.915	10.205	53.3
1987	5.865	2.065	0.795	0.485	0.415	0.405	2.675	1.035	2.605	3.465	5.275	6.575	31.6
1988	4.635	1.865	0.725	0.475	0.435	1.415	1.155	1.645	5.675	7.945	18.685	18.285	62.9
1989	10.225	4.495	1.335	0.565	0.475	0.455	2.385	5.095	7.605	12.725	13.525	9.105	67.9
1990	4.255	1.835	0.885	0.535	0.425	0.405	0.415	0.535	7.775	35.055	12.835	11.095	76.0
1991	8.275	3.775	1.315	0.595	0.485	0.485	0.765	1.065	8.655	9.995	14.315	11.125	60.8
1992	8.645	4.475	1.365	0.575	0.455	0.425	5.005	5.305	6.885	34.825	13.355	9.215	90.5
1993	4.625	1.915	0.835	0.485	0.415	0.395	0.745	0.735	16.525	7.985	7.765	8.115	50.5
1994	6.145	2.435	0.825	0.475	0.415	0.405	0.405	2.865	2.085	5.945	9.765	8.475	40.2
1995	6.505	3.555	2.085	1.005	0.595	0.525	0.515	0.705	4.325	10.035	24.925	12.895	67.6
1996	8.645	4.785	2.545	1.075	0.535	0.435	0.435	0.525	10.505	4.075	4.595	3.815	41.9
1997	2.255	1.885	1.135	0.785	0.565	0.435	0.415	2.035	1.785	3.895	4.775	3.805	23.7
1998	2.475	1.945	1.185	0.615	0.435	0.405	0.485	0.635	0.995	1.835	8.225	10.035	29.2
1999	6.655	2.405	0.905	0.515	0.425	0.405	0.395	0.415	0.555	6.185	4.365	8.335	31.5
2000	5.595	2.185	0.835	0.475	0.415	0.405	0.415	2.445	1.495	25.465	12.045	16.065	67.8
2001	9.695	4.145	1.295	0.805	0.645	0.525	0.735	4.645	3.935	9.055	17.425	16.995	69.8
2002	9.845	4.335	1.435	0.655	0.475	0.445	0.475	0.565	0.625	0.645	12.885	4.945	37.3
2003	4.175	1.975	0.825	0.575	0.455	0.415	0.485	0.505	1.065	1.855	3.185	3.525	19.0
2004	4.385	2.525	0.855	0.495	0.425	0.405	1.355	0.835	2.025	3.005	16.405	9.665	42.3
AVE :	6.18	3.21	1.21	0.64	0.54	0.54	0.94	3.25	5.58	8.92	12.99	8.98	53.0
SD :	2.88	1.79	0.59	0.44	0.44	0.48	1.26	5.48	6.52	9.68	14.16	4.73	30.0

Incremental Naturalised Flows at G1H011

File : G1H011.NAT
Units : Mm3
Descrip. : Simulated for 1927 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1927	0.119	0.579	0.539	0.049	0.039	0.039	0.039	0.029	3.399	3.989	1.849	2.329	12.9
1928	1.249	0.189	0.039	0.029	0.029	0.029	0.759	1.649	1.849	2.839	3.429	1.849	13.8
1929	0.409	0.119	0.099	0.099	0.059	0.049	0.049	0.059	0.049	0.739	1.979	3.649	7.3
1930	2.669	0.339	0.079	0.029	0.029	0.029	0.619	1.949	1.639	0.909	4.089	4.549	16.8
1931	1.539	0.519	0.079	0.039	1.949	1.959	0.049	1.359	2.669	2.859	2.229	1.339	16.5
1932	0.799	0.189	0.039	0.029	0.039	0.039	0.029	0.679	3.329	5.429	3.909	1.539	15.9
1933	0.579	0.229	0.059	0.039	0.029	0.089	0.099	0.879	1.769	1.799	1.879	2.319	9.7
1934	2.309	1.239	0.269	0.039	0.029	0.069	0.419	1.329	1.629	2.619	3.499	2.489	15.8
1935	1.129	0.299	0.139	0.059	0.059	0.029	0.029	0.959	1.139	1.209	2.779	2.879	10.6
1936	1.289	0.219	0.519	0.509	0.029	0.179	0.479	1.329	3.439	5.659	3.869	0.859	18.3
1937	0.339	0.139	0.049	0.419	0.419	0.039	0.539	2.469	2.589	1.329	1.799	2.329	12.4
1938	1.439	0.269	0.059	0.029	0.369	0.379	0.159	1.599	1.729	0.859	2.499	2.499	11.8
1939	0.729	0.169	0.069	0.059	0.079	0.089	0.429	0.689	1.839	2.379	1.379	0.949	8.8
1940	0.559	0.399	0.249	0.179	0.179	0.029	1.029	3.989	5.959	4.439	3.309	4.699	24.9
1941	3.729	0.949	0.089	0.029	0.029	0.029	0.029	1.759	7.299	6.379	1.969	1.419	23.6
1942	0.419	0.179	0.059	0.089	0.089	0.059	0.139	0.279	1.539	3.929	5.129	3.699	15.5
1943	1.389	0.479	0.259	0.039	0.029	0.029	0.259	1.769	6.519	5.819	2.689	2.689	21.9
1944	1.069	0.349	0.129	0.039	0.029	0.029	0.259	2.749	6.279	6.229	4.029	1.849	22.9
1945	0.349	0.099	0.039	0.029	0.029	0.029	0.089	0.289	0.459	0.879	1.689	3.659	7.5
1946	2.969	0.399	0.069	0.029	0.029	0.209	0.229	0.199	0.389	3.249	4.119	1.459	13.2
1947	0.629	0.299	0.059	0.029	0.029	0.809	1.329	2.129	2.469	3.179	2.779	2.299	15.9
1948	2.219	0.469	0.079	0.029	0.029	0.029	0.269	0.679	1.309	2.469	3.129	2.909	13.5
1949	2.109	1.119	0.379	0.039	0.029	0.029	1.829	1.899	0.209	3.489	3.719	1.869	16.6
1950	1.819	0.929	0.679	0.309	0.279	0.029	0.909	1.319	3.729	5.019	2.649	1.659	19.2
1951	1.109	0.939	0.589	0.039	0.039	0.049	0.069	1.809	2.569	2.219	4.449	4.049	17.8
1952	1.349	0.889	0.579	0.039	0.029	0.029	2.129	4.499	2.879	3.089	3.789	1.419	20.6
1953	0.269	0.239	0.239	0.059	0.029	0.029	0.929	3.519	3.569	4.399	5.679	2.789	21.6
1954	0.759	0.259	0.079	0.059	0.489	0.499	0.089	0.129	1.749	4.119	7.049	4.989	20.2
1955	1.039	1.339	0.699	0.039	0.029	0.029	0.039	0.719	3.029	4.039	3.209	1.849	15.9
1956	0.479	0.159	0.039	0.029	1.459	1.579	0.189	3.029	6.089	6.599	5.549	2.659	27.8
1957	2.389	1.859	0.089	0.029	0.139	0.139	0.049	1.699	2.519	1.249	2.049	2.059	14.2
1958	0.629	0.319	0.109	0.029	0.029	0.039	1.049	6.279	5.749	0.809	1.689	1.739	18.4
1959	1.199	0.919	0.079	0.029	0.029	0.039	0.179	1.959	4.299	2.979	0.769	0.479	12.9
1960	0.269	0.109	0.039	0.089	0.089	0.029	0.059	1.129	2.109	1.919	2.519	3.419	11.7
1961	1.989	0.219	0.039	0.029	0.059	0.109	0.269	0.349	5.299	6.619	4.489	3.509	22.9
1962	1.949	1.619	0.189	0.039	0.029	0.029	0.029	0.029	0.569	2.099	5.729	4.539	16.7
1963	0.429	0.169	0.179	0.109	0.289	0.289	0.159	0.609	3.229	4.019	4.479	3.609	17.5
1964	0.589	0.569	0.399	0.039	0.139	0.699	0.799	0.559	0.909	0.959	0.859	0.679	7.1
1965	0.339	0.149	0.059	0.049	0.029	0.239	0.389	0.239	1.469	3.839	3.049	1.369	11.1
1966	0.909	0.149	0.039	0.029	0.029	0.029	0.369	0.519	3.199	4.109	1.679	1.049	12.0
1967	0.789	0.519	0.199	0.039	0.029	0.029	0.839	2.989	4.009	3.849	3.569	1.799	18.6
1968	2.169	2.009	0.089	0.029	0.029	0.029	0.199	0.269	0.379	0.599	1.189	1.529	8.4
1969	1.579	1.009	0.089	0.029	0.029	0.029	0.029	0.929	3.119	4.039	3.939	2.639	17.4
1970	0.689	0.199	0.049	0.029	0.029	0.209	0.209	0.079	1.149	2.279	2.969	2.019	9.8
1971	0.299	0.069	0.029	0.029	0.029	0.029	1.049	1.959	1.619	1.469	1.569	1.229	9.3
1972	0.719	0.339	0.079	0.049	0.029	0.039	0.039	0.149	0.229	2.969	4.539	2.709	11.8
1973	1.299	0.289	0.079	0.049	0.029	0.029	0.029	1.349	3.699	3.539	7.319	7.349	25.0
1974	2.199	1.169	0.199	0.039	0.029	0.029	0.149	3.039	3.479	2.099	3.309	2.049	17.7
1975	1.089	0.879	0.089	0.029	0.029	0.029	0.169	0.269	4.199	5.979	2.479	0.829	16.0
1976	0.309	2.409	2.859	0.549	0.059	0.049	0.539	3.999	7.039	7.259	6.529	3.259	34.8
1977	0.569	0.159	0.119	0.109	0.029	0.079	0.239	0.519	0.559	0.329	2.109	3.069	7.8
1978	1.239	0.179	0.039	0.039	0.589	0.599	0.039	0.579	2.569	3.229	2.159	2.199	13.4
1979	2.059	0.869	0.079	0.039	0.039	0.029	0.179	1.019	2.059	1.559	1.599	1.469	10.9
1980	0.359	1.869	2.819	2.459	1.429	0.049	0.079	0.089	0.609	3.009	4.659	3.829	21.2
1981	1.809	0.249	0.049	0.089	0.089	0.049	1.209	1.549	1.109	1.689	1.479	0.679	9.9
1982	0.719	0.609	0.079	0.039	0.039	0.049	0.049	2.569	4.749	5.019	3.379	0.979	18.2
1983	0.509	0.119	0.039	0.029	0.029	1.019	1.099	4.519	5.369	1.769	1.439	2.659	18.5
1984	3.109	1.139	0.429	0.419	0.089	1.239	1.589	1.009	2.319	4.159	4.529	2.779	22.7
1985	0.889	0.169	0.039	0.029	0.029	0.249	0.299	0.319	1.699	2.909	4.999	4.199	15.7
1986	0.829	0.189	0.049	0.029	0.029	0.029	0.139	2.339	4.129	3.819	3.729	2.469	17.7
1987	0.769	0.149	0.039	0.039	0.029	0.029	1.229	1.539	2.349	2.839	2.219	2.229	13.4
1988	0.969	0.179	0.039	0.029	0.099	1.029	1.109	0.689	1.859	2.689	3.549	4.259	16.4
1989	2.459	0.479	0.129	0.039	0.039	0.049	1.449	2.799	2.889	3.989	3.319	1.079	18.6
1990	0.269	0.069	0.079	0.059	0.029	0.029	0.079	0.989	3.629	7.059	4.969	2.319	19.5
1991	2.079	0.429	0.079	0.029	0.099	0.109	0.759	0.909	3.819	5.709	3.479	1.909	19.3
1992	2.049	1.659	0.109	0.029	0.039	0.039	1.349	3.359	3.519	5.219	4.229	0.719	22.2
1993	0.269	0.079	0.039	0.039	0.029	0.029	0.389	0.619	5.079	6.279	1.829	1.709	16.3
1994	1.529	0.239	0.049	0.029	0.029	0.029	0.029	0.909	2.059	3.159	3.479	1.789	13.2
1995	1.959	1.729	0.459	0.409	0.049	0.049	0.059	0.609	3.979	5.799	5.109	5.499	25.6
1996	3.299	1.599	1.349	0.289	0.039	0.029	0.039	0.329	3.529	3.839	2.189	1.829	18.3
1997	0.299	0.299	0.279	0.119	0.109	0.029	0.029	3.069	3.809	2.259	2.189	0.989	13.4
1998	0.409	0.819	0.809	0.109	0.029	0.029	0.039	0.159	1.139	1.509	1.509	2.719	9.2
1999	1.869	0.179	0.039	0.029	0.029	0.029	0.029	0.099	0.489	2.729	3.279	2.609	11.3
2000	1.829	0.199	0.049	0.029	0.029	0.029	0.139	1.889	2.249	5.059	6.739	3.739	21.9
2001	1.799	0.309	0.089	0.409	0.419	0.049	0.049	1.749	2.429	3.629	4.779	2.289	17.9
2002	0.629	0.269	0.089	0.039	0.029	0.039	0.059	0.079	0.109	0.259	2.789	3.079	7.4
2003	0.889	0.459	0.139	0.109	0.039	0.029	0.419	0.459	0.849	1.879	2.009	1.269	8.4
2004	0.739	0.449	0.069	0.029	0.029	0.029	0.869	1.099	2.329	3.159	4.549	4.009	17.3
AVE :	1.21	0.56	0.23	0.11	0.13	0.17	0.42	1.40	2.72	3.32	3.29	2.45	16.0
SD :	0.83	0.54	0.48	0.29	0.32	0.36	0.49	1.27	1.75	1.77	1.48	1.27	5.4

Incremental Naturalised Flows at G1H013

File : G1H013.NAT
Units : Mm3
Descrip. : Simulated for 1927 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1927	3.261	2.261	0.460	0.150	0.050	0.040	0.030	0.030	9.060	3.781	5.091	5.541	29.8
1928	4.211	2.361	0.400	0.110	0.020	0.020	0.160	1.170	2.270	6.881	7.521	6.741	31.9
1929	4.511	2.471	0.470	0.200	0.130	0.090	0.090	0.110	0.150	1.771	2.511	12.271	24.8
1930	5.161	3.111	0.610	0.110	0.050	0.030	0.940	1.840	2.120	3.881	10.481	8.621	37.0
1931	6.721	3.381	0.510	0.130	1.810	0.410	0.150	4.000	4.150	6.831	7.931	8.671	44.7
1932	6.411	3.141	0.490	0.140	0.070	0.060	0.040	0.860	12.150	19.271	18.741	9.991	71.4
1933	6.571	3.411	0.660	0.190	0.080	0.210	0.230	1.760	2.070	4.181	5.161	6.681	31.2
1934	6.031	3.881	0.810	0.140	0.030	0.050	0.380	1.750	2.400	6.211	8.051	8.251	38.0
1935	5.861	3.161	0.590	0.230	0.130	0.080	0.060	0.790	0.980	3.421	5.511	8.021	28.8
1936	5.711	2.891	0.630	0.220	0.050	0.230	0.460	1.190	9.290	15.711	11.491	8.531	56.4
1937	5.481	2.881	0.400	0.130	0.060	0.030	0.550	1.390	1.970	3.931	4.911	5.921	27.7
1938	4.741	2.601	0.490	0.150	0.090	0.060	0.080	2.320	1.770	4.131	6.541	6.481	29.5
1939	4.551	2.531	0.400	0.100	0.260	0.220	0.540	1.110	5.000	5.861	5.901	5.691	32.2
1940	4.721	3.031	0.630	0.240	0.120	0.050	1.880	21.630	16.070	39.311	39.991	47.531	175.2
1941	9.691	4.891	0.970	0.240	0.060	0.020	0.050	4.880	62.550	10.171	11.671	9.841	115.0
1942	6.581	3.371	0.510	0.220	0.160	0.230	0.240	0.410	1.310	7.921	12.401	10.421	43.8
1943	7.551	4.111	0.850	0.190	0.060	0.030	0.140	8.280	39.340	10.951	62.461	11.041	145.0
1944	8.171	4.441	1.060	0.260	0.050	0.020	0.170	25.090	17.230	65.921	50.581	9.421	182.4
1945	5.681	2.991	0.480	0.110	0.030	0.040	0.120	0.670	1.190	3.711	4.971	18.121	38.1
1946	7.851	3.971	0.700	0.140	0.030	0.220	0.240	0.580	1.060	15.271	7.681	6.891	44.6
1947	4.951	2.861	0.420	0.070	0.030	0.510	0.480	1.770	2.400	13.971	9.011	11.731	48.2
1948	8.621	4.351	0.780	0.190	0.050	0.020	0.420	0.710	2.170	5.901	7.861	8.621	39.7
1949	6.961	4.391	1.060	0.200	0.040	0.020	7.010	1.360	1.690	40.301	9.081	11.871	84.0
1950	8.151	4.721	1.260	0.410	0.130	0.030	1.050	1.090	26.200	9.921	11.631	10.641	75.2
1951	7.611	4.381	0.960	0.170	0.050	0.050	0.120	6.330	3.960	10.791	60.141	15.891	110.5
1952	8.621	5.531	1.390	0.250	0.050	0.040	10.860	9.480	5.440	13.611	51.931	9.401	116.6
1953	5.441	3.041	0.660	0.170	0.060	0.050	0.520	59.710	6.790	86.851	67.611	10.441	241.3
1954	7.281	3.671	0.730	0.210	0.880	0.340	0.260	0.390	2.820	10.401	70.241	10.441	107.7
1955	8.041	4.551	0.940	0.220	0.070	0.040	0.070	2.480	7.870	9.041	11.321	9.631	54.3
1956	6.291	3.161	0.490	0.110	0.630	0.330	0.270	12.760	10.820	56.931	39.431	10.361	141.6
1957	12.361	5.421	0.890	0.160	0.120	0.090	0.120	2.620	2.240	3.721	5.881	5.501	39.1
1958	4.281	2.691	0.410	0.080	0.040	0.050	1.040	48.580	5.680	6.781	10.071	8.741	88.4
1959	6.771	3.641	0.590	0.130	0.030	0.070	0.180	2.480	5.390	5.791	5.581	4.831	35.5
1960	3.571	2.151	0.310	0.130	0.070	0.050	0.100	0.440	2.190	4.171	6.981	10.951	31.1
1961	7.031	3.211	0.430	0.110	0.090	0.140	0.630	0.850	45.310	9.361	34.631	10.211	112.0
1962	11.121	5.641	1.180	0.220	0.050	0.030	0.030	0.050	1.160	5.151	21.601	9.191	55.4
1963	5.701	3.351	0.900	0.230	0.120	0.090	0.090	0.410	5.040	6.661	11.131	9.461	43.2
1964	6.841	4.401	1.050	0.240	0.310	0.740	0.880	1.570	2.360	4.111	5.121	4.931	32.6
1965	3.731	2.291	0.370	0.110	0.030	0.190	0.310	0.470	1.950	10.761	8.191	8.041	36.4
1966	5.461	2.621	0.350	0.100	0.040	0.010	0.670	0.680	16.390	7.031	7.831	7.241	48.4
1967	5.681	3.501	0.680	0.180	0.070	0.030	1.310	4.310	6.430	13.471	28.751	9.451	73.9
1968	9.401	4.641	0.800	0.210	0.090	0.060	0.260	0.360	0.770	2.561	3.861	4.741	27.8
1969	5.181	3.121	0.440	0.090	0.030	0.010	0.010	1.610	7.700	8.051	10.181	9.381	45.8
1970	6.481	3.251	0.530	0.140	0.040	0.060	0.080	0.160	0.930	3.781	6.831	5.761	28.0
1971	3.751	2.161	0.260	0.100	0.060	0.050	0.380	1.520	2.600	5.041	5.681	5.381	27.0
1972	3.981	2.191	0.410	0.160	0.030	0.120	0.130	0.260	0.440	16.981	6.381	6.961	38.0
1973	5.451	3.071	0.720	0.230	0.060	0.030	0.030	8.260	13.150	8.591	148.271	11.771	199.6
1974	9.431	5.051	0.990	0.290	0.120	0.050	0.430	9.350	3.610	8.541	9.661	8.161	55.7
1975	5.991	3.501	0.580	0.110	0.030	0.030	1.400	1.010	23.750	10.341	10.781	9.281	66.8
1976	6.051	6.791	2.010	0.640	0.280	0.220	0.920	18.040	19.700	97.181	51.701	10.991	214.5
1977	7.541	3.801	0.830	0.240	0.080	0.130	0.350	0.590	0.690	1.901	5.151	4.661	26.0
1978	3.921	2.311	0.490	0.250	0.220	0.150	0.090	1.050	2.730	4.661	5.341	5.601	26.8
1979	5.031	2.951	0.390	0.140	0.100	0.050	0.130	1.470	2.370	4.181	5.611	5.311	27.7
1980	3.801	10.721	1.820	0.890	0.350	0.190	0.300	0.400	0.710	14.201	12.081	14.611	60.1
1981	8.411	3.911	0.700	0.270	0.130	0.130	2.800	1.790	4.400	6.781	8.261	7.001	44.6
1982	5.051	3.051	0.660	0.230	0.210	0.270	0.240	14.220	10.530	11.071	11.131	9.721	66.4
1983	6.601	3.281	0.590	0.140	0.050	0.330	0.420	28.430	4.630	6.851	7.211	10.631	69.2
1984	8.941	4.571	1.570	0.700	0.410	1.800	1.250	1.760	4.060	12.621	13.141	10.961	61.8
1985	7.351	3.371	0.560	0.150	0.050	0.110	0.220	0.490	5.890	8.251	22.551	11.021	60.0
1986	7.361	3.591	0.630	0.180	0.090	0.060	0.220	7.400	6.920	19.011	54.881	11.591	111.9
1987	7.771	3.501	0.710	0.210	0.050	0.050	2.090	1.190	2.500	5.601	8.991	8.931	41.6
1988	6.311	3.111	0.520	0.140	0.090	0.740	0.980	1.740	3.270	8.741	12.281	20.521	58.4
1989	9.071	4.751	0.950	0.200	0.120	0.070	8.320	5.540	9.090	33.291	11.971	9.421	92.8
1990	5.481	2.741	0.530	0.170	0.050	0.030	0.070	0.560	7.720	45.321	11.411	12.491	86.6
1991	10.491	5.371	1.020	0.200	0.100	0.160	0.350	0.910	19.300	10.781	11.471	10.261	70.4
1992	9.121	4.861	0.870	0.170	0.090	0.070	7.680	7.780	7.420	74.991	20.591	10.071	143.7
1993	6.051	2.831	0.450	0.120	0.030	0.010	0.310	0.550	44.180	8.091	7.851	7.351	77.8
1994	5.681	2.931	0.410	0.100	0.040	0.040	0.060	0.720	4.110	15.991	22.571	9.711	62.4
1995	7.841	4.241	1.570	0.480	0.260	0.240	0.250	0.630	7.170	7.581	15.401	40.211	85.9
1996	9.531	5.901	1.890	0.570	0.130	0.050	0.070	0.380	14.750	5.911	7.201	6.191	52.6
1997	3.741	2.351	0.480	0.200	0.080	0.030	0.050	6.940	2.620	5.121	6.121	5.511	33.2
1998	3.841	2.691	0.780	0.240	0.050	0.010	0.170	0.780	2.080	4.781	17.941	27.821	61.2
1999	8.001	3.581	0.680	0.190	0.050	0.020	0.020	0.080	0.420	5.281	5.181	8.661	32.2
2000	5.681	2.971	0.520	0.110	0.040	0.010	0.050	3.640	2.080	46.831	39.201	13.631	114.8
2001	9.131	4.581	0.800	0.650	0.350	0.170	0.260	5.210	3.370	9.471	16.051	11.221	61.3
2002	8.241	4.241	0.830	0.210	0.060	0.100	0.250	0.470	0.590	1.891	19.631	6.521	43.0
2003	5.361	2.931	0.520	0.250	0.090	0.040	0.450	0.420	2.740	5.501	6.981	6.561	31.8
2004	7.871	3.991	0.610	0.180	0.080	0.030	0.620	0.920	4.440	5.481	15.051	9.691	49.0
AVE :	6.58	3.68	0.73	0.21	0.13	0.14	0.83	4.81	7.82	14.42	18.31	10.26	67.9
SD :	1.94	1.27	0.36	0.15	0.23	0.24	1.88	9.83	11.07	19.05	22.25	6.59	46.9

Incremental Naturalised Flows at G1H019

File : G1H019.NAT
Units : Mm3
Descrip. : Simulated for 1927 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1927	0.293	0.923	0.713	0.293	0.083	0.073	0.093	0.103	3.533	2.193	3.963	4.613	16.8
1928	1.833	0.513	0.243	0.083	0.023	0.023	2.003	2.473	1.843	4.233	4.443	1.963	19.6
1929	0.743	0.423	1.373	0.603	0.193	0.173	0.253	0.233	0.353	2.073	4.513	6.303	17.2
1930	2.763	1.203	0.423	0.073	0.083	0.053	1.893	2.863	2.453	3.843	5.263	5.003	25.9
1931	4.213	1.373	0.233	0.123	1.283	0.603	0.293	2.213	4.783	4.623	2.843	2.153	24.7
1932	1.223	0.473	0.223	0.113	0.063	0.043	0.073	0.553	3.473	4.553	5.043	2.083	17.9
1933	0.973	0.473	0.123	0.033	0.043	0.133	0.123	3.093	2.263	1.483	3.013	2.883	14.6
1934	1.883	1.483	0.523	0.113	0.053	0.113	0.793	2.803	1.803	3.733	3.663	2.053	19.0
1935	1.213	1.533	0.573	0.323	0.173	0.493	0.293	1.753	1.423	2.143	3.263	3.413	16.6
1936	1.443	0.623	0.343	0.193	0.083	0.143	0.493	1.963	7.083	7.253	3.933	1.753	25.3
1937	1.123	0.613	0.193	0.503	0.233	0.073	1.343	3.653	2.583	2.813	2.733	3.753	19.6
1938	1.883	0.713	0.243	0.053	0.403	0.193	0.753	2.753	1.713	1.943	3.833	1.973	16.4
1939	0.763	0.493	0.473	0.193	0.113	0.373	1.803	2.103	4.343	3.453	2.133	1.863	18.1
1940	1.603	1.303	0.483	0.193	0.123	0.073	3.523	4.803	6.473	5.783	5.233	7.033	36.6
1941	3.003	0.793	0.293	0.143	0.063	0.023	0.113	3.543	8.403	5.323	4.083	1.893	27.6
1942	0.903	0.403	0.113	0.213	0.163	0.163	0.603	1.343	1.923	5.503	4.513	2.173	18.0
1943	1.593	0.873	0.273	0.083	0.033	0.033	0.573	5.003	6.803	6.383	4.303	3.813	29.7
1944	1.863	0.803	0.343	0.103	0.023	0.023	0.243	3.303	7.673	5.903	4.553	1.743	26.5
1945	0.983	1.413	0.573	0.113	0.043	0.103	0.423	1.053	1.993	3.383	3.143	4.963	18.1
1946	2.453	0.763	0.253	0.063	0.023	0.203	0.243	2.173	1.643	6.213	3.903	1.803	19.7
1947	1.113	0.523	0.163	0.043	0.023	0.093	0.203	1.783	2.613	4.743	2.763	3.053	17.1
1948	2.373	0.843	0.253	0.103	0.043	0.023	0.593	0.703	1.263	2.493	2.893	2.363	13.9
1949	1.663	1.123	0.543	0.163	0.043	0.033	1.853	1.213	1.163	7.303	3.353	1.753	20.2
1950	1.613	1.183	0.593	0.363	0.143	0.043	1.643	2.223	6.053	6.213	3.873	2.363	26.3
1951	2.153	1.543	0.483	0.073	0.033	0.093	0.423	1.323	1.293	2.593	3.473	3.833	17.3
1952	1.803	0.863	0.403	0.123	0.043	0.043	4.193	5.163	3.193	6.143	4.543	2.223	28.7
1953	1.103	1.073	0.433	0.113	0.053	0.093	1.413	3.903	4.823	9.223	7.493	2.503	32.2
1954	1.273	0.643	0.313	0.113	1.173	0.723	0.543	0.453	2.213	5.323	6.253	4.433	23.4
1955	3.293	1.773	0.503	0.133	0.053	0.113	0.363	2.793	4.333	5.873	6.493	2.713	28.4
1956	1.003	0.463	0.193	0.093	0.633	0.343	0.443	3.993	3.953	5.983	6.723	3.163	27.0
1957	3.883	1.533	0.203	0.053	0.503	0.483	0.493	4.043	5.483	2.713	3.283	2.673	25.3
1958	1.733	0.793	0.233	0.093	0.043	0.053	2.063	6.883	5.353	1.993	1.943	2.443	23.6
1959	1.993	0.803	0.243	0.103	0.073	0.253	0.473	2.933	5.953	2.513	1.093	1.383	17.8
1960	0.943	0.363	0.113	0.233	0.143	0.073	0.103	0.933	4.703	3.013	4.783	4.043	19.4
1961	1.803	0.563	0.143	0.063	0.123	0.663	1.133	0.873	5.613	5.283	7.463	3.073	26.8
1962	2.053	1.743	0.573	0.133	0.053	0.023	0.063	0.393	1.513	4.023	7.533	3.193	21.3
1963	1.003	0.733	0.573	0.203	0.273	0.193	0.213	1.253	3.553	3.863	4.413	1.943	18.2
1964	1.573	0.953	0.363	0.163	0.273	1.133	1.393	2.493	2.683	1.863	4.453	2.403	19.7
1965	0.973	0.423	0.273	0.143	0.093	0.923	1.583	1.233	2.263	5.703	3.813	2.993	20.4
1966	1.253	0.363	0.163	0.133	0.073	0.043	1.183	2.483	6.513	3.663	2.993	1.813	20.6
1967	1.853	1.003	0.333	0.313	0.163	0.063	0.863	3.383	5.003	4.173	5.123	2.213	24.5
1968	1.833	0.823	0.273	0.263	0.203	0.173	0.513	0.463	1.203	2.373	3.483	3.523	15.1
1969	1.763	0.663	0.223	0.063	0.043	0.033	0.033	2.333	4.193	5.733	4.533	3.673	23.3
1970	1.493	0.493	0.323	0.153	0.053	0.043	0.123	0.733	1.653	3.693	4.643	2.453	15.8
1971	1.083	0.483	0.193	0.123	0.103	0.083	1.723	3.553	2.443	2.353	2.853	2.193	17.2
1972	1.113	0.393	0.163	0.063	0.023	0.163	0.113	0.343	0.683	2.423	3.753	2.223	11.4
1973	1.253	0.753	0.363	0.123	0.043	0.033	0.033	1.673	3.793	4.583	7.383	5.403	25.4
1974	2.483	1.053	0.363	0.123	0.063	0.053	0.203	3.543	3.853	5.943	4.873	1.763	24.3
1975	1.083	0.583	0.173	0.043	0.023	0.053	0.153	0.583	6.103	5.353	4.833	3.323	22.3
1976	1.413	3.453	2.923	0.783	0.133	0.113	2.353	3.623	9.983	9.043	8.243	3.543	45.6
1977	1.113	0.413	0.273	0.173	0.093	0.073	1.013	1.413	0.993	1.003	5.463	4.043	16.0
1978	1.963	0.813	0.393	0.273	0.363	0.223	0.183	1.293	4.673	3.463	2.373	1.643	17.6
1979	2.883	1.233	0.203	0.113	0.093	0.053	0.583	2.253	4.433	2.173	2.553	1.633	18.2
1980	0.903	1.303	0.793	0.903	0.333	0.203	0.583	0.493	1.523	4.903	5.093	4.293	21.3
1981	1.603	0.673	0.333	0.183	0.083	0.033	1.263	1.243	2.173	3.263	2.753	1.413	15.0
1982	1.113	0.673	0.423	0.213	0.373	0.293	0.203	5.833	7.643	4.893	2.283	2.833	26.7
1983	1.343	0.343	0.103	0.043	0.023	0.173	0.373	4.113	2.183	2.903	1.903	2.183	15.7
1984	1.923	0.753	1.603	0.683	0.323	0.813	1.063	0.933	4.143	4.533	3.103	1.753	21.6
1985	0.923	0.383	0.133	0.073	0.073	0.233	0.613	0.833	3.463	3.633	6.253	3.433	20.0
1986	1.113	0.393	0.133	0.263	0.143	0.103	0.373	2.773	4.143	5.413	4.653	3.683	23.1
1987	1.503	0.453	0.423	0.173	0.043	0.033	1.233	1.423	2.853	4.343	5.133	3.423	21.0
1988	1.573	0.623	0.233	0.073	0.043	2.123	1.483	2.133	2.413	4.423	4.323	3.233	22.6
1989	2.013	1.103	0.363	0.093	0.143	0.083	1.453	3.423	4.433	6.883	3.703	1.433	25.1
1990	0.713	0.363	0.203	0.093	0.043	0.033	0.143	2.483	4.633	7.003	4.963	3.453	24.1
1991	1.733	0.603	0.173	0.043	0.083	0.093	1.783	2.143	6.043	5.303	3.143	2.183	23.3
1992	2.493	1.153	0.303	0.083	0.123	0.073	7.033	5.403	5.923	8.753	4.643	1.403	37.4
1993	0.483	0.183	0.083	0.083	0.053	0.023	0.143	0.403	5.893	4.573	2.093	1.433	15.4
1994	0.903	0.393	0.133	0.073	0.043	0.033	0.103	1.703	3.333	4.843	5.393	2.213	19.1
1995	2.093	0.943	0.563	0.213	0.183	0.193	0.393	0.483	4.263	4.153	2.903	4.253	20.6
1996	4.393	2.333	1.633	0.533	0.073	0.033	0.283	0.953	4.023	3.223	2.843	1.363	21.7
1997	0.633	2.483	1.353	0.313	0.073	0.043	0.373	3.573	4.623	4.913	2.813	1.293	22.5
1998	0.643	1.013	1.013	0.323	0.043	0.023	0.463	0.583	1.843	1.183	0.513	0.253	7.9
1999	0.133	0.083	0.043	0.023	0.033	0.043	0.053	0.373	1.703	3.543	2.603	4.353	13.0
2000	1.853	0.373	0.123	0.043	0.033	0.023	0.053	2.833	1.633	4.533	4.513	2.203	18.2
2001	1.213	2.813	1.053	1.853	0.723	0.093	0.143	2.683	4.143	4.353	4.583	2.053	25.7
2002	1.883	0.893	0.223	0.083	0.043	1.103	0.563	0.703	1.363	2.323	4.533	2.593	16.3
2003	1.103	0.493	0.233	0.223	0.103	0.093	0.603	0.673	1.063	1.383	2.453	1.503	9.9
2004	1.903	0.923	0.263	0.243	0.203	0.173	0.493	1.463	5.493	3.853	5.283	2.493	22.8
AVE :	1.60	0.89	0.42	0.20	0.15	0.20	0.84	2.17	3.68	4.29	4.11	2.77	21.3
SD :	0.80	0.59	0.43	0.25	0.22	0.33	1.06	1.49	2.04	1.81	1.52	1.21	6.0

Incremental Naturalised Flows at G1H020

File : G1H020.NAT
Units : Mm3
Descrip. : Simulated for 1927 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1927	2.490	2.320	1.390	0.840	0.600	0.620	0.730	0.740	39.350	15.650	29.770	26.300	120.8
1928	7.240	2.800	1.080	0.620	0.530	0.530	2.000	8.480	8.720	45.060	29.880	9.650	116.6
1929	5.730	2.300	1.120	0.760	0.670	0.840	1.260	1.270	1.210	10.180	21.960	55.050	102.3
1930	7.780	3.940	1.500	0.650	0.590	0.560	2.200	5.110	5.800	7.990	36.160	28.710	101.0
1931	9.580	3.750	1.000	0.660	1.630	1.060	0.810	9.070	29.030	25.280	19.310	10.960	112.1
1932	6.460	2.170	0.830	0.610	0.570	0.560	0.560	1.650	26.080	38.950	20.690	8.330	107.5
1933	6.440	2.890	0.930	0.580	0.540	0.640	0.670	10.040	5.830	7.740	9.740	10.120	56.2
1934	8.380	4.160	1.330	0.620	0.560	0.630	2.390	5.480	6.870	24.650	21.670	15.210	91.9
1935	6.850	2.940	1.120	1.200	0.850	0.730	0.650	2.210	3.250	5.500	12.970	11.420	49.7
1936	6.970	2.470	1.260	0.860	0.600	0.760	3.220	8.720	74.020	68.990	11.980	9.240	189.1
1937	5.820	2.330	0.790	0.830	0.700	0.590	3.580	7.020	7.740	16.470	20.880	20.590	87.3
1938	7.610	4.010	1.470	0.640	0.880	0.780	1.690	20.090	8.810	10.630	50.270	10.190	117.1
1939	5.870	2.670	1.520	0.790	1.570	1.360	2.430	6.800	36.080	24.690	21.900	10.690	116.4
1940	7.610	4.140	1.560	1.430	0.900	0.680	28.910	46.660	67.270	56.310	41.980	65.500	323.0
1941	9.080	3.770	1.260	0.740	0.570	0.530	0.670	32.530	98.500	24.670	65.740	9.160	247.2
1942	6.280	2.630	0.860	0.690	0.650	0.930	1.530	3.060	6.760	28.810	49.320	10.950	112.5
1943	7.430	4.300	1.480	0.690	0.560	0.540	1.680	13.620	82.990	56.350	55.330	11.960	236.9
1944	9.290	4.420	2.360	0.960	0.560	0.520	1.140	33.290	90.460	89.390	44.620	8.190	285.2
1945	4.350	2.050	1.000	0.630	0.540	0.600	1.480	4.390	5.600	22.100	46.140	51.350	140.2
1946	11.530	4.960	1.400	0.620	0.520	1.080	1.150	5.900	6.890	78.920	30.310	9.260	152.5
1947	6.810	3.090	0.970	0.570	0.580	0.680	1.160	16.530	23.490	63.030	34.990	37.100	189.0
1948	9.850	4.040	1.210	0.670	0.550	0.520	2.150	2.830	7.360	26.730	42.900	12.390	111.2
1949	8.900	4.360	1.440	0.640	0.530	0.520	10.400	3.350	6.170	81.530	10.440	17.270	145.6
1950	7.320	4.150	1.840	0.940	0.630	0.540	31.230	8.980	91.210	50.760	22.990	16.210	236.8
1951	8.170	5.310	1.710	0.630	0.540	0.620	1.790	6.930	8.360	29.230	67.840	54.410	185.5
1952	7.800	5.500	1.800	0.660	0.530	0.560	27.780	48.990	25.750	54.200	44.720	8.260	226.6
1953	4.170	2.510	1.170	0.650	0.600	0.680	8.800	52.800	32.050	108.920	49.780	9.170	271.3
1954	5.980	2.620	1.100	0.650	2.790	1.090	1.090	1.420	4.800	44.840	96.130	10.010	172.5
1955	8.120	5.410	1.930	0.740	0.550	0.590	1.450	9.470	56.100	73.150	70.550	10.410	238.5
1956	6.780	2.580	0.950	0.630	1.100	1.070	1.230	58.080	52.580	72.520	48.330	9.600	255.5
1957	18.140	4.740	1.120	0.600	1.990	1.140	1.180	16.110	10.500	9.930	31.190	9.420	106.1
1958	6.110	2.860	1.000	0.650	0.590	0.600	4.650	75.430	11.000	8.810	11.510	8.870	132.1
1959	6.770	2.910	0.900	0.590	0.540	0.650	1.130	12.750	46.370	10.600	8.800	6.530	98.5
1960	4.250	1.800	0.720	0.620	0.580	0.570	0.660	3.080	34.120	17.810	44.600	35.860	144.7
1961	7.590	2.730	0.860	0.590	0.650	1.030	3.480	3.390	127.720	38.030	56.280	9.920	252.3
1962	18.710	5.000	1.270	0.680	0.570	0.530	0.550	1.290	2.640	22.740	63.170	10.220	127.4
1963	5.870	3.060	1.620	0.760	2.270	1.020	0.810	2.320	22.380	35.110	36.030	8.650	119.9
1964	6.600	4.610	1.650	0.870	1.110	5.030	3.980	20.730	22.080	13.400	43.420	9.010	132.5
1965	5.420	2.200	1.170	0.710	0.550	5.020	2.340	3.160	10.190	56.440	33.220	9.800	130.2
1966	5.310	1.900	0.890	0.650	0.550	0.530	5.150	6.430	52.110	17.870	10.960	10.280	112.6
1967	7.560	4.180	1.430	0.890	0.690	0.550	4.950	13.590	49.020	61.900	26.650	8.210	179.6
1968	8.240	3.690	1.250	1.260	0.790	0.600	1.000	1.140	7.720	9.490	29.920	24.800	89.9
1969	8.700	3.500	0.970	0.590	0.560	0.540	0.530	25.800	43.250	38.560	39.420	11.240	173.7
1970	7.380	3.030	1.380	0.740	0.540	0.600	0.670	1.270	5.760	18.100	51.350	8.750	99.6
1971	4.860	1.900	0.820	0.650	0.600	0.590	2.870	5.630	8.700	14.050	23.130	10.430	74.2
1972	6.070	1.990	0.880	0.610	0.520	0.620	0.660	1.900	2.420	26.350	17.330	10.490	69.8
1973	6.780	2.650	1.820	0.910	0.580	0.540	0.530	6.490	41.830	29.630	119.040	16.700	227.5
1974	11.210	5.700	1.770	0.760	0.600	0.550	1.000	41.500	26.690	80.110	26.710	8.060	204.7
1975	5.310	3.020	1.120	0.580	0.520	0.600	0.870	1.740	65.450	73.200	19.650	10.350	182.4
1976	6.110	6.830	4.660	1.560	1.070	0.850	8.080	53.460	108.100	80.000	76.230	11.340	358.3
1977	7.120	2.830	1.160	0.740	0.670	0.750	1.090	5.040	4.290	4.220	22.100	17.060	67.1
1978	7.780	3.110	1.210	0.810	1.590	0.970	1.060	7.610	20.770	20.360	23.480	11.470	100.2
1979	23.970	4.660	1.090	0.670	0.650	0.580	2.240	8.300	19.900	10.600	18.620	9.640	100.9
1980	6.040	7.710	2.840	2.800	1.110	0.960	1.350	1.900	6.040	55.150	31.310	29.490	146.7
1981	7.110	2.890	1.220	0.870	0.650	0.590	2.200	4.780	30.770	42.810	21.330	8.380	123.6
1982	5.830	3.000	1.550	0.820	0.860	1.020	1.190	33.530	76.990	44.420	17.420	25.590	212.2
1983	6.680	2.270	1.000	0.710	0.580	1.060	1.430	42.340	11.710	37.230	13.180	36.190	154.4
1984	11.960	4.460	4.690	1.500	1.050	3.750	3.870	5.080	43.710	63.420	36.410	13.700	193.6
1985	6.630	2.250	0.830	0.580	0.560	1.100	1.870	3.170	35.850	59.760	62.470	13.020	188.1
1986	6.640	2.420	0.940	1.180	0.810	0.670	0.980	19.020	29.570	52.390	58.480	26.590	199.7
1987	7.140	2.680	1.450	0.780	0.540	0.550	2.290	7.390	9.700	35.670	39.850	13.570	121.6
1988	7.010	2.520	0.990	0.630	0.650	4.510	3.530	8.930	19.430	61.940	45.570	27.630	183.3
1989	7.730	4.330	1.530	0.670	0.930	0.720	33.730	9.780	51.870	83.230	14.810	8.970	218.3
1990	4.630	1.850	1.140	0.710	0.560	0.550	0.690	12.250	58.210	109.710	14.680	20.340	225.3
1991	7.700	3.080	1.000	0.580	0.620	0.830	2.180	7.500	96.760	49.960	25.130	10.610	206.0
1992	12.630	4.950	1.260	0.610	0.650	0.630	28.450	41.670	35.710	98.610	34.980	8.160	268.3
1993	3.850	1.460	0.740	0.610	0.540	0.530	1.310	2.040	103.680	31.080	10.140	14.630	170.6
1994	7.030	2.590	0.950	0.670	0.580	0.580	0.610	5.410	23.920	71.900	46.560	9.230	170.0
1995	12.090	4.400	1.960	0.930	0.870	0.910	1.280	3.490	75.810	45.490	50.540	50.600	248.4
1996	9.690	6.810	3.500	1.260	0.630	0.540	0.960	2.780	53.020	21.770	47.230	8.290	156.5
1997	4.350	3.190	1.470	0.760	0.580	0.550	0.950	34.880	30.820	41.690	11.530	9.660	140.4
1998	5.700	3.420	1.640	0.740	0.540	0.510	1.000	4.680	35.680	41.340	77.400	52.270	224.9
1999	6.470	2.370	0.960	0.830	0.640	0.580	0.590	3.750	5.390	28.430	33.500	28.670	112.2
2000	6.720	2.680	1.120	0.670	0.600	0.550	0.970	26.150	20.900	151.740	97.490	35.430	345.0
2001	8.150	3.220	0.970	2.650	1.260	0.840	2.630	13.790	44.440	64.110	46.150	9.840	198.1
2002	6.440	2.770	1.320	0.780	0.570	0.960	1.330	1.910	2.300	3.930	36.070	16.010	74.4
2003	8.820	3.450	1.260	0.940	0.650	0.580	1.370	1.460	12.620	17.540	29.160	9.510	87.4
2004	9.750	3.930	1.010	0.920	0.680	0.550	1.260	12.710	24.680	26.660	53.740	9.260	145.2
AVE :	7.68	3.44	1.38	0.82	0.76	0.90	3.76	13.64	33.36	42.31	37.40	17.31	162.8
SD :	3.20	1.25	0.70	0.38	0.41	0.89	7.17	16.19	30.26	29.22	21.88	13.38	68.1

Incremental Naturalised Flows at G1H021

File : G1H021.NAT
Units : Mm3
Descrip. : Simulated for 1927 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1927	0.131	0.541	0.651	0.271	0.121	0.081	0.071	0.041	1.911	2.991	2.301	2.021	11.1
1928	1.241	0.641	0.291	0.121	0.051	0.031	0.351	1.091	1.831	2.671	3.171	2.291	13.8
1929	1.051	0.461	0.381	0.361	0.351	0.341	0.151	0.091	0.081	0.411	0.961	2.201	6.8
1930	2.421	1.191	0.521	0.191	0.081	0.051	0.591	1.741	1.661	1.091	2.181	2.781	14.5
1931	1.891	0.941	0.411	0.231	1.321	1.681	0.581	0.901	1.951	2.391	2.181	1.901	16.4
1932	1.361	0.641	0.251	0.101	0.101	0.151	0.111	0.931	2.811	4.651	4.221	2.351	17.7
1933	1.251	0.571	0.261	0.141	0.071	0.201	0.251	0.841	1.861	1.841	1.251	1.671	10.2
1934	2.331	1.791	0.851	0.301	0.141	0.261	0.821	1.451	1.861	1.971	2.271	2.101	16.1
1935	1.091	0.561	0.341	0.211	0.161	0.091	0.081	0.831	1.211	1.321	2.191	2.751	10.8
1936	2.091	0.871	0.721	0.641	0.231	0.461	0.951	1.371	2.451	3.541	2.901	1.411	17.6
1937	0.711	0.411	0.171	0.111	0.081	0.051	0.751	1.821	1.851	1.471	1.581	1.851	10.9
1938	1.431	0.631	0.271	0.121	0.141	0.151	0.161	1.011	1.531	1.161	1.621	1.941	10.2
1939	1.191	0.491	0.211	0.091	0.231	0.291	0.521	0.791	1.491	1.851	1.091	1.081	9.3
1940	1.041	0.601	0.371	0.661	0.741	0.261	0.711	2.571	4.121	3.781	3.001	3.351	21.2
1941	3.281	1.821	0.661	0.251	0.101	0.051	0.031	0.931	4.151	4.801	2.701	1.621	20.4
1942	0.971	0.661	0.251	0.271	0.351	0.331	0.281	0.351	1.201	2.731	3.951	3.501	14.8
1943	2.041	1.261	0.751	0.271	0.111	0.111	0.371	1.801	3.831	3.341	2.801	2.991	19.7
1944	1.861	1.121	0.681	0.291	0.111	0.051	0.311	2.251	4.371	4.431	3.851	2.561	21.9
1945	1.121	0.601	0.281	0.121	0.051	0.081	0.201	0.621	0.911	0.831	0.961	2.341	8.1
1946	2.651	1.191	0.441	0.171	0.071	0.411	0.531	0.701	0.841	1.891	2.631	1.651	13.2
1947	1.311	0.941	0.361	0.131	0.151	0.871	1.411	1.591	1.711	2.341	2.301	2.191	15.3
1948	2.281	1.121	0.411	0.161	0.071	0.041	0.471	0.831	1.071	1.571	1.771	1.901	11.7
1949	2.061	2.311	1.681	0.591	0.211	0.081	1.311	1.781	0.941	2.521	2.891	2.641	19.0
1950	2.961	2.301	1.611	0.861	0.541	0.201	0.541	0.961	2.591	3.631	2.841	2.271	21.3
1951	1.621	1.181	0.691	0.251	0.121	0.101	0.121	1.621	2.981	3.271	3.831	3.191	19.0
1952	1.861	1.631	1.321	0.461	0.161	0.071	1.591	3.471	2.761	2.621	3.211	2.021	21.2
1953	0.831	0.791	0.891	0.481	0.181	0.111	0.791	3.711	4.621	4.331	5.411	3.861	26.0
1954	1.761	0.841	0.541	0.431	0.781	0.941	0.451	0.291	1.441	3.221	4.841	4.161	19.7
1955	2.531	1.871	0.751	0.311	0.161	0.081	0.051	0.691	2.071	2.491	2.121	1.591	14.7
1956	0.821	0.361	0.231	0.181	0.851	1.211	0.741	2.101	3.771	3.961	3.801	2.771	20.8
1957	2.691	2.351	0.811	0.281	0.271	0.271	0.181	1.041	1.681	1.111	1.401	1.621	13.7
1958	0.951	0.571	0.271	0.111	0.101	0.121	0.821	2.991	3.251	1.481	1.561	1.721	13.9
1959	1.411	1.081	0.481	0.271	0.111	0.181	0.341	0.881	1.931	1.861	1.011	0.691	10.2
1960	0.481	0.271	0.141	0.131	0.111	0.061	0.141	0.451	0.761	1.211	1.861	2.521	8.1
1961	2.001	0.741	0.261	0.111	0.121	0.651	1.211	1.171	3.241	4.621	4.371	3.541	22.0
1962	2.841	2.571	1.071	0.371	0.141	0.061	0.041	0.031	0.731	1.861	3.541	3.371	16.6
1963	1.351	1.051	1.041	0.481	0.191	0.101	0.131	0.491	1.821	2.721	3.171	3.171	15.7
1964	1.991	1.371	0.901	0.341	0.651	1.241	1.261	1.441	1.411	0.991	1.121	1.041	13.8
1965	0.721	0.491	0.271	0.181	0.081	0.421	0.721	0.641	1.491	3.001	2.881	1.861	12.8
1966	1.131	0.431	0.161	0.071	0.041	0.031	0.611	1.051	2.501	3.391	2.331	1.691	13.4
1967	1.291	1.011	0.571	0.211	0.091	0.051	0.641	2.011	3.101	3.381	3.051	1.941	17.3
1968	2.021	2.011	0.741	0.261	0.111	0.071	0.431	0.561	0.591	0.791	1.221	1.621	10.4
1969	1.811	1.431	0.511	0.181	0.081	0.041	0.031	0.801	2.501	3.231	3.051	2.421	16.1
1970	1.361	0.631	0.241	0.101	0.051	0.371	0.481	0.301	0.861	1.881	2.281	1.551	10.1
1971	0.651	0.261	0.111	0.071	0.061	0.051	0.641	1.661	2.091	2.121	1.661	1.091	10.5
1972	0.801	0.391	0.361	0.341	0.131	0.171	0.191	0.331	0.441	1.931	3.101	2.381	10.6
1973	1.561	0.711	0.411	0.301	0.111	0.061	0.071	1.441	3.041	2.821	5.301	6.041	21.9
1974	3.141	1.721	0.691	0.271	0.121	0.061	0.261	1.891	2.471	1.881	2.161	1.561	16.2
1975	1.161	0.941	0.351	0.131	0.071	0.061	1.241	1.801	2.891	4.251	3.061	1.651	17.6
1976	0.841	1.581	2.291	1.351	0.561	0.311	0.611	2.401	4.021	4.741	4.621	3.081	26.4
1977	1.541	0.661	0.251	0.101	0.051	0.191	0.391	0.351	0.241	0.191	1.181	1.811	6.9
1978	1.011	0.411	0.171	0.121	0.351	0.391	0.151	0.521	1.301	1.881	1.731	1.331	9.4
1979	1.131	0.651	0.251	0.191	0.191	0.101	0.131	0.631	1.311	1.171	1.151	1.101	8.0
1980	0.631	2.081	3.001	2.641	1.921	0.711	0.401	0.271	0.271	1.681	2.921	3.181	19.7
1981	2.501	1.001	0.361	0.291	0.261	0.371	1.791	2.181	1.741	1.791	1.151	0.611	14.0
1982	0.571	0.561	0.291	0.161	0.461	0.741	0.451	2.131	4.121	3.721	2.421	1.431	17.1
1983	0.891	0.461	0.251	0.101	0.051	1.041	1.631	3.091	3.421	1.981	1.581	2.231	16.7
1984	2.881	1.621	1.171	1.281	1.111	1.921	2.171	1.411	1.451	2.611	3.461	2.811	23.9
1985	1.511	0.571	0.221	0.111	0.061	0.131	0.181	0.161	1.131	2.341	3.131	2.861	12.4
1986	1.411	0.581	0.241	0.091	0.051	0.041	0.291	1.831	3.351	3.121	2.521	2.011	15.5
1987	1.141	0.431	0.181	0.101	0.051	0.031	1.121	1.601	1.541	1.751	1.691	1.911	11.5
1988	1.301	0.511	0.191	0.091	0.091	0.911	1.671	1.491	2.081	2.681	3.021	3.271	17.3
1989	2.411	1.221	0.471	0.181	0.181	0.211	1.131	2.621	3.141	3.191	2.661	1.481	18.9
1990	0.601	0.291	0.231	0.151	0.071	0.041	0.151	0.541	2.141	5.001	4.661	2.561	16.4
1991	1.851	0.971	0.421	0.181	0.261	0.341	0.721	1.181	2.351	3.471	3.231	2.261	17.2
1992	1.701	1.331	0.511	0.191	0.121	0.101	1.391	3.011	3.071	3.741	3.551	1.761	20.5
1993	0.741	0.321	0.161	0.081	0.041	0.031	0.651	1.151	2.741	3.791	2.261	1.731	13.7
1994	1.511	0.631	0.231	0.091	0.041	0.051	0.071	1.171	2.181	2.491	2.941	2.141	13.5
1995	1.481	1.171	1.091	1.021	0.431	0.281	0.251	0.551	1.801	3.271	3.921	3.301	18.6
1996	1.931	1.381	1.421	0.931	0.331	0.131	0.101	0.371	2.191	2.761	1.631	1.081	14.3
1997	0.491	0.771	0.921	0.761	0.611	0.221	0.101	1.041	1.891	2.011	1.761	0.961	11.5
1998	0.501	0.771	0.921	0.451	0.171	0.071	0.431	0.881	0.991	1.241	2.411	3.261	12.1
1999	2.171	0.791	0.301	0.131	0.061	0.031	0.031	0.101	0.551	2.131	2.791	2.631	11.7
2000	2.061	0.781	0.301	0.121	0.061	0.041	0.171	1.271	1.701	3.171	4.391	3.401	17.5
2001	2.351	1.081	0.441	0.601	0.721	0.361	0.651	1.951	2.391	2.481	3.191	3.141	19.4
2002	2.231	1.111	0.481	0.221	0.131	0.171	0.281	0.411	0.411	0.271	2.051	3.081	10.8
2003	1.781	0.861	0.411	0.331	0.211	0.091	0.421	0.551	0.871	1.531	1.681	1.381	10.1
2004	1.491	1.321	0.471	0.181	0.091	0.041	0.871	1.291	1.381	1.691	2.881	3.081	14.8
AVE :	1.55	0.98	0.57	0.32	0.25	0.28	0.55	1.23	2.03	2.51	2.63	2.27	15.2
SD :	0.71	0.55	0.49	0.37	0.32	0.38	0.48	0.83	1.08	1.14	1.07	0.90	4.5

Incremental Naturalised Flows at G1H028

File : G1H028.NAT
Units : Mm3
Descrip. : Simulated for 1927 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1927	2.780	4.620	3.290	2.193	1.483	1.383	1.393	0.530	24.470	18.750	9.560	8.700	79.1
1928	6.690	4.350	2.220	1.553	1.003	0.973	2.293	5.750	12.360	27.180	23.890	11.190	99.4
1929	5.580	3.330	2.330	2.293	2.503	2.313	1.923	1.150	1.150	2.910	4.470	21.580	51.5
1930	15.740	5.580	2.600	1.623	1.103	1.143	4.843	13.000	9.760	7.960	28.250	24.040	115.6
1931	10.520	4.750	2.200	1.723	16.573	10.823	2.253	7.450	13.050	18.970	15.440	13.840	117.6
1932	9.020	4.050	1.890	1.573	1.363	1.593	1.523	13.260	27.150	47.290	30.210	10.850	149.8
1933	5.900	3.530	2.720	2.433	1.593	2.693	2.613	6.740	10.430	8.980	7.360	18.280	73.3
1934	21.860	12.120	4.280	2.073	1.383	2.013	6.413	10.370	16.720	19.070	25.620	15.910	137.8
1935	6.370	3.980	2.170	2.403	1.923	1.783	1.853	9.820	8.480	10.600	25.680	34.400	109.5
1936	17.090	4.790	5.300	3.993	1.683	4.083	5.333	8.700	27.580	44.870	24.010	7.420	154.8
1937	5.120	3.260	1.630	1.753	1.483	1.263	10.013	18.020	12.580	11.180	16.600	15.560	98.5
1938	9.000	4.490	2.380	1.793	1.843	1.753	1.823	11.310	10.110	6.650	15.760	14.590	81.5
1939	7.420	3.730	1.900	1.583	2.613	2.513	6.273	5.690	11.140	10.280	6.890	7.690	67.7
1940	6.360	4.450	2.650	5.203	3.763	1.653	8.243	31.890	45.370	35.390	27.160	38.490	210.6
1941	25.190	8.220	2.960	2.003	1.293	0.953	0.933	11.760	54.770	36.310	17.920	10.580	172.9
1942	6.000	3.900	1.880	2.913	3.143	3.283	2.933	2.890	11.970	33.070	45.930	27.310	145.2
1943	10.290	6.740	3.740	2.043	1.253	1.443	3.183	21.230	45.120	24.370	33.620	27.310	180.3
1944	10.560	6.040	3.730	2.323	1.243	0.873	2.933	37.560	55.920	48.580	39.820	17.610	227.2
1945	5.830	3.830	2.070	1.563	1.033	1.413	2.223	3.720	4.800	5.170	6.780	31.090	69.5
1946	20.770	5.520	2.330	1.613	0.993	4.233	3.793	4.890	4.710	25.770	21.190	9.300	105.1
1947	7.630	5.120	2.190	1.463	1.583	11.973	10.953	12.110	13.000	29.330	18.590	23.050	137.0
1948	16.520	5.720	2.430	1.703	1.113	0.883	3.473	4.130	7.220	12.790	16.970	17.390	90.3
1949	14.280	16.360	8.800	2.763	1.283	0.993	19.933	13.230	4.490	30.350	20.440	27.930	160.8
1950	21.450	14.780	8.350	4.843	3.023	1.503	4.203	5.320	35.920	36.550	25.920	15.460	177.3
1951	8.930	6.900	3.660	1.923	1.423	1.633	1.963	23.160	24.730	34.390	42.030	23.780	174.5
1952	9.570	12.380	7.360	2.403	1.163	0.933	24.153	33.720	16.520	30.170	31.880	13.480	183.7
1953	4.800	5.990	4.910	3.043	1.753	1.573	8.633	49.440	38.930	51.570	60.440	25.930	257.0
1954	7.390	4.280	3.400	2.703	7.273	5.663	3.133	2.200	19.050	34.600	60.310	31.410	181.4
1955	16.340	10.420	3.520	2.463	1.833	1.473	1.393	6.640	19.910	20.540	18.610	11.280	114.4
1956	5.630	3.160	1.990	1.843	9.643	7.693	4.273	27.020	39.340	40.830	37.540	18.170	197.1
1957	26.090	15.730	2.890	1.503	2.093	1.973	1.953	11.090	10.870	6.380	13.960	11.290	105.8
1958	6.760	4.730	2.360	1.553	1.283	1.483	9.113	40.470	25.310	7.540	16.980	13.010	130.6
1959	9.810	6.280	2.770	2.003	1.253	1.783	3.043	12.400	20.840	12.810	7.090	6.000	86.1
1960	4.970	3.290	2.020	2.143	1.833	1.723	2.033	5.050	10.440	13.780	23.190	27.370	97.8
1961	13.610	4.000	1.510	1.333	1.623	2.993	9.383	7.710	39.420	39.070	38.130	20.650	179.4
1962	18.430	12.660	4.090	2.133	1.233	1.013	1.013	0.630	11.420	18.860	48.840	28.340	148.7
1963	6.480	6.740	4.670	2.473	2.143	2.233	2.223	4.270	15.790	22.080	30.620	18.330	118.0
1964	8.440	9.050	5.150	2.383	5.273	7.853	7.973	9.770	8.890	7.550	13.170	9.860	95.4
1965	6.170	4.080	2.480	2.033	1.353	3.113	3.963	3.510	13.460	34.750	26.750	13.360	115.0
1966	7.060	3.220	1.290	1.273	1.103	0.963	8.603	7.160	31.250	29.940	16.530	9.980	118.4
1967	7.810	6.320	3.360	2.133	1.523	1.173	9.293	21.940	29.440	33.210	28.950	13.350	158.5
1968	19.900	12.730	3.070	1.923	1.623	1.643	4.173	3.410	4.670	5.520	10.100	11.260	80.0
1969	11.260	6.840	2.480	1.503	1.073	0.963	0.883	7.520	25.020	32.780	30.570	16.120	137.0
1970	7.120	4.080	1.950	1.613	1.173	2.743	2.793	2.180	7.190	14.640	22.060	12.810	80.3
1971	4.840	2.750	1.410	1.583	1.413	1.493	6.433	11.840	17.320	21.440	13.050	7.790	91.4
1972	6.040	3.460	3.640	2.993	1.413	2.563	2.573	3.330	3.650	28.070	28.490	18.720	104.9
1973	10.140	4.370	2.720	2.233	1.393	1.203	1.293	24.000	36.290	26.110	74.680	46.030	230.5
1974	13.190	7.280	3.120	2.253	1.613	1.343	4.273	25.180	17.710	16.800	20.950	11.350	125.1
1975	7.920	5.390	2.210	1.603	1.163	1.113	18.573	13.360	34.910	39.840	21.340	9.320	156.7
1976	5.180	15.000	14.070	5.983	2.763	2.473	6.443	28.980	46.890	50.520	38.980	18.150	235.4
1977	7.340	4.120	2.310	1.913	1.323	1.983	3.483	3.320	3.180	2.810	14.820	12.970	59.6
1978	6.190	3.250	2.510	2.603	3.533	2.903	1.753	6.440	11.060	18.200	13.270	10.750	82.5
1979	9.190	5.130	2.100	2.273	2.153	1.623	2.113	8.090	11.430	8.160	10.620	8.510	71.4
1980	5.360	24.940	16.060	6.663	3.953	2.293	3.003	2.600	3.910	22.450	37.260	33.690	162.2
1981	15.140	4.700	2.050	3.373	2.693	3.233	16.223	12.230	13.630	15.290	10.470	6.580	105.6
1982	7.790	5.450	3.350	2.643	4.163	3.863	2.593	23.690	29.350	24.730	13.680	8.120	129.4
1983	6.150	3.980	2.300	1.893	1.313	7.023	6.523	34.830	23.160	11.320	9.110	19.440	127.0
1984	18.930	8.200	7.510	6.603	4.213	12.503	11.703	8.710	17.410	35.410	33.910	17.710	182.8
1985	7.400	3.330	1.860	1.823	1.383	2.563	3.053	3.310	12.700	21.830	39.930	24.050	123.2
1986	7.570	3.890	1.800	1.513	1.293	1.253	3.343	17.820	27.230	32.320	31.680	17.190	146.9
1987	6.900	3.250	1.780	1.683	1.173	1.193	12.143	9.530	14.400	16.950	23.200	18.950	111.1
1988	8.690	3.670	1.690	1.563	1.853	9.793	10.043	7.560	12.940	22.130	31.840	30.610	142.4
1989	15.380	6.190	3.000	1.993	1.873	1.743	14.013	20.740	24.340	33.300	21.140	8.220	151.9
1990	4.200	2.570	2.120	2.083	1.393	1.213	1.953	4.070	26.150	66.010	35.250	16.590	163.6
1991	13.420	6.400	2.690	1.723	2.283	2.343	4.973	4.920	24.760	34.020	28.180	14.320	140.0
1992	13.520	8.900	2.970	1.803	1.693	1.653	15.403	24.360	24.270	40.230	23.160	7.240	165.2
1993	4.470	2.440	1.460	1.563	1.083	0.993	4.723	4.720	33.910	31.460	12.290	10.530	109.6
1994	8.580	4.400	1.850	1.373	0.993	1.363	1.753	10.270	13.630	31.670	36.590	16.650	129.1
1995	12.890	8.360	5.760	4.023	2.833	2.873	2.823	4.810	20.100	32.340	40.450	42.490	179.7
1996	20.700	14.320	10.360	4.533	1.953	1.403	1.543	3.580	30.380	20.970	16.110	10.880	136.7
1997	4.360	3.310	2.600	4.003	2.923	1.493	1.293	16.490	13.570	10.270	11.540	8.030	79.9
1998	5.030	6.040	5.200	3.133	1.523	1.003	1.923	4.260	9.330	9.510	19.710	27.970	94.6
1999	14.100	3.750	1.870	1.983	1.473	1.133	1.083	1.170	4.110	20.220	23.440	26.690	101.0
2000	14.350	4.680	2.360	1.753	1.313	1.073	1.523	13.230	10.790	47.320	47.910	29.890	176.2
2001	14.470	5.840	2.800	4.683	3.773	2.223	2.493	16.820	14.170	27.050	33.840	18.990	147.1
2002	8.670	4.990	2.520	1.863	1.293	1.803	3.003	3.100	3.070	3.350	25.780	18.490	77.9
2003	7.710	4.680	2.670	2.653	1.853	1.313	4.723	3.720	7.930	10.490	14.900	10.450	73.1
2004	9.130	6.090	2.210	1.613	1.253	1.063	8.373	7.070	15.270	16.000	38.840	24.360	131.3
AVE :	10.25	6.30	3.41	2.40	2.21	2.55	5.23	11.90	19.15	24.26	25.41	17.91	131.0
SD :	5.36	3.96	2.57	1.17	2.15	2.49	4.77	10.38	12.64	13.58	13.45	8.90	44.5

Incremental Naturalised Flows at G1H029

File : G1H029.NAT
Units : Mm3
Descrip. : Simulated for 1927 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1927	0.218	0.928	0.388	0.078	0.038	0.058	0.038	0.028	6.438	3.158	3.098	2.118	16.5
1928	1.038	0.468	0.148	0.038	0.018	0.018	0.498	1.668	2.838	5.778	5.678	2.108	20.2
1929	0.668	0.268	0.328	0.158	0.308	0.148	0.068	0.058	0.078	0.588	1.168	5.098	8.8
1930	2.458	0.658	0.188	0.038	0.028	0.028	1.188	3.288	1.438	1.188	5.498	3.818	19.7
1931	1.588	0.508	0.198	0.078	3.878	1.378	0.058	1.708	3.358	3.668	3.038	2.328	21.7
1932	1.198	0.408	0.108	0.038	0.088	0.108	0.058	2.418	6.278	10.268	4.918	1.728	27.5
1933	0.888	0.368	0.148	0.058	0.028	0.218	0.118	1.898	2.938	1.888	1.318	3.628	13.4
1934	3.428	1.438	0.318	0.048	0.048	0.258	1.248	1.968	2.658	3.048	4.658	2.308	21.3
1935	0.758	0.428	0.148	0.128	0.068	0.058	0.048	2.038	1.078	2.138	4.328	4.878	16.0
1936	1.848	0.408	0.778	0.288	0.038	0.608	1.008	1.808	5.298	7.198	2.968	0.938	23.1
1937	0.618	0.258	0.078	0.068	0.048	0.038	1.788	2.948	1.808	1.768	2.758	2.908	15.0
1938	1.318	0.388	0.128	0.048	0.118	0.068	0.128	2.338	1.538	1.128	3.438	2.418	13.0
1939	0.938	0.318	0.098	0.038	0.248	0.128	0.738	0.648	3.178	2.028	1.058	1.758	11.1
1940	1.038	0.508	0.198	1.058	0.398	0.038	1.388	6.308	7.658	5.318	4.378	6.528	34.7
1941	3.858	0.988	0.178	0.048	0.028	0.018	0.018	2.518	11.378	5.508	2.728	1.328	28.5
1942	0.958	0.418	0.098	0.228	0.208	0.228	0.158	0.368	2.468	6.238	8.108	3.928	23.3
1943	1.428	0.978	0.318	0.068	0.028	0.088	0.408	4.708	8.138	3.168	5.858	3.718	28.8
1944	1.428	0.838	0.348	0.078	0.028	0.018	0.398	6.488	8.458	7.068	6.108	2.088	33.3
1945	0.648	0.348	0.128	0.038	0.018	0.068	0.178	0.868	0.868	0.908	1.308	6.218	11.5
1946	2.828	0.538	0.138	0.038	0.018	0.628	0.278	1.048	0.668	5.118	3.248	1.468	15.9
1947	1.548	0.678	0.138	0.028	0.128	1.828	1.388	2.208	1.878	5.728	2.618	4.328	22.4
1948	2.358	0.588	0.138	0.048	0.028	0.018	0.818	0.678	1.448	2.388	2.818	2.928	14.2
1949	2.898	3.518	1.098	0.088	0.028	0.018	4.048	1.568	0.608	6.858	2.938	5.628	29.2
1950	3.308	2.768	0.988	0.458	0.168	0.028	0.888	0.868	6.988	5.558	4.078	2.408	28.4
1951	1.488	1.008	0.318	0.048	0.048	0.068	0.098	5.028	4.268	6.438	7.238	3.318	29.3
1952	1.308	2.418	0.848	0.068	0.018	0.018	5.178	6.208	2.258	5.768	5.108	1.658	30.8
1953	0.468	1.018	0.608	0.158	0.048	0.058	1.788	10.368	5.608	9.558	10.278	3.308	43.2
1954	0.948	0.408	0.418	0.158	1.458	0.608	0.198	0.168	4.138	6.448	11.118	3.978	30.0
1955	3.138	1.348	0.238	0.098	0.058	0.038	0.038	1.498	4.188	3.338	3.108	1.618	18.6
1956	0.678	0.238	0.168	0.068	2.048	0.928	0.398	5.758	6.888	7.028	6.268	2.508	32.9
1957	5.288	1.948	0.138	0.028	0.208	0.098	0.118	2.468	1.808	0.898	2.978	1.788	17.7
1958	0.968	0.498	0.148	0.038	0.038	0.048	1.898	8.428	3.468	0.988	3.128	1.898	21.5
1959	1.808	0.738	0.198	0.068	0.028	0.148	0.318	2.698	3.898	1.918	1.138	0.858	13.7
1960	0.608	0.268	0.148	0.098	0.068	0.058	0.108	1.018	2.158	2.478	4.248	4.638	15.8
1961	1.688	0.308	0.068	0.028	0.098	0.348	1.838	1.118	7.938	6.178	6.768	2.798	29.1
1962	3.728	1.748	0.298	0.058	0.028	0.018	0.018	0.048	2.588	3.738	9.528	3.658	25.4
1963	0.658	1.138	0.508	0.088	0.158	0.128	0.108	0.798	3.418	3.908	5.498	2.648	19.0
1964	1.238	2.068	0.708	0.068	0.988	1.118	1.128	1.588	1.408	1.178	1.408	1.038	13.8
1965	0.978	0.438	0.188	0.068	0.028	0.338	0.428	0.388	2.598	5.468	3.138	1.698	15.7
1966	0.798	0.228	0.058	0.028	0.028	0.018	1.808	0.958	6.248	4.198	2.648	1.598	18.5
1967	1.168	0.658	0.198	0.078	0.048	0.028	1.708	3.998	4.408	5.168	4.598	1.678	23.6
1968	4.578	1.738	0.148	0.068	0.058	0.048	0.608	0.368	0.648	0.798	1.798	1.938	12.7
1969	2.798	1.068	0.138	0.028	0.018	0.018	0.018	1.748	5.218	5.408	4.838	2.328	23.5
1970	0.968	0.358	0.098	0.038	0.028	0.258	0.148	0.218	1.408	2.818	3.638	1.528	11.4
1971	0.438	0.168	0.058	0.068	0.048	0.058	1.448	2.248	2.688	3.348	1.808	1.168	13.5
1972	0.728	0.268	0.708	0.268	0.028	0.328	0.168	0.448	0.378	5.748	4.278	2.518	15.8
1973	1.268	0.438	0.268	0.108	0.038	0.028	0.048	5.268	6.728	3.998	14.738	6.258	39.1
1974	2.128	0.868	0.178	0.088	0.048	0.028	0.848	4.868	2.248	2.858	3.458	1.468	19.0
1975	1.268	0.568	0.118	0.038	0.028	0.028	3.378	1.558	7.328	6.378	2.628	1.268	24.5
1976	0.688	3.558	2.238	0.448	0.118	0.158	1.278	6.308	8.388	8.548	6.208	2.618	40.5
1977	0.998	0.458	0.238	0.098	0.038	0.248	0.458	0.388	0.338	0.298	3.258	2.408	9.1
1978	0.958	0.308	0.748	0.318	0.498	0.218	0.058	2.148	2.718	2.088	1.618	2.008	13.6
1979	1.518	0.558	0.108	0.178	0.118	0.048	0.178	1.768	2.218	1.258	1.948	1.248	11.1
1980	0.678	5.188	2.038	0.858	0.308	0.118	0.288	0.248	0.608	4.928	6.768	5.488	27.4
1981	1.898	0.418	0.108	0.448	0.188	0.408	3.348	1.778	2.658	2.608	1.688	0.938	16.4
1982	1.398	0.618	0.358	0.138	0.658	0.358	0.118	5.118	5.178	4.188	2.008	1.388	21.4
1983	0.798	0.368	0.138	0.058	0.028	1.478	0.808	7.388	3.128	1.818	1.418	3.668	21.0
1984	3.098	0.938	1.768	1.068	0.518	2.698	1.988	1.388	3.038	6.378	5.048	2.328	30.2
1985	0.858	0.248	0.118	0.058	0.028	0.258	0.248	0.488	2.998	4.198	6.748	3.108	19.3
1986	0.948	0.358	0.098	0.038	0.028	0.038	0.708	3.568	5.018	6.068	5.268	2.538	24.6
1987	0.878	0.248	0.128	0.058	0.028	0.048	2.358	1.248	2.208	2.478	4.158	2.998	16.7
1988	1.088	0.298	0.078	0.058	0.128	2.058	1.978	1.348	2.578	4.488	5.748	4.438	24.2
1989	1.958	0.788	0.228	0.058	0.098	0.058	3.678	4.528	4.788	5.118	2.588	1.018	24.8
1990	0.408	0.178	0.188	0.078	0.038	0.028	0.158	0.408	4.988	12.648	4.628	2.188	25.8
1991	2.058	0.778	0.168	0.048	0.198	0.158	0.608	1.068	4.428	5.748	4.428	1.948	21.5
1992	2.328	0.998	0.168	0.038	0.088	0.058	3.708	4.928	3.968	6.738	3.478	1.168	27.6
1993	0.478	0.158	0.078	0.038	0.018	0.028	1.278	0.798	6.438	4.378	1.558	1.918	17.1
1994	1.308	0.438	0.098	0.028	0.018	0.138	0.108	2.568	2.568	6.538	6.438	2.188	22.3
1995	2.018	0.848	1.068	0.378	0.368	0.308	0.238	0.728	3.008	4.808	6.948	6.528	27.2
1996	2.398	2.268	1.238	0.258	0.038	0.048	0.048	0.678	6.118	2.828	1.718	1.048	18.6
1997	0.388	0.288	0.188	0.538	0.208	0.028	0.048	3.698	2.018	1.708	1.958	1.128	12.1
1998	0.578	0.918	0.908	0.268	0.038	0.018	0.558	1.568	2.068	3.048	6.458	5.878	22.2
1999	1.798	0.278	0.138	0.098	0.048	0.028	0.028	0.138	0.748	4.268	3.978	4.988	16.4
2000	1.878	0.598	0.208	0.058	0.028	0.018	0.118	2.288	1.298	9.228	7.278	4.318	27.2
2001	2.138	0.738	0.178	0.738	0.328	0.088	0.488	4.028	2.578	4.958	5.458	3.158	24.8
2002	1.478	0.578	0.158	0.058	0.028	0.188	0.468	0.428	0.338	0.418	6.148	3.288	13.5
2003	1.348	0.518	0.198	0.158	0.068	0.038	0.888	0.428	2.138	2.298	2.768	1.528	12.3
2004	2.248	0.918	0.128	0.048	0.028	0.018	1.638	1.008	2.398	2.078	6.568	2.968	20.0
AVE :	1.54	0.84	0.34	0.15	0.20	0.25	0.87	2.33	3.51	4.22	4.32	2.76	21.3
SD :	1.01	0.86	0.43	0.22	0.52	0.49	1.09	2.18	2.38	2.49	2.49	1.49	7.5

Incremental Naturalised Flows at G1H035

File : G1H035.NAT
Units : Mm3
Descrip. : Simulated for 1927 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1927	1.482	0.912	0.542	0.050	0.010	0.010	0.412	0.412	4.032	1.382	2.282	2.422	13.9
1928	1.532	0.772	0.512	0.020	0.000	0.000	0.582	2.602	1.942	4.032	4.112	3.292	19.4
1929	1.932	0.842	0.472	0.030	0.010	0.000	0.452	0.492	0.632	1.312	1.722	12.202	20.1
1930	2.552	1.292	0.582	0.020	0.000	0.010	2.322	1.782	1.482	1.692	9.072	4.272	25.1
1931	2.552	0.982	0.472	0.030	0.320	0.060	0.412	5.992	6.082	4.332	4.182	3.892	29.3
1932	2.382	0.962	0.482	0.020	0.020	0.020	0.412	0.762	9.152	8.712	6.002	4.212	33.1
1933	2.432	1.052	0.492	0.010	0.000	0.020	0.412	0.792	1.252	2.262	3.542	3.632	15.9
1934	2.432	1.222	0.552	0.010	0.000	0.020	0.882	1.372	2.662	3.182	4.222	3.662	20.2
1935	2.172	0.932	0.492	0.050	0.020	0.020	0.402	1.292	0.842	1.652	3.522	3.982	15.4
1936	2.222	0.922	0.502	0.020	0.000	0.020	0.652	0.972	5.842	7.932	4.692	3.202	27.0
1937	1.712	0.752	0.432	0.060	0.020	0.010	0.982	1.742	1.422	1.952	2.832	3.732	15.6
1938	2.312	1.012	0.502	0.020	0.020	0.010	0.432	1.292	0.952	1.312	3.442	2.152	13.4
1939	1.192	0.612	0.432	0.010	0.040	0.080	0.662	0.732	5.462	2.392	2.232	2.322	16.1
1940	1.582	0.882	0.512	0.030	0.010	0.000	1.302	15.792	16.772	26.142	19.132	17.342	99.5
1941	4.592	1.692	0.562	0.020	0.000	0.000	0.442	2.952	31.002	4.412	9.162	5.222	60.0
1942	3.182	1.222	0.512	0.090	0.060	0.210	0.492	0.522	1.942	6.962	7.322	4.982	27.5
1943	2.802	1.132	0.522	0.020	0.000	0.010	0.412	1.252	9.822	3.432	13.072	5.182	37.6
1944	3.072	1.282	0.582	0.030	0.000	0.000	0.432	12.232	14.242	19.442	16.092	4.472	71.9
1945	2.252	0.952	0.482	0.010	0.000	0.010	0.502	1.282	1.402	2.002	2.702	14.992	26.6
1946	3.292	1.272	0.542	0.020	0.000	0.080	0.452	1.052	0.962	17.742	4.172	3.262	32.8
1947	2.342	1.062	0.482	0.010	0.000	0.360	0.562	1.752	1.552	5.672	3.362	4.842	22.0
1948	2.572	1.112	0.532	0.030	0.010	0.000	0.502	0.682	1.202	2.122	4.262	3.562	16.6
1949	2.262	1.142	0.542	0.010	0.000	0.000	1.832	0.762	0.872	30.492	3.422	4.972	46.3
1950	2.602	1.272	0.632	0.060	0.010	0.000	0.962	0.692	15.872	3.492	3.922	3.112	32.6
1951	2.252	1.372	0.592	0.020	0.010	0.010	0.452	1.452	2.772	4.772	8.772	5.612	28.1
1952	3.192	2.302	0.712	0.030	0.000	0.000	12.332	24.632	3.952	11.662	34.242	4.442	97.5
1953	2.012	0.882	0.562	0.040	0.020	0.030	0.512	13.082	3.082	40.632	25.622	4.882	91.3
1954	2.732	1.092	0.522	0.030	0.230	0.050	0.442	0.492	2.712	5.232	22.112	4.892	40.5
1955	3.002	1.302	0.562	0.030	0.000	0.000	0.422	1.752	7.742	4.172	5.522	3.802	28.3
1956	2.072	0.882	0.542	0.040	0.430	0.080	0.452	16.422	13.832	12.682	16.992	5.312	69.7
1957	5.462	1.752	0.562	0.010	0.040	0.040	0.462	4.652	1.952	1.902	4.972	2.762	24.6
1958	1.852	0.922	0.472	0.010	0.000	0.010	1.072	28.832	2.672	2.582	4.362	3.172	45.9
1959	2.422	1.052	0.492	0.020	0.000	0.020	0.462	2.222	2.372	2.032	1.962	1.582	14.6
1960	1.082	0.632	0.512	0.050	0.020	0.020	0.432	0.752	3.102	2.242	4.042	5.172	18.0
1961	2.592	0.932	0.462	0.010	0.010	0.010	0.952	0.732	24.792	4.912	11.592	4.952	51.9
1962	4.902	1.862	0.652	0.030	0.010	0.000	0.392	0.412	1.862	2.742	19.092	4.352	36.3
1963	2.332	1.132	0.572	0.030	0.050	0.040	0.432	0.562	4.232	2.332	3.772	2.932	18.4
1964	2.102	1.342	0.582	0.030	0.090	0.420	0.782	0.862	1.102	1.342	1.812	1.562	12.0
1965	1.052	0.602	0.462	0.020	0.000	0.230	0.502	0.532	1.512	3.812	2.882	2.642	14.2
1966	1.552	0.662	0.432	0.010	0.000	0.000	1.032	0.662	8.952	2.762	2.842	2.362	21.3
1967	1.602	0.882	0.492	0.020	0.010	0.000	0.962	5.262	3.492	5.652	5.932	3.972	28.3
1968	4.442	1.392	0.532	0.030	0.010	0.010	0.422	0.452	0.752	0.892	1.472	1.822	12.2
1969	1.762	0.862	0.462	0.010	0.000	0.000	0.392	1.552	5.732	4.112	4.882	3.842	23.6
1970	2.262	0.932	0.472	0.010	0.000	0.020	0.412	0.442	0.712	2.142	4.332	2.432	14.2
1971	1.312	0.642	0.432	0.020	0.010	0.010	0.572	0.792	1.662	2.012	2.252	2.092	11.8
1972	1.392	0.662	0.502	0.030	0.010	0.350	0.472	0.612	0.662	8.052	3.152	3.132	19.0
1973	1.952	0.822	0.502	0.030	0.010	0.000	0.392	7.432	14.392	4.082	67.322	5.492	102.4
1974	3.582	1.462	0.562	0.050	0.020	0.010	0.532	6.362	1.962	3.862	4.082	2.882	25.4
1975	1.702	0.882	0.472	0.010	0.000	0.000	2.422	0.892	21.952	4.832	4.532	3.682	41.4
1976	2.092	2.682	1.752	0.170	0.080	0.070	1.132	14.412	13.642	37.242	20.412	5.192	98.9
1977	2.812	1.092	0.532	0.030	0.010	0.020	0.472	0.552	0.592	0.592	2.222	2.002	10.9
1978	1.382	0.722	0.592	0.070	0.040	0.020	0.402	1.542	2.102	1.942	2.302	2.462	13.6
1979	1.932	0.922	0.462	0.070	0.040	0.010	0.432	2.792	2.812	2.212	2.802	2.182	16.7
1980	1.302	5.792	0.772	0.080	0.020	0.020	0.452	0.472	0.642	5.842	9.952	5.302	30.6
1981	2.912	1.102	0.502	0.130	0.030	0.040	1.232	0.872	1.752	2.512	3.692	2.572	17.3
1982	1.702	0.892	0.632	0.060	0.140	0.080	0.442	7.572	4.352	4.722	4.112	3.602	28.3
1983	2.032	0.842	0.492	0.020	0.000	0.090	0.472	23.612	2.192	2.482	2.502	4.132	38.8
1984	4.412	1.402	1.252	0.160	0.080	1.680	1.242	1.282	5.062	9.652	6.562	5.232	38.0
1985	2.762	0.962	0.472	0.020	0.010	0.050	0.472	0.672	2.722	3.352	8.522	4.722	24.7
1986	2.662	1.022	0.482	0.020	0.010	0.010	0.592	2.892	3.282	11.672	24.012	5.342	52.0
1987	2.792	0.972	0.522	0.040	0.010	0.020	1.702	0.872	2.592	2.922	6.762	4.692	23.9
1988	2.602	0.962	0.482	0.010	0.010	0.340	0.872	1.102	1.352	4.802	5.782	6.612	24.9
1989	3.532	1.532	0.602	0.030	0.020	0.010	10.362	5.982	6.242	8.492	5.882	3.892	46.6
1990	1.812	0.762	0.472	0.020	0.010	0.010	0.432	0.792	5.552	27.762	5.312	4.962	47.9
1991	3.842	1.482	0.552	0.020	0.030	0.030	0.462	0.732	5.252	5.412	4.352	3.792	25.9
1992	2.882	1.222	0.502	0.010	0.020	0.010	5.452	5.272	3.952	19.452	6.292	4.292	49.3
1993	1.992	0.762	0.462	0.010	0.000	0.000	0.602	0.592	24.042	3.152	2.802	2.322	36.7
1994	1.662	0.792	0.452	0.010	0.000	0.070	0.452	0.772	1.762	8.522	5.032	3.512	23.0
1995	2.672	1.132	0.752	0.070	0.150	0.090	0.512	1.232	5.242	4.642	8.652	16.762	41.9
1996	4.302	2.512	0.952	0.110	0.020	0.010	0.422	0.772	19.362	2.942	3.842	2.652	37.9
1997	1.302	0.692	0.462	0.020	0.010	0.000	0.412	3.062	1.592	2.392	2.632	2.212	14.8
1998	1.402	1.272	2.422	0.170	0.030	0.000	0.482	0.962	1.312	1.992	11.602	8.102	29.7
1999	3.292	1.072	0.502	0.040	0.010	0.000	0.392	0.472	0.742	3.112	2.962	4.302	16.9
2000	2.182	0.952	0.512	0.020	0.000	0.000	0.402	1.862	1.062	34.012	6.872	5.302	53.2
2001	3.232	1.302	0.532	0.090	0.070	0.040	0.432	2.562	1.782	4.772	4.202	3.452	22.5
2002	2.252	1.012	0.512	0.030	0.010	0.030	0.482	0.572	0.642	0.742	14.142	3.212	23.6
2003	2.122	0.902	0.492	0.050	0.010	0.010	0.682	0.562	2.602	2.562	3.072	2.472	15.5
2004	2.602	1.052	0.472	0.010	0.000	0.000	0.512	0.712	2.512	2.082	6.982	3.502	20.4
AVE :	2.44	1.16	0.58	0.04	0.03	0.07	0.99	3.42	5.15	6.76	7.71	4.40	32.7
SD :	0.90	0.66	0.28	0.04	0.07	0.20	1.83	5.74	6.37	8.58	9.30	2.87	21.8

Incremental Naturalised Flows at G1H036

File : G1H036.NAT
Units : Mm3
Descrip. : Simulated for 1927 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1927	2.490	1.710	0.910	1.490	0.790	0.080	0.280	0.280	5.470	3.120	4.420	5.310	26.4
1928	3.910	1.740	0.740	1.400	0.740	0.050	0.560	3.060	3.890	8.350	9.080	7.660	41.2
1929	4.790	2.210	0.990	1.600	0.900	0.150	0.360	0.390	0.420	1.200	2.310	8.260	23.6
1930	5.130	2.870	1.190	1.470	0.810	0.080	1.500	2.110	2.640	3.450	8.670	9.630	39.6
1931	7.540	3.470	1.110	1.540	1.970	0.590	0.500	4.690	5.050	6.770	7.740	7.930	48.9
1932	5.710	2.500	0.920	1.500	0.810	0.090	0.270	0.660	11.160	11.690	12.650	9.300	57.3
1933	6.420	3.250	1.160	1.530	0.850	0.690	0.740	2.070	2.630	3.730	5.010	5.770	33.9
1934	4.710	2.770	1.120	1.440	0.750	0.080	0.720	1.930	2.610	5.040	6.850	7.640	35.7
1935	5.520	2.730	1.050	1.620	0.930	0.150	0.290	0.720	1.120	2.410	4.060	5.680	26.3
1936	4.320	2.010	0.990	1.550	0.780	0.540	0.920	1.920	8.490	11.380	10.620	7.890	51.4
1937	4.970	2.280	0.760	1.450	0.830	0.080	1.070	2.110	2.760	3.660	4.780	5.730	30.5
1938	4.450	2.200	0.940	1.460	0.780	0.070	0.350	2.750	2.410	3.710	6.810	6.790	32.7
1939	4.590	2.170	0.880	1.420	0.920	0.280	0.920	2.060	5.780	6.360	6.700	6.590	38.7
1940	5.120	3.170	1.390	1.660	0.910	0.110	2.120	16.830	23.330	31.460	36.390	39.210	161.7
1941	8.570	3.920	1.370	1.560	0.780	0.040	0.250	6.130	30.520	11.680	33.680	9.280	107.8
1942	5.950	2.760	0.910	1.510	0.880	0.310	0.550	0.770	1.700	5.900	11.480	11.070	43.8
1943	7.810	4.000	1.500	1.580	0.810	0.060	0.370	2.990	20.520	14.670	36.210	10.240	100.8
1944	7.500	3.970	1.740	1.750	0.810	0.050	0.380	7.170	13.840	41.320	34.450	8.970	122.0
1945	5.210	2.440	0.890	1.400	0.740	0.050	0.440	1.330	2.190	4.240	6.940	12.150	38.0
1946	8.970	4.520	1.480	1.520	0.760	0.260	0.460	0.790	1.510	11.100	8.050	7.070	46.5
1947	4.670	2.300	0.820	1.370	0.730	0.110	0.430	1.470	2.160	9.040	7.860	9.000	40.0
1948	7.510	3.750	1.240	1.530	0.780	0.040	0.930	1.280	2.730	5.360	8.690	8.520	42.4
1949	6.460	3.630	1.470	1.570	0.780	0.040	2.860	1.430	1.790	26.610	8.720	8.230	63.6
1950	6.410	3.570	1.600	1.750	0.870	0.060	1.480	1.520	16.220	10.090	24.150	9.870	77.6
1951	6.590	3.780	1.490	1.510	0.780	0.080	0.360	2.670	3.140	6.010	13.360	18.080	57.9
1952	8.200	4.810	1.910	1.610	0.790	0.070	5.520	10.900	6.860	12.860	43.560	8.940	106.0
1953	5.010	2.550	1.120	1.540	0.820	0.090	0.790	22.920	7.880	60.420	38.850	9.790	151.8
1954	6.890	3.290	1.210	1.560	1.030	0.260	0.450	0.610	2.690	6.440	34.860	9.790	69.1
1955	6.960	3.980	1.520	1.560	0.800	0.080	0.330	1.280	10.320	9.540	33.700	9.200	79.3
1956	5.760	2.640	0.890	1.430	1.220	0.380	0.490	8.890	7.730	36.290	22.000	10.090	97.8
1957	9.420	4.820	1.400	1.500	0.910	0.190	0.380	2.850	2.920	3.280	6.230	5.800	39.7
1958	4.450	2.550	0.950	1.430	0.780	0.100	1.190	35.130	7.010	6.240	8.350	7.700	75.9
1959	5.770	2.870	0.910	1.400	0.740	0.080	0.390	2.690	6.270	5.770	5.360	4.480	36.7
1960	3.300	1.690	0.660	1.410	0.770	0.060	0.320	0.810	5.500	4.850	6.790	10.990	37.2
1961	7.460	3.080	0.960	1.450	0.900	0.230	0.820	0.990	54.210	9.790	37.960	9.600	127.5
1962	8.850	4.640	1.410	1.540	0.790	0.060	0.240	0.280	0.720	4.270	9.120	7.590	39.5
1963	5.020	2.620	1.340	1.610	0.990	0.230	0.420	0.810	5.660	5.730	9.020	8.020	41.5
1964	5.660	3.360	1.340	1.590	1.070	0.930	1.210	2.310	3.170	3.880	5.100	4.810	34.4
1965	3.290	1.600	0.710	1.420	0.750	0.440	0.680	0.880	2.360	9.170	8.370	8.090	37.8
1966	5.300	2.190	0.770	1.400	0.750	0.030	0.440	0.880	7.630	5.430	5.940	5.690	36.5
1967	4.660	2.830	1.110	1.520	0.820	0.050	2.620	3.740	5.760	18.230	18.110	9.010	68.5
1968	7.100	3.900	1.340	1.650	0.870	0.100	0.520	0.610	1.470	2.210	4.110	5.240	29.1
1969	4.580	2.310	0.750	1.380	0.760	0.040	0.220	2.600	6.780	8.020	9.950	9.480	46.9
1970	6.510	2.940	1.060	1.470	0.750	0.060	0.250	0.310	2.090	3.760	7.290	6.220	32.7
1971	3.780	1.690	0.620	1.380	0.790	0.100	0.530	2.010	2.900	4.230	5.190	5.120	28.3
1972	3.730	1.710	0.810	1.480	0.750	0.270	0.440	0.670	0.890	12.450	6.970	7.480	37.7
1973	5.400	2.490	1.220	1.630	0.800	0.060	0.230	3.160	10.780	7.560	97.420	11.050	141.8
1974	9.360	4.990	1.640	1.690	0.890	0.090	0.470	9.980	5.160	10.990	11.170	8.790	65.2
1975	6.140	3.490	1.240	1.460	0.750	0.060	0.880	1.160	27.320	10.330	10.660	8.970	72.5
1976	5.770	4.910	2.380	2.050	1.120	0.290	1.600	12.700	28.550	65.970	50.800	10.420	186.6
1977	7.140	3.380	1.370	1.640	0.840	0.210	0.720	1.200	1.360	1.330	4.980	4.810	29.0
1978	3.680	1.730	0.780	1.500	1.190	0.320	0.350	1.670	3.150	4.050	5.660	5.940	30.0
1979	5.440	2.960	0.940	1.490	0.860	0.090	0.470	2.890	4.430	5.040	6.230	5.690	36.5
1980	3.730	4.370	2.210	2.740	1.330	0.320	0.570	0.630	1.090	6.340	8.160	10.270	41.8
1981	7.200	3.130	1.160	1.610	0.850	0.130	1.670	2.150	6.030	7.210	8.280	6.710	46.1
1982	4.820	2.750	1.340	1.690	0.990	0.340	0.530	9.150	12.960	17.210	10.950	10.080	72.8
1983	6.780	3.060	1.220	1.540	0.780	0.350	0.620	21.610	5.750	7.010	7.300	9.550	65.6
1984	8.490	4.200	1.980	2.040	1.140	1.150	1.530	1.990	5.980	11.390	18.610	10.270	68.8
1985	6.900	3.030	1.000	1.480	0.800	0.200	0.690	1.130	7.500	10.500	31.250	10.820	75.3
1986	7.030	3.130	1.170	1.790	1.010	0.190	0.560	3.840	5.060	10.190	27.300	14.330	75.6
1987	8.090	3.500	1.430	1.660	0.790	0.060	1.260	1.450	2.960	5.330	7.960	8.220	42.7
1988	5.880	2.730	1.050	1.500	0.830	0.600	1.100	2.330	3.780	9.110	18.070	15.730	62.7
1989	8.500	4.210	1.460	1.570	0.910	0.140	7.530	4.950	9.700	41.240	13.720	9.460	103.4
1990	5.470	2.380	1.090	1.570	0.820	0.080	0.290	1.800	7.460	67.420	11.600	18.140	118.1
1991	10.000	5.030	1.570	1.560	0.840	0.230	0.610	1.560	25.550	12.910	11.540	10.150	81.6
1992	10.010	5.130	1.540	1.550	0.850	0.110	5.390	7.100	8.290	67.270	20.210	10.350	137.8
1993	6.490	2.670	0.940	1.440	0.760	0.040	0.520	0.780	31.710	7.550	6.940	7.000	66.8
1994	5.260	2.380	0.860	1.470	0.800	0.080	0.280	0.830	4.800	9.710	11.080	9.010	46.6
1995	6.990	3.670	3.980	2.310	1.170	0.350	0.510	1.110	10.890	7.680	11.130	26.500	76.3
1996	9.500	5.430	2.520	2.050	0.920	0.080	0.300	0.730	10.460	5.970	8.890	7.440	54.3
1997	4.200	2.220	1.130	1.530	0.770	0.050	0.330	5.200	3.770	5.490	6.360	5.620	36.7
1998	3.810	2.400	1.280	1.570	0.780	0.040	0.450	1.040	3.050	4.900	12.490	22.180	54.0
1999	7.630	3.170	1.140	1.510	0.780	0.060	0.240	0.370	1.050	2.430	3.570	4.940	26.9
2000	3.630	1.670	0.700	1.380	0.750	0.030	0.280	3.040	2.420	29.840	36.100	11.420	91.3
2001	8.530	4.590	1.750	2.390	1.400	0.350	0.820	3.370	5.940	9.620	24.150	9.730	72.6
2002	6.520	3.160	1.240	1.630	0.850	0.170	0.480	0.770	1.000	1.370	7.300	5.860	30.4
2003	4.960	2.460	1.010	1.660	0.870	0.080	0.530	0.590	3.270	4.100	5.340	4.970	29.8
2004	4.690	2.630	0.840	1.540	0.890	0.110	0.790	2.180	5.490	6.110	9.690	8.500	43.5
AVE :	6.09	3.11	1.24	1.59	0.88	0.19	0.90	3.64	7.58	12.24	15.02	9.38	61.8
SD :	1.77	0.96	0.49	0.23	0.19	0.20	1.19	5.64	8.93	14.91	14.73	5.03	35.4

Incremental Naturalised Flows at G1H037

File : G1H037.NAT
Units : Mm3
Descrip. : Simulated for 1927 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1927	0.503	0.483	0.250	0.110	0.050	0.083	0.093	0.093	2.013	0.873	1.263	1.623	7.4
1928	1.203	0.583	0.230	0.080	0.030	0.073	0.223	2.593	1.593	5.643	3.373	1.953	17.6
1929	1.283	0.643	0.290	0.130	0.080	0.113	0.133	0.143	0.133	0.483	0.913	2.863	7.2
1930	1.513	0.863	0.350	0.100	0.060	0.093	0.603	0.953	0.933	1.223	4.193	5.643	16.5
1931	1.953	0.993	0.340	0.150	1.050	0.333	0.223	2.123	2.103	2.103	3.763	2.343	17.5
1932	1.653	0.763	0.290	0.120	0.070	0.093	0.093	0.333	6.033	3.733	3.453	1.883	18.5
1933	1.583	0.863	0.290	0.090	0.050	0.193	0.173	1.113	0.803	1.173	1.413	1.573	9.3
1934	1.333	0.933	0.390	0.110	0.050	0.093	0.343	0.913	0.913	2.113	4.313	2.943	14.4
1935	1.663	0.913	0.360	0.200	0.120	0.133	0.113	0.403	0.453	0.823	1.333	1.783	8.3
1936	1.333	0.673	0.340	0.150	0.060	0.683	0.393	0.903	4.353	9.123	2.283	1.873	22.1
1937	1.303	0.663	0.220	0.090	0.070	0.093	1.253	1.303	1.273	1.753	2.013	2.373	12.4
1938	1.693	0.853	0.320	0.090	0.060	0.093	0.173	1.053	0.813	1.233	2.463	2.123	10.9
1939	1.473	0.783	0.340	0.110	0.090	0.143	0.333	0.963	2.073	1.833	1.823	2.073	12.0
1940	1.573	1.023	0.450	0.240	0.150	0.123	1.853	4.173	9.463	5.783	8.123	9.823	42.8
1941	1.813	0.923	0.380	0.150	0.060	0.073	0.073	4.843	8.353	3.423	7.593	1.943	29.6
1942	1.373	0.693	0.230	0.160	0.120	0.183	0.203	0.273	0.603	1.773	4.063	3.763	13.4
1943	1.693	0.983	0.380	0.120	0.050	0.073	0.113	2.063	6.303	4.883	7.033	2.243	25.9
1944	1.923	1.183	0.580	0.210	0.060	0.073	0.163	3.583	6.693	11.063	5.333	1.833	32.7
1945	1.203	0.663	0.260	0.080	0.030	0.083	0.333	0.903	1.033	1.683	2.203	5.783	14.2
1946	2.153	1.193	0.430	0.120	0.040	0.173	0.173	0.473	0.643	2.513	2.263	1.973	12.1
1947	1.333	0.693	0.250	0.070	0.040	0.103	0.153	0.583	0.763	2.663	2.283	3.033	11.9
1948	2.113	1.123	0.410	0.140	0.050	0.073	0.373	0.413	0.823	1.883	3.653	2.203	13.2
1949	1.793	1.153	0.470	0.140	0.050	0.073	1.033	0.383	0.583	6.303	1.923	2.353	16.2
1950	1.653	1.073	0.520	0.210	0.090	0.083	3.123	0.903	5.163	6.893	4.093	2.063	25.8
1951	1.503	1.003	0.410	0.100	0.040	0.083	0.143	0.813	0.853	1.733	10.193	8.373	25.2
1952	1.793	1.613	0.610	0.160	0.060	0.083	3.973	4.493	2.013	8.773	9.833	1.823	35.2
1953	1.063	0.613	0.300	0.110	0.070	0.113	0.683	7.793	1.993	13.273	9.453	1.973	37.4
1954	1.493	0.793	0.320	0.120	0.190	0.163	0.183	0.263	1.443	5.013	13.233	1.963	25.1
1955	1.553	1.003	0.410	0.120	0.050	0.083	0.143	0.983	3.333	5.213	8.273	1.893	23.0
1956	1.233	0.603	0.230	0.090	0.360	0.223	0.253	5.943	2.503	11.153	5.223	2.153	29.9
1957	2.723	1.293	0.390	0.120	0.280	0.203	0.203	1.853	1.373	1.363	2.153	1.863	13.8
1958	1.443	0.973	0.390	0.130	0.080	0.103	1.553	14.833	1.823	1.503	1.723	1.653	26.2
1959	1.333	0.703	0.240	0.080	0.040	0.123	0.203	1.493	2.563	1.863	1.733	1.433	11.8
1960	1.113	0.603	0.210	0.130	0.080	0.093	0.103	0.413	2.653	1.623	2.833	7.263	17.1
1961	1.763	0.833	0.260	0.090	0.110	0.153	0.483	0.433	14.973	3.663	10.593	2.033	35.4
1962	2.513	1.243	0.410	0.120	0.060	0.073	0.073	0.113	0.293	2.263	3.263	2.073	12.5
1963	1.403	0.803	0.430	0.160	0.300	0.193	0.153	0.253	1.843	1.803	3.203	1.923	12.4
1964	1.443	1.073	0.450	0.180	0.150	0.483	0.423	1.113	1.133	1.323	1.563	1.403	10.7
1965	1.033	0.543	0.220	0.090	0.040	0.363	0.243	0.333	1.143	3.153	2.273	2.053	11.5
1966	1.353	0.623	0.230	0.080	0.040	0.063	0.203	0.453	3.183	1.573	1.673	1.613	11.1
1967	1.413	0.923	0.360	0.140	0.080	0.083	2.243	1.613	2.153	9.673	3.873	1.803	24.3
1968	1.603	0.933	0.350	0.180	0.100	0.103	0.223	0.233	0.713	0.863	1.703	1.913	8.9
1969	1.513	0.763	0.250	0.070	0.040	0.073	0.063	1.743	3.603	3.063	5.073	2.193	18.4
1970	1.613	0.823	0.330	0.120	0.040	0.083	0.093	0.133	0.903	1.243	3.403	1.873	10.6
1971	1.173	0.553	0.200	0.090	0.070	0.113	0.363	0.863	1.083	1.503	1.753	1.683	9.4
1972	1.283	0.633	0.370	0.150	0.050	0.163	0.143	0.383	0.383	5.133	2.073	2.043	12.8
1973	1.473	0.713	0.440	0.180	0.070	0.083	0.073	2.273	3.623	2.093	21.663	2.963	35.6
1974	2.533	1.383	0.490	0.160	0.080	0.083	0.103	5.423	1.403	6.293	3.103	1.793	22.8
1975	1.323	0.863	0.340	0.090	0.030	0.073	0.143	0.253	12.723	3.153	2.653	2.163	23.8
1976	1.553	1.513	0.710	0.310	0.190	0.183	0.873	4.733	9.573	12.573	10.443	2.353	45.0
1977	1.743	0.903	0.430	0.180	0.100	0.153	0.383	0.543	0.563	0.523	2.463	1.653	9.6
1978	1.263	0.623	0.270	0.130	0.350	0.203	0.143	1.263	1.083	1.423	1.903	1.863	10.5
1979	1.963	1.063	0.340	0.130	0.090	0.093	0.203	1.963	1.953	1.763	2.273	1.973	13.8
1980	1.333	1.383	0.670	0.990	0.310	0.213	0.223	0.243	0.693	2.563	4.553	5.263	18.4
1981	1.623	0.743	0.280	0.130	0.070	0.083	0.663	0.723	2.763	2.183	2.413	1.833	13.5
1982	1.483	0.893	0.400	0.150	0.130	0.213	0.203	3.933	5.763	6.303	2.193	2.633	24.3
1983	1.583	0.793	0.340	0.120	0.050	0.283	0.213	9.553	1.403	1.843	1.893	3.833	21.9
1984	2.123	1.073	0.630	0.290	0.170	0.513	0.633	0.703	3.723	9.893	6.143	2.153	28.0
1985	1.453	0.653	0.220	0.080	0.050	0.143	0.343	0.463	3.503	7.093	8.163	2.273	24.4
1986	1.533	0.703	0.270	0.320	0.160	0.143	0.203	1.023	1.523	4.023	7.833	4.213	21.9
1987	1.693	0.803	0.390	0.150	0.050	0.073	0.473	0.563	1.183	1.883	4.643	2.263	14.1
1988	1.613	0.753	0.290	0.100	0.060	0.453	0.463	0.913	1.413	5.263	9.343	4.323	25.0
1989	1.823	1.253	0.500	0.150	0.140	0.133	2.953	1.333	3.853	12.093	2.723	1.933	28.9
1990	1.183	0.573	0.340	0.150	0.060	0.083	0.083	0.693	3.523	17.633	2.563	4.393	31.3
1991	1.813	0.923	0.330	0.100	0.060	0.133	0.203	0.863	9.813	7.433	4.183	2.143	28.0
1992	2.463	1.243	0.390	0.110	0.070	0.093	2.583	3.303	2.603	13.693	4.383	1.863	32.8
1993	1.093	0.483	0.190	0.070	0.030	0.063	0.123	0.173	9.073	1.423	1.403	1.583	15.7
1994	1.243	0.623	0.210	0.080	0.040	0.073	0.083	0.563	2.223	5.013	6.313	1.853	18.3
1995	1.463	0.793	1.430	0.330	0.170	0.173	0.183	0.483	3.313	2.083	6.383	5.983	22.8
1996	1.833	1.233	0.710	0.280	0.090	0.083	0.103	0.303	5.053	1.643	3.713	1.803	16.8
1997	1.093	0.723	0.370	0.140	0.050	0.073	0.113	2.923	1.493	2.973	2.283	1.983	14.2
1998	1.413	0.853	0.440	0.160	0.050	0.063	0.253	0.443	1.783	2.313	8.803	5.723	22.3
1999	1.543	0.733	0.280	0.100	0.050	0.073	0.073	0.183	0.613	1.103	1.423	1.843	8.0
2000	1.273	0.633	0.260	0.090	0.050	0.073	0.123	1.123	0.833	14.183	11.243	4.523	34.4
2001	1.823	1.113	0.460	0.420	0.240	0.173	0.313	1.203	2.193	6.813	7.533	2.073	24.3
2002	1.533	0.803	0.330	0.140	0.070	0.103	0.143	0.253	0.323	0.493	3.063	2.023	9.3
2003	1.703	0.863	0.340	0.180	0.080	0.083	0.193	0.183	1.833	1.473	1.823	1.663	10.4
2004	1.893	0.973	0.300	0.220	0.120	0.103	0.453	1.083	2.223	2.003	6.893	1.993	18.2
AVE :	1.56	0.87	0.37	0.15	0.11	0.14	0.47	1.63	2.81	4.21	4.52	2.66	19.5
SD :	0.36	0.24	0.17	0.12	0.13	0.11	0.74	2.34	2.93	3.86	3.51	1.61	9.0

Incremental Naturalised Flows at G1H038

File : G1H038.NAT
Units : Mm3
Descrip. : Simulated for 1927 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1927	0.136	1.486	1.196	0.496	0.126	0.596	0.516	0.206	7.456	5.546	3.316	3.246	24.3
1928	1.096	0.246	0.306	0.126	0.046	0.056	1.766	3.146	2.476	4.346	3.856	1.526	18.9
1929	0.636	0.336	0.556	0.406	0.276	1.096	0.716	0.216	0.216	2.996	4.086	5.936	17.4
1930	2.546	1.366	0.446	0.066	0.296	0.136	1.656	1.326	0.856	1.746	3.186	2.616	16.2
1931	2.586	0.756	0.066	0.056	0.956	0.366	0.076	3.436	3.526	3.076	2.276	1.926	19.0
1932	0.706	0.136	0.076	0.056	0.086	0.066	0.066	1.616	4.256	3.626	2.816	1.006	14.4
1933	0.866	0.326	0.056	0.046	0.066	0.286	0.156	2.666	1.906	1.826	1.466	1.506	11.1
1934	1.456	0.636	0.146	0.056	0.256	0.456	1.976	3.086	2.196	3.026	2.256	1.566	17.0
1935	0.536	0.356	0.146	1.096	0.456	0.116	0.076	1.186	1.436	1.896	3.286	2.986	13.5
1936	1.036	0.876	0.896	0.556	0.156	0.566	1.516	3.086	7.386	6.656	3.476	1.716	27.9
1937	1.156	0.526	0.126	1.186	0.476	0.106	2.106	4.096	2.606	2.886	2.696	3.736	21.6
1938	1.876	1.146	0.346	0.056	1.266	0.476	1.536	4.486	2.266	2.076	3.936	2.126	21.5
1939	0.616	0.856	1.226	0.376	0.756	1.156	2.506	3.216	4.526	3.596	2.636	2.316	23.7
1940	2.026	2.206	0.676	0.816	0.406	0.126	4.606	5.876	6.346	5.746	5.236	7.136	41.1
1941	3.396	0.826	0.426	0.286	0.096	0.056	0.426	4.326	9.626	5.476	4.176	1.786	30.8
1942	1.066	0.356	0.076	0.596	0.336	0.586	1.336	1.796	2.256	5.106	4.336	2.396	20.2
1943	1.966	1.096	0.256	0.116	0.076	0.116	1.596	5.636	7.086	6.686	4.416	3.426	32.4
1944	2.106	1.296	0.796	0.206	0.046	0.046	1.026	6.006	9.566	8.466	5.436	1.456	36.4
1945	1.256	0.826	0.326	0.146	0.086	0.476	1.316	2.576	2.566	3.256	4.076	5.456	22.3
1946	3.036	0.776	0.146	0.056	0.046	1.016	1.096	3.116	2.756	6.626	4.846	1.886	25.3
1947	1.506	0.516	0.086	0.046	0.066	0.266	0.806	3.546	3.956	4.766	3.386	4.076	23.0
1948	2.716	0.646	0.306	0.166	0.066	0.056	1.836	1.726	2.156	3.036	3.926	2.836	19.4
1949	1.676	1.646	0.496	0.066	0.046	0.056	3.576	1.506	2.116	8.146	3.326	2.946	25.5
1950	1.676	1.796	1.156	0.886	0.266	0.046	3.726	3.596	8.626	6.096	3.656	3.296	34.8
1951	2.116	1.736	0.486	0.056	0.056	0.706	1.446	2.516	2.066	3.206	6.046	5.076	25.4
1952	2.086	2.076	0.646	0.066	0.056	0.136	5.086	6.206	4.086	5.146	4.826	1.486	31.8
1953	0.596	1.456	0.506	0.136	0.136	0.376	2.846	7.096	5.216	8.136	6.566	2.206	35.2
1954	1.596	0.686	0.456	0.166	2.866	1.046	0.796	0.566	2.906	6.016	8.046	3.476	28.6
1955	2.456	2.316	0.646	0.086	0.056	0.446	1.736	3.616	6.666	7.066	5.766	2.906	33.7
1956	1.436	0.386	0.386	0.176	1.436	0.936	1.076	6.786	6.046	6.036	5.116	3.436	33.2
1957	3.416	1.026	0.086	0.146	1.466	0.716	1.106	5.516	3.976	1.986	3.656	2.026	25.1
1958	1.376	1.096	0.296	0.096	0.076	0.196	3.146	7.606	3.636	1.096	2.446	2.256	23.3
1959	1.826	0.526	0.166	0.236	0.136	1.036	0.846	2.966	5.896	2.296	1.176	1.176	18.2
1960	0.736	0.226	0.156	0.716	0.276	0.076	0.266	2.316	5.156	3.586	4.636	3.696	21.8
1961	1.566	0.336	0.176	0.126	0.576	1.516	2.316	1.396	8.516	5.876	6.656	3.226	32.2
1962	3.176	1.636	0.296	0.346	0.146	0.056	0.126	0.956	2.526	5.566	6.416	3.116	24.3
1963	0.726	1.006	1.296	0.376	1.666	0.606	0.596	2.486	4.396	3.946	4.266	1.896	23.2
1964	1.796	1.596	0.436	0.776	1.216	2.626	2.386	4.436	2.766	1.746	3.986	2.316	26.0
1965	0.906	0.276	1.016	0.376	0.106	2.746	1.946	1.856	3.366	5.126	4.326	2.526	24.5
1966	0.686	0.376	0.316	0.426	0.156	0.066	2.886	3.216	6.236	3.846	2.066	2.086	22.3
1967	2.186	1.586	0.406	0.846	0.406	0.086	2.726	3.656	4.696	5.016	3.826	1.376	26.7
1968	2.516	0.896	0.506	1.326	0.566	0.206	1.246	0.656	2.736	3.026	3.586	3.656	20.9
1969	2.546	0.666	0.086	0.076	0.096	0.066	0.056	4.556	6.146	4.656	4.916	3.086	26.9
1970	1.116	0.586	0.826	0.296	0.056	0.216	0.276	1.416	3.426	4.446	4.696	1.906	19.2
1971	1.016	0.346	0.336	0.566	0.256	0.116	3.126	3.336	2.966	2.316	2.366	2.216	18.9
1972	0.966	0.216	0.536	0.216	0.046	0.646	0.296	1.266	1.376	4.406	3.106	2.546	15.6
1973	1.466	0.556	1.156	0.406	0.056	0.056	0.066	3.356	5.526	3.866	7.776	4.136	28.4
1974	2.736	1.536	0.356	0.146	0.106	0.096	0.546	4.876	4.496	6.666	4.736	1.386	27.6
1975	1.376	0.806	0.186	0.056	0.046	0.446	0.906	1.346	6.566	6.796	3.876	2.756	25.1
1976	1.516	3.356	2.936	0.886	0.546	0.386	3.476	6.056	10.786	8.896	7.316	3.616	49.7
1977	1.236	0.306	0.626	0.416	0.176	0.356	1.676	2.236	1.026	1.126	5.326	3.866	18.3
1978	2.426	0.816	1.126	0.486	1.046	0.496	0.366	2.786	5.076	3.396	2.646	2.296	22.9
1979	3.556	1.136	0.086	0.436	0.636	0.216	1.576	3.376	5.086	2.246	2.706	2.126	23.1
1980	1.356	2.536	1.796	2.126	0.646	0.896	1.406	0.766	2.496	5.456	4.506	3.466	27.4
1981	1.526	0.906	0.396	0.446	0.166	0.066	2.186	2.666	3.706	4.776	3.106	1.296	21.2
1982	1.436	0.866	1.096	0.506	0.996	0.836	0.396	6.086	7.936	4.606	2.366	3.416	30.5
1983	1.236	0.166	0.096	0.096	0.066	1.076	1.346	4.886	2.436	2.846	1.696	2.516	18.4
1984	2.396	0.636	2.476	1.176	0.786	1.726	1.966	1.316	4.626	4.906	2.996	2.026	27.0
1985	1.016	0.266	0.086	0.136	0.166	1.076	1.286	1.196	3.546	3.336	6.336	3.656	22.0
1986	0.846	0.206	0.096	0.996	0.436	0.266	1.096	4.056	4.706	5.076	4.736	3.886	26.3
1987	1.446	0.366	1.146	0.406	0.046	0.226	2.186	3.026	3.096	4.126	4.466	3.386	23.9
1988	1.496	0.386	0.216	0.096	0.336	3.276	2.346	3.066	3.126	5.256	4.576	3.586	27.7
1989	2.256	1.626	0.436	0.076	0.496	0.206	4.816	3.566	5.416	6.776	3.216	1.176	30.0
1990	0.396	0.486	0.856	0.276	0.056	0.066	0.696	3.506	6.026	8.856	3.736	2.596	27.5
1991	1.576	0.426	0.096	0.046	0.396	0.526	2.236	2.496	7.256	5.376	3.096	2.416	25.9
1992	3.046	1.336	0.226	0.066	0.586	0.246	6.646	6.386	6.216	7.896	4.266	0.996	37.8
1993	0.186	0.086	0.096	0.146	0.076	0.056	0.566	1.016	7.026	5.116	2.016	1.996	18.3
1994	0.916	0.226	0.096	0.236	0.116	0.066	0.196	2.996	4.286	4.906	5.526	2.206	21.7
1995	2.796	0.986	1.106	0.396	0.626	0.716	1.046	1.036	6.326	5.956	4.726	4.406	30.1
1996	3.936	2.676	2.616	0.726	0.056	0.056	1.006	2.126	5.046	3.766	3.196	1.216	26.4
1997	0.546	3.376	1.176	0.246	0.106	0.116	1.136	6.986	5.266	3.836	2.676	1.386	26.8
1998	0.566	1.526	1.076	0.246	0.046	0.046	1.366	1.796	3.706	2.716	3.006	2.636	18.7
1999	0.806	0.326	0.136	0.406	0.226	0.116	0.086	2.096	2.546	3.886	4.056	4.086	18.7
2000	1.356	0.236	0.096	0.116	0.096	0.056	0.516	4.216	3.136	9.526	7.686	4.296	31.3
2001	2.176	0.606	0.116	2.216	1.116	0.186	1.296	3.406	4.776	6.446	4.266	2.246	28.8
2002	1.706	0.776	0.596	0.226	0.066	2.276	1.396	1.386	1.296	1.926	6.146	4.216	21.9
2003	2.306	0.596	0.756	0.796	0.226	0.136	1.936	0.816	3.026	3.126	3.806	2.156	19.6
2004	2.566	0.856	0.096	0.096	0.756	0.326	1.146	1.906	4.326	3.646	4.796	2.346	22.8
AVE :	1.64	0.93	0.56	0.39	0.38	0.50	1.55	3.11	4.39	4.59	4.10	2.74	24.9
SD :	0.86	0.72	0.58	0.43	0.48	0.65	1.27	1.80	2.21	1.96	1.47	1.17	6.5

Incremental Naturalised Flows at G1H040

File : G1H040.NAT
Units : Mm3
Descrip. : Simulated for 1927 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1927	0.088	0.020	0.010	0.000	0.000	0.000	0.000	0.048	0.748	0.198	0.238	0.268	1.6
1928	0.178	0.040	0.010	0.000	0.000	0.000	0.130	0.218	0.158	0.708	1.088	0.238	2.7
1929	0.158	0.040	0.010	0.000	0.000	0.000	0.010	0.058	0.058	0.118	0.158	0.568	1.1
1930	0.208	0.070	0.020	0.000	0.000	0.000	0.060	0.108	0.108	0.138	0.338	0.318	1.3
1931	0.208	0.060	0.010	0.000	0.030	0.010	0.000	0.268	0.238	0.258	0.278	0.838	2.2
1932	0.188	0.040	0.010	0.000	0.000	0.000	0.000	0.058	0.828	0.738	0.698	0.228	2.7
1933	0.178	0.060	0.020	0.000	0.000	0.000	0.000	0.078	0.088	0.098	0.128	0.228	0.8
1934	0.158	0.070	0.020	0.000	0.000	0.000	0.010	0.068	0.088	0.128	0.258	0.218	1.0
1935	0.158	0.040	0.010	0.010	0.000	0.000	0.000	0.078	0.068	0.138	0.248	0.218	0.9
1936	0.148	0.030	0.010	0.000	0.000	0.000	0.010	0.198	0.408	3.268	0.268	0.198	4.5
1937	0.128	0.030	0.010	0.000	0.000	0.000	0.030	0.118	0.118	0.138	0.188	0.208	0.9
1938	0.148	0.040	0.010	0.000	0.000	0.000	0.000	0.258	0.108	0.148	0.348	0.258	1.3
1939	0.168	0.040	0.010	0.000	0.000	0.000	0.030	0.118	0.308	0.228	0.258	0.248	1.4
1940	0.168	0.070	0.020	0.000	0.000	0.000	0.120	1.378	3.798	2.988	2.928	2.868	14.3
1941	0.198	0.050	0.010	0.000	0.000	0.000	0.000	0.428	2.558	1.308	2.478	0.228	7.2
1942	0.138	0.030	0.010	0.000	0.000	0.000	0.000	0.058	0.098	0.288	1.948	0.398	2.9
1943	0.198	0.070	0.020	0.000	0.000	0.000	0.000	0.108	0.998	2.288	1.718	0.238	5.6
1944	0.178	0.060	0.040	0.010	0.000	0.000	0.000	0.238	0.678	3.498	1.988	0.218	6.9
1945	0.128	0.030	0.010	0.000	0.000	0.000	0.010	0.118	0.128	0.218	0.728	2.438	3.8
1946	0.218	0.070	0.020	0.000	0.000	0.000	0.000	0.068	0.078	0.948	0.978	0.228	2.6
1947	0.168	0.050	0.010	0.000	0.000	0.000	0.000	0.128	0.108	0.538	1.418	0.298	2.7
1948	0.218	0.060	0.010	0.000	0.000	0.000	0.070	0.078	0.128	0.208	0.448	0.258	1.4
1949	0.188	0.060	0.010	0.000	0.000	0.000	0.150	0.078	0.078	1.798	0.258	0.228	2.8
1950	0.158	0.050	0.020	0.010	0.000	0.000	0.130	0.098	1.148	1.388	2.688	0.248	5.9
1951	0.178	0.080	0.020	0.000	0.000	0.000	0.000	0.178	0.118	0.188	0.728	0.278	1.7
1952	0.188	0.070	0.020	0.000	0.000	0.000	0.190	1.068	0.268	2.368	2.858	0.218	7.2
1953	0.138	0.040	0.010	0.000	0.000	0.000	0.030	1.018	0.298	6.968	2.138	0.228	10.8
1954	0.168	0.050	0.010	0.000	0.010	0.000	0.000	0.048	0.168	0.198	2.968	0.248	3.8
1955	0.188	0.070	0.020	0.000	0.000	0.000	0.000	0.068	0.848	1.598	4.078	0.238	7.1
1956	0.158	0.040	0.010	0.000	0.020	0.010	0.000	0.268	0.328	3.418	1.298	0.238	5.7
1957	0.348	0.090	0.020	0.000	0.000	0.000	0.000	0.148	0.118	0.128	0.368	0.218	1.4
1958	0.158	0.040	0.010	0.000	0.000	0.000	0.020	1.678	0.208	0.188	0.318	0.238	2.8
1959	0.168	0.050	0.010	0.000	0.000	0.000	0.000	0.248	0.388	0.218	0.198	0.168	1.4
1960	0.118	0.020	0.000	0.000	0.000	0.000	0.000	0.068	0.388	0.168	0.288	0.698	1.7
1961	0.188	0.040	0.010	0.000	0.000	0.010	0.030	0.068	3.478	1.668	3.248	0.238	8.9
1962	0.308	0.090	0.020	0.000	0.000	0.000	0.000	0.048	0.068	0.268	0.638	0.248	1.6
1963	0.158	0.050	0.020	0.000	0.000	0.000	0.010	0.068	0.398	0.198	1.088	0.258	2.2
1964	0.188	0.060	0.010	0.000	0.030	0.030	0.020	0.118	0.108	0.118	0.198	0.168	1.0
1965	0.118	0.030	0.010	0.000	0.000	0.020	0.010	0.058	0.118	0.398	0.248	0.228	1.2
1966	0.148	0.030	0.000	0.000	0.000	0.000	0.010	0.058	0.518	0.208	0.238	0.218	1.4
1967	0.168	0.050	0.010	0.000	0.000	0.000	0.040	0.288	0.288	2.158	0.978	0.218	4.2
1968	0.318	0.080	0.020	0.000	0.000	0.000	0.010	0.058	0.098	0.098	0.178	0.178	1.0
1969	0.188	0.050	0.010	0.000	0.000	0.000	0.000	0.178	0.318	0.478	1.508	0.258	2.9
1970	0.178	0.040	0.010	0.000	0.000	0.000	0.000	0.048	0.158	0.218	0.218	0.178	1.0
1971	0.108	0.020	0.000	0.000	0.000	0.000	0.020	0.118	0.128	0.178	0.188	0.178	0.9
1972	0.128	0.030	0.010	0.000	0.000	0.010	0.000	0.058	0.058	0.458	0.258	0.248	1.2
1973	0.168	0.040	0.010	0.000	0.000	0.000	0.000	0.168	0.358	0.238	8.078	0.288	9.3
1974	0.228	0.070	0.020	0.000	0.000	0.000	0.010	0.468	0.158	0.708	0.788	0.218	2.6
1975	0.198	0.060	0.010	0.000	0.000	0.000	0.130	0.078	1.648	2.148	0.268	0.228	4.7
1976	0.158	0.300	0.040	0.010	0.000	0.000	0.030	0.848	3.098	4.838	2.818	0.238	12.3
1977	0.168	0.040	0.010	0.000	0.000	0.000	0.000	0.058	0.058	0.058	0.218	0.138	0.7
1978	0.108	0.020	0.000	0.000	0.010	0.000	0.000	0.078	0.128	0.118	0.168	0.168	0.8
1979	0.148	0.040	0.010	0.000	0.000	0.000	0.000	0.098	0.138	0.128	0.138	0.128	0.8
1980	0.088	0.330	0.060	0.100	0.010	0.000	0.000	0.048	0.058	0.278	0.228	0.708	1.9
1981	0.198	0.050	0.010	0.010	0.000	0.010	0.160	0.108	0.208	0.208	0.208	0.168	1.3
1982	0.118	0.030	0.020	0.010	0.010	0.010	0.000	0.598	0.798	2.058	0.268	0.238	4.1
1983	0.158	0.040	0.010	0.000	0.000	0.160	0.030	1.368	0.208	0.278	0.258	2.548	5.0
1984	0.258	0.080	0.070	0.020	0.030	0.430	0.060	0.108	0.158	1.288	2.488	0.268	5.2
1985	0.178	0.040	0.010	0.000	0.000	0.000	0.000	0.048	0.188	0.188	1.338	0.248	2.2
1986	0.168	0.040	0.010	0.000	0.000	0.000	0.000	0.518	0.338	0.948	0.808	0.248	3.0
1987	0.158	0.030	0.010	0.000	0.000	0.000	0.220	0.088	0.268	0.188	0.278	0.278	1.5
1988	0.188	0.040	0.010	0.000	0.000	0.070	0.050	0.118	0.218	0.528	2.218	0.708	4.1
1989	0.228	0.080	0.020	0.000	0.000	0.000	0.250	0.318	0.568	3.028	0.278	0.218	4.9
1990	0.128	0.030	0.010	0.000	0.000	0.000	0.000	0.068	0.228	2.628	0.268	0.288	3.6
1991	0.228	0.070	0.020	0.000	0.000	0.000	0.020	0.088	0.388	0.918	0.788	0.248	2.7
1992	0.248	0.070	0.010	0.000	0.000	0.000	0.300	0.428	0.268	4.538	0.538	0.228	6.6
1993	0.138	0.030	0.010	0.000	0.000	0.000	0.020	0.068	1.128	0.528	0.248	0.248	2.4
1994	0.178	0.040	0.010	0.000	0.000	0.000	0.000	0.098	0.138	0.218	0.278	0.218	1.1
1995	0.208	0.060	0.170	0.020	0.010	0.010	0.010	0.068	0.338	0.878	2.148	0.288	4.2
1996	0.218	0.100	0.040	0.010	0.000	0.000	0.000	0.068	0.708	0.198	0.228	0.178	1.7
1997	0.118	0.060	0.020	0.000	0.000	0.000	0.000	0.258	0.148	0.198	0.208	0.178	1.1
1998	0.128	0.070	0.020	0.000	0.000	0.000	0.020	0.068	0.098	0.138	0.378	1.388	2.3
1999	0.188	0.040	0.010	0.000	0.000	0.000	0.000	0.048	0.058	0.228	0.158	0.218	0.9
2000	0.138	0.030	0.010	0.000	0.000	0.000	0.000	0.208	0.108	2.798	2.148	0.328	5.7
2001	0.208	0.070	0.020	0.010	0.010	0.000	0.020	0.298	0.178	0.978	2.348	0.288	4.4
2002	0.208	0.060	0.010	0.000	0.000	0.000	0.000	0.058	0.058	0.058	0.858	0.208	1.5
2003	0.158	0.040	0.010	0.010	0.000	0.000	0.010	0.058	0.128	0.148	0.168	0.158	0.8
2004	0.218	0.060	0.010	0.000	0.000	0.000	0.090	0.098	0.238	0.208	2.878	0.248	4.0
AVE :	0.17	0.06	0.02	0.00	0.00	0.01	0.03	0.22	0.44	0.96	1.03	0.36	3.3
SD :	0.05	0.05	0.02	0.01	0.01	0.05	0.06	0.32	0.72	1.32	1.27	0.49	2.8

Incremental Naturalised Flows at G1H041

File : G1H041.NAT
Units : Mm3
Descrip. : Simulated for 1927 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1927	0.315	0.345	0.165	0.105	0.085	0.095	0.095	0.095	2.465	0.915	2.285	2.285	9.2
1928	0.715	0.305	0.145	0.095	0.075	0.075	0.235	3.055	3.325	9.055	3.945	1.185	22.1
1929	0.745	0.325	0.165	0.105	0.095	0.095	0.115	0.115	0.115	0.475	1.345	5.025	8.7
1930	0.895	0.465	0.195	0.095	0.095	0.085	0.715	0.925	1.165	2.045	6.895	6.805	20.3
1931	1.125	0.495	0.165	0.105	1.265	0.205	0.135	2.975	3.755	2.805	2.995	2.675	18.6
1932	0.945	0.385	0.155	0.105	0.085	0.085	0.085	0.345	6.885	8.605	4.465	1.125	23.2
1933	0.855	0.435	0.175	0.095	0.075	0.175	0.145	1.095	0.735	2.445	2.065	1.865	10.1
1934	0.785	0.545	0.215	0.095	0.075	0.095	0.435	0.735	1.415	4.335	7.295	2.485	18.5
1935	0.945	0.465	0.185	0.145	0.105	0.095	0.095	0.295	0.285	0.585	2.525	2.795	8.5
1936	0.725	0.315	0.175	0.105	0.075	0.515	0.265	0.755	8.265	14.935	2.305	1.155	29.5
1937	0.755	0.345	0.125	0.095	0.095	0.085	1.695	1.315	1.735	2.595	2.705	2.685	14.2
1938	0.925	0.415	0.175	0.095	0.095	0.095	0.145	1.085	0.995	2.195	4.225	2.055	12.4
1939	0.875	0.425	0.175	0.105	0.095	0.105	0.235	0.665	3.755	1.955	1.315	2.425	12.1
1940	0.805	0.445	0.195	0.135	0.105	0.095	1.875	6.085	13.175	6.425	9.505	13.755	52.5
1941	1.035	0.455	0.185	0.105	0.075	0.075	0.075	4.535	14.575	5.405	9.425	1.125	37.0
1942	0.755	0.355	0.135	0.125	0.105	0.125	0.145	0.205	0.825	4.815	10.375	5.245	23.1
1943	0.965	0.525	0.205	0.105	0.085	0.075	0.115	2.445	11.575	9.185	11.345	2.195	38.8
1944	1.035	0.515	0.225	0.115	0.075	0.075	0.175	4.725	12.325	16.175	9.025	1.095	45.5
1945	0.655	0.315	0.135	0.085	0.075	0.075	0.285	0.625	1.195	3.105	3.645	9.295	19.4
1946	1.745	0.575	0.185	0.085	0.075	0.205	0.125	0.255	0.415	5.835	4.305	1.155	14.9
1947	0.715	0.325	0.135	0.085	0.075	0.115	0.135	0.505	0.495	5.485	2.625	2.795	13.4
1948	1.365	0.535	0.185	0.105	0.075	0.075	0.395	0.395	1.365	3.535	4.525	1.605	14.1
1949	1.015	0.625	0.235	0.105	0.075	0.075	1.245	0.285	0.425	12.125	1.275	2.985	20.4
1950	0.965	0.535	0.235	0.135	0.095	0.075	2.415	0.565	9.725	10.375	6.125	1.735	32.9
1951	0.875	0.565	0.205	0.095	0.075	0.075	0.115	1.095	1.925	3.705	13.885	8.985	31.5
1952	1.025	1.105	0.295	0.105	0.075	0.075	4.345	6.035	2.425	12.975	12.495	1.095	42.0
1953	0.595	0.345	0.175	0.105	0.095	0.095	0.455	7.345	3.575	17.755	11.385	1.185	43.1
1954	0.915	0.435	0.165	0.105	0.225	0.125	0.135	0.165	1.855	6.375	19.415	1.175	31.0
1955	0.885	0.535	0.215	0.105	0.075	0.075	0.115	0.685	5.435	8.225	11.255	1.125	28.7
1956	0.735	0.345	0.145	0.095	0.285	0.145	0.135	8.275	4.345	17.815	8.035	1.495	41.8
1957	2.435	0.575	0.165	0.085	0.145	0.105	0.115	2.035	1.685	0.775	4.035	1.255	13.4
1958	0.845	0.485	0.185	0.095	0.085	0.095	0.675	16.675	1.405	1.145	3.595	1.185	26.4
1959	1.005	0.445	0.145	0.085	0.075	0.095	0.135	1.625	4.305	1.595	1.405	0.875	11.7
1960	0.645	0.325	0.135	0.105	0.095	0.095	0.095	0.405	3.625	2.125	3.725	9.645	21.0
1961	0.995	0.395	0.135	0.085	0.135	0.115	0.415	0.305	22.105	6.715	15.755	1.195	48.3
1962	3.175	0.605	0.175	0.105	0.085	0.075	0.075	0.095	0.365	2.765	6.515	1.735	15.7
1963	0.815	0.445	0.225	0.115	0.285	0.125	0.135	0.325	3.725	3.485	7.805	1.185	18.6
1964	0.845	0.565	0.225	0.105	0.145	0.455	0.335	0.925	1.705	1.645	2.585	0.915	10.4
1965	0.625	0.285	0.155	0.105	0.075	0.355	0.205	0.235	1.585	7.005	3.915	2.205	16.7
1966	0.835	0.325	0.125	0.085	0.075	0.075	0.385	0.425	5.915	1.935	2.135	1.245	13.5
1967	0.885	0.515	0.195	0.105	0.095	0.075	1.335	2.115	4.075	15.155	6.985	1.065	32.5
1968	1.195	0.515	0.205	0.125	0.095	0.095	0.205	0.165	0.535	0.595	2.975	1.935	8.6
1969	0.795	0.375	0.135	0.085	0.075	0.075	0.075	1.745	5.675	5.255	6.285	2.025	22.5
1970	0.925	0.415	0.175	0.105	0.075	0.085	0.095	0.115	0.765	3.355	7.325	1.145	14.5
1971	0.685	0.295	0.125	0.105	0.095	0.095	0.305	0.915	2.245	2.465	1.965	1.215	10.5
1972	0.695	0.295	0.195	0.105	0.075	0.165	0.115	0.225	0.235	8.175	3.145	1.865	15.2
1973	0.845	0.375	0.255	0.125	0.085	0.075	0.075	2.965	6.955	3.825	37.765	2.425	55.7
1974	2.635	0.695	0.235	0.115	0.095	0.075	0.105	6.765	2.115	8.045	3.495	1.095	25.4
1975	0.765	0.445	0.175	0.095	0.075	0.075	0.435	0.335	16.135	10.495	2.265	1.765	33.0
1976	0.845	1.365	0.455	0.205	0.165	0.125	0.715	5.585	14.585	18.635	16.075	2.175	60.9
1977	0.935	0.445	0.205	0.115	0.095	0.295	0.315	0.425	0.425	0.385	4.235	2.225	10.0
1978	0.725	0.305	0.145	0.105	0.295	0.125	0.095	1.075	2.045	1.985	3.485	1.765	12.1
1979	2.535	0.585	0.175	0.145	0.125	0.095	0.215	1.945	3.565	1.815	3.005	1.145	15.3
1980	0.725	1.845	0.405	0.965	0.185	0.125	0.155	0.205	0.765	6.245	8.215	6.835	26.6
1981	0.935	0.395	0.155	0.105	0.095	0.075	0.985	0.785	5.565	4.795	2.715	1.105	17.7
1982	0.985	0.495	0.225	0.125	0.125	0.155	0.155	4.215	11.935	8.625	1.765	2.745	31.5
1983	0.875	0.375	0.175	0.105	0.075	0.565	0.195	10.415	2.385	3.115	1.785	6.565	26.6
1984	1.675	0.535	0.585	0.205	0.145	0.715	0.495	0.525	5.835	12.175	7.845	2.045	32.7
1985	0.835	0.325	0.125	0.085	0.085	0.125	0.305	0.365	5.375	7.905	12.415	1.895	29.8
1986	0.795	0.315	0.145	0.215	0.125	0.105	0.175	0.995	3.205	7.145	10.995	4.455	28.6
1987	0.975	0.405	0.245	0.125	0.075	0.075	0.625	0.525	2.745	3.845	8.915	2.495	21.0
1988	0.945	0.405	0.155	0.095	0.095	0.595	0.435	1.685	3.275	9.935	10.845	5.015	33.4
1989	1.025	0.615	0.225	0.105	0.115	0.095	3.615	1.495	5.725	18.785	2.685	1.165	35.6
1990	0.655	0.295	0.155	0.105	0.085	0.075	0.095	0.715	5.155	28.985	2.665	4.515	43.4
1991	1.085	0.495	0.185	0.105	0.095	0.115	0.135	0.735	13.165	9.465	3.795	2.015	31.3
1992	3.605	0.675	0.195	0.105	0.095	0.085	2.885	5.235	6.355	16.255	5.225	1.115	41.8
1993	0.615	0.255	0.125	0.095	0.075	0.075	0.205	0.185	10.985	1.755	1.425	2.215	17.9
1994	0.815	0.365	0.145	0.095	0.085	0.075	0.095	0.765	3.195	7.555	7.455	1.105	21.7
1995	0.965	0.445	2.475	0.215	0.145	0.125	0.125	0.255	4.505	3.375	9.855	9.175	31.6
1996	1.085	0.745	0.435	0.165	0.095	0.075	0.095	0.285	6.795	2.295	6.215	1.085	19.3
1997	0.595	0.425	0.205	0.105	0.075	0.075	0.095	3.495	2.395	4.105	2.115	1.185	14.8
1998	0.825	0.515	0.295	0.135	0.085	0.075	0.195	0.405	2.565	4.155	10.755	6.995	26.9
1999	0.875	0.355	0.145	0.105	0.085	0.075	0.075	0.215	0.675	2.105	2.225	2.625	9.5
2000	0.735	0.335	0.155	0.095	0.085	0.075	0.095	1.325	0.595	20.715	15.035	4.855	44.0
2001	1.125	0.655	0.245	0.485	0.185	0.125	0.475	2.865	4.725	12.115	9.985	1.565	34.5
2002	0.905	0.405	0.185	0.125	0.095	0.095	0.145	0.235	0.275	0.425	6.755	3.255	12.8
2003	1.155	0.495	0.215	0.135	0.095	0.075	0.295	0.185	3.525	3.685	3.155	1.195	14.2
2004	2.475	0.565	0.165	0.165	0.105	0.095	0.365	1.075	4.585	2.255	9.355	1.305	22.5
AVE :	1.03	0.48	0.22	0.12	0.11	0.13	0.45	1.84	4.39	6.58	6.50	2.74	24.6
SD :	0.57	0.23	0.27	0.11	0.14	0.13	0.77	2.74	4.41	5.75	5.49	2.49	12.4

Incremental Naturalised Flows at G1H043

File : G1H043.NAT
Units : Mm3
Descrip. : Simulated for 1927 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1927	0.214	0.020	0.010	0.000	0.000	0.000	0.000	0.154	0.524	0.234	0.284	0.334	1.8
1928	0.254	0.020	0.000	0.000	0.000	0.000	0.000	0.174	0.204	0.364	0.464	0.404	1.9
1929	0.274	0.030	0.010	0.000	0.000	0.000	0.000	0.154	0.154	0.164	0.184	0.574	1.5
1930	0.304	0.060	0.010	0.000	0.000	0.000	0.010	0.174	0.184	0.204	0.394	0.434	1.8
1931	0.354	0.050	0.010	0.000	0.000	0.000	0.000	0.474	0.274	0.394	0.454	0.454	2.4
1932	0.344	0.050	0.010	0.000	0.000	0.000	0.000	0.154	0.604	0.704	0.744	0.634	3.2
1933	0.404	0.070	0.010	0.000	0.000	0.000	0.000	0.164	0.184	0.224	0.294	0.344	1.7
1934	0.304	0.050	0.010	0.000	0.000	0.000	0.000	0.174	0.194	0.274	0.384	0.424	1.8
1935	0.314	0.040	0.010	0.000	0.000	0.000	0.000	0.314	0.194	0.244	0.354	0.474	1.9
1936	0.364	0.050	0.010	0.000	0.000	0.000	0.000	0.174	0.384	0.694	0.684	0.494	2.8
1937	0.314	0.040	0.000	0.000	0.000	0.000	0.000	0.174	0.204	0.224	0.274	0.314	1.5
1938	0.254	0.030	0.010	0.000	0.000	0.000	0.000	0.174	0.184	0.204	0.284	0.324	1.4
1939	0.254	0.030	0.000	0.000	0.000	0.000	0.010	0.174	0.264	0.314	0.324	0.324	1.7
1940	0.274	0.050	0.010	0.000	0.000	0.000	0.010	0.844	0.694	2.354	4.274	6.204	14.7
1941	0.594	0.120	0.020	0.000	0.000	0.000	0.000	0.194	3.314	0.704	8.694	0.664	14.3
1942	0.414	0.070	0.010	0.000	0.000	0.000	0.000	0.154	0.164	0.244	0.424	0.484	1.9
1943	0.364	0.070	0.010	0.000	0.000	0.000	0.000	0.244	1.534	0.644	6.214	0.734	9.8
1944	0.514	0.120	0.020	0.000	0.000	0.000	0.000	0.464	0.664	2.944	6.314	0.634	11.7
1945	0.354	0.050	0.010	0.000	0.000	0.000	0.000	0.164	0.174	0.204	0.264	0.604	1.8
1946	0.434	0.090	0.010	0.000	0.000	0.000	0.000	0.154	0.174	0.614	0.434	0.394	2.3
1947	0.284	0.040	0.000	0.000	0.000	0.000	0.000	0.164	0.194	0.554	0.454	0.574	2.2
1948	0.494	0.110	0.010	0.000	0.000	0.000	0.000	0.164	0.184	0.274	0.454	0.544	2.2
1949	0.434	0.100	0.010	0.000	0.000	0.000	0.080	0.174	0.184	2.894	0.644	0.644	5.1
1950	0.504	0.120	0.020	0.000	0.000	0.000	0.000	0.164	1.234	0.514	0.634	0.574	3.7
1951	0.384	0.080	0.010	0.000	0.000	0.000	0.000	0.224	0.234	0.404	3.264	1.874	6.5
1952	0.564	0.140	0.030	0.000	0.000	0.000	0.410	0.374	0.354	0.704	7.124	0.634	10.3
1953	0.344	0.050	0.010	0.000	0.000	0.000	0.000	3.704	0.514	12.584	8.554	0.714	26.5
1954	0.464	0.090	0.010	0.000	0.000	0.000	0.000	0.154	0.194	0.444	7.444	0.704	9.5
1955	0.464	0.110	0.020	0.000	0.000	0.000	0.000	0.164	0.374	0.424	0.624	0.544	2.7
1956	0.344	0.050	0.010	0.000	0.010	0.000	0.000	0.564	0.604	6.624	5.004	0.704	13.9
1957	0.624	0.170	0.020	0.000	0.000	0.000	0.000	0.194	0.204	0.214	0.284	0.304	2.0
1958	0.254	0.040	0.010	0.000	0.000	0.000	0.000	3.754	0.464	0.464	0.584	0.564	6.1
1959	0.404	0.080	0.010	0.000	0.000	0.000	0.000	0.184	0.244	0.284	0.294	0.264	1.7
1960	0.214	0.020	0.000	0.000	0.000	0.000	0.000	0.164	0.194	0.244	0.334	0.654	1.8
1961	0.444	0.060	0.010	0.000	0.000	0.000	0.000	0.164	5.014	0.654	5.814	0.694	12.8
1962	0.564	0.170	0.020	0.000	0.000	0.000	0.000	0.154	0.164	0.204	0.654	0.464	2.4
1963	0.314	0.040	0.010	0.000	0.000	0.000	0.000	0.154	0.434	0.364	0.654	0.624	2.6
1964	0.444	0.130	0.030	0.000	0.000	0.000	0.030	0.020	0.184	0.214	0.244	0.274	0.264	1.8
1965	0.214	0.020	0.000	0.000	0.000	0.000	0.000	0.154	0.184	0.364	0.424	0.444	1.8
1966	0.314	0.040	0.000	0.000	0.000	0.000	0.000	0.164	0.404	0.344	0.384	0.364	2.0
1967	0.294	0.060	0.010	0.000	0.000	0.000	0.000	0.214	0.284	0.654	2.924	0.644	5.1
1968	0.524	0.140	0.020	0.000	0.000	0.000	0.000	0.154	0.164	0.174	0.224	0.284	1.7
1969	0.284	0.050	0.010	0.000	0.000	0.000	0.000	0.154	0.264	0.314	0.484	0.514	2.1
1970	0.354	0.050	0.010	0.000	0.000	0.000	0.000	0.154	0.164	0.194	0.264	0.274	1.4
1971	0.214	0.020	0.000	0.000	0.000	0.000	0.000	0.174	0.204	0.244	0.284	0.294	1.4
1972	0.234	0.020	0.000	0.000	0.000	0.000	0.000	0.154	0.154	0.464	0.324	0.374	1.7
1973	0.294	0.040	0.010	0.000	0.000	0.000	0.000	0.264	0.654	0.444	25.504	2.134	29.3
1974	0.654	0.180	0.020	0.000	0.000	0.000	0.000	0.324	0.254	0.384	0.554	0.484	2.8
1975	0.334	0.070	0.010	0.000	0.000	0.000	0.020	0.174	0.994	0.514	0.634	0.574	3.3
1976	0.354	0.110	0.040	0.010	0.000	0.000	0.010	0.984	1.004	17.004	8.924	0.734	29.2
1977	0.474	0.090	0.010	0.000	0.000	0.000	0.000	0.154	0.164	0.164	0.204	0.234	1.5
1978	0.214	0.020	0.000	0.000	0.000	0.000	0.000	0.154	0.184	0.224	0.274	0.294	1.3
1979	0.274	0.040	0.000	0.000	0.000	0.000	0.000	0.174	0.224	0.274	0.334	0.334	1.6
1980	0.244	1.050	0.070	0.010	0.000	0.000	0.000	0.154	0.164	0.384	0.524	0.714	3.3
1981	0.524	0.090	0.010	0.000	0.000	0.000	0.030	0.184	0.254	0.374	0.514	0.454	2.4
1982	0.324	0.060	0.010	0.000	0.000	0.000	0.000	0.884	0.644	0.714	0.754	0.634	4.0
1983	0.414	0.060	0.010	0.000	0.000	0.000	0.000	2.164	0.374	0.464	0.534	0.754	4.8
1984	0.664	0.180	0.030	0.010	0.000	0.010	0.020	0.184	0.304	0.614	2.184	0.744	4.9
1985	0.484	0.090	0.010	0.000	0.000	0.000	0.000	0.164	0.254	0.384	0.664	0.694	2.7
1986	0.434	0.070	0.010	0.000	0.000	0.000	0.000	0.384	0.314	0.754	6.424	1.804	10.2
1987	0.534	0.090	0.010	0.000	0.000	0.000	0.010	0.164	0.254	0.354	0.564	0.614	2.6
1988	0.414	0.070	0.010	0.000	0.000	0.000	0.000	0.174	0.204	0.334	0.564	0.684	2.4
1989	0.534	0.120	0.020	0.000	0.000	0.000	0.460	0.314	0.554	5.374	1.194	0.654	9.2
1990	0.364	0.050	0.010	0.000	0.000	0.000	0.000	0.164	0.414	2.124	0.794	4.264	8.2
1991	0.744	0.220	0.030	0.000	0.000	0.000	0.000	0.164	1.194	0.544	0.654	0.564	4.1
1992	0.494	0.130	0.020	0.000	0.000	0.000	0.180	0.424	0.414	10.494	2.894	0.724	15.8
1993	0.434	0.060	0.010	0.000	0.000	0.000	0.000	0.154	3.454	0.544	0.534	0.504	5.7
1994	0.374	0.050	0.010	0.000	0.000	0.000	0.000	0.154	0.184	0.394	0.464	0.434	2.0
1995	0.354	0.080	0.040	0.010	0.000	0.000	0.000	0.164	0.674	0.514	4.094	7.544	13.4
1996	0.624	0.180	0.040	0.010	0.000	0.000	0.000	0.164	0.454	0.334	0.464	0.434	2.7
1997	0.274	0.030	0.010	0.000	0.000	0.000	0.000	0.314	0.224	0.294	0.364	0.344	1.8
1998	0.254	0.040	0.020	0.000	0.000	0.000	0.000	0.164	0.174	0.234	0.844	2.394	4.1
1999	0.524	0.080	0.010	0.000	0.000	0.000	0.000	0.154	0.154	0.214	0.264	0.344	1.7
2000	0.294	0.040	0.010	0.000	0.000	0.000	0.000	0.224	0.204	3.084	8.304	0.794	12.9
2001	0.544	0.110	0.010	0.010	0.000	0.000	0.000	0.244	0.244	0.644	1.244	0.754	3.8
2002	0.504	0.110	0.020	0.000	0.000	0.000	0.000	0.154	0.154	0.164	0.354	0.284	1.7
2003	0.254	0.030	0.010	0.000	0.000	0.000	0.000	0.154	0.174	0.214	0.274	0.274	1.4
2004	0.294	0.060	0.010	0.000	0.000	0.000	0.000	0.164	0.214	0.244	0.584	0.464	2.0
AVE :	0.39	0.09	0.01	0.00	0.00	0.00	0.02	0.34	0.49	1.17	1.95	0.80	5.3
SD :	0.12	0.12	0.01	0.00	0.00	0.00	0.07	0.62	0.76	2.72	3.64	1.14	6.1

Incremental Naturalised Flows at G1R002

File : G1R002.NAT
Units : Mm3
Descrip. : Simulated for 1927 to 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1927	1.132	3.602	4.012	1.332	0.522	0.812	1.042	0.692	12.572	17.402	11.442	13.372	67.9
1928	8.132	1.602	0.932	0.572	0.322	0.322	5.122	9.892	8.662	12.122	14.782	8.602	71.0
1929	3.042	1.442	2.282	1.982	0.662	1.022	1.522	1.212	0.952	7.392	14.172	18.432	54.1
1930	12.992	3.922	2.262	0.432	0.552	0.572	4.412	10.832	9.252	7.592	13.662	17.542	84.0
1931	14.552	6.142	0.662	0.612	3.212	3.422	1.132	7.302	15.252	14.092	10.142	9.012	85.5
1932	5.462	1.312	0.592	0.552	0.532	0.472	0.422	2.872	12.352	15.992	12.912	8.062	61.5
1933	3.772	2.662	0.502	0.322	0.372	0.802	0.882	6.362	8.922	5.662	7.322	8.472	46.0
1934	6.342	3.662	1.512	0.422	0.422	0.712	3.312	8.832	8.802	10.492	12.702	8.772	66.0
1935	4.832	2.752	1.912	1.822	1.892	0.792	0.732	4.072	6.232	7.292	11.402	11.322	55.0
1936	5.722	1.342	1.522	1.422	0.502	1.262	3.922	9.682	22.662	27.152	15.602	6.892	97.7
1937	4.272	2.052	0.592	2.202	2.272	0.482	4.302	10.842	9.992	8.782	10.062	10.752	66.6
1938	8.062	3.382	1.832	0.402	1.942	2.002	3.312	11.042	9.662	6.052	11.792	9.732	69.2
1939	3.032	1.682	2.522	1.782	1.462	2.462	4.612	8.352	13.962	13.502	7.962	6.892	68.2
1940	5.712	4.882	2.842	1.452	1.442	0.492	9.842	18.812	20.432	20.302	16.032	20.422	122.6
1941	16.702	3.802	0.982	0.782	0.492	0.322	0.562	9.112	26.722	22.662	13.522	10.582	106.2
1942	2.882	1.482	0.472	0.732	0.812	1.072	3.282	5.252	7.182	11.502	17.232	13.462	65.3
1943	5.722	3.812	1.642	0.422	0.362	0.362	2.232	10.612	24.102	26.422	19.672	13.032	108.4
1944	7.432	4.252	2.432	1.542	0.332	0.302	1.822	13.952	29.492	35.552	26.892	9.892	133.9
1945	2.762	2.052	0.962	0.502	0.372	0.702	2.562	5.982	5.672	7.452	13.562	17.002	59.6
1946	13.222	4.712	0.872	0.382	0.312	1.922	2.672	8.332	10.592	20.302	23.452	8.452	95.2
1947	3.802	2.072	0.572	0.322	0.332	0.402	0.812	8.512	13.712	15.392	16.152	14.622	76.7
1948	11.252	3.622	1.142	0.902	0.362	0.312	3.282	5.392	6.422	10.802	13.352	11.542	68.4
1949	6.842	3.582	1.822	0.412	0.312	0.312	7.682	8.172	3.652	18.442	17.482	7.932	76.6
1950	7.482	4.362	3.902	1.772	0.822	0.332	8.942	14.222	21.852	26.242	14.762	9.332	114.0
1951	6.612	4.192	2.172	0.372	0.322	0.782	3.012	7.052	7.492	6.892	13.742	18.802	71.4
1952	11.342	5.342	3.352	0.392	0.322	0.402	11.902	23.022	17.432	15.352	16.432	8.602	113.9
1953	2.442	2.942	2.202	0.472	0.452	0.652	6.452	19.732	19.912	21.612	25.852	12.872	115.6
1954	4.842	2.922	1.062	0.732	5.272	5.342	1.132	1.432	4.132	15.362	26.112	17.032	85.4
1955	6.582	6.612	2.992	0.442	0.332	0.592	2.792	9.292	19.282	21.682	19.852	14.412	104.8
1956	5.682	2.142	0.692	0.532	3.292	3.632	1.852	15.772	25.862	22.292	19.552	12.462	113.7
1957	11.032	7.752	0.692	0.352	2.702	3.062	1.852	11.942	15.022	5.932	10.012	10.492	80.8
1958	3.772	2.632	1.082	0.422	0.402	0.422	6.382	22.342	18.402	3.712	7.332	7.772	74.7
1959	4.432	2.812	0.592	0.472	0.402	0.792	2.262	7.792	17.072	12.822	3.512	2.982	55.9
1960	2.172	1.072	0.462	1.152	1.142	0.372	0.652	3.832	11.362	11.742	11.392	15.192	60.5
1961	8.912	1.692	0.572	0.462	1.122	2.942	5.922	5.312	21.592	26.982	20.212	16.662	112.4
1962	9.262	6.612	0.802	1.112	1.092	0.342	0.432	1.822	5.242	15.462	22.232	12.832	77.2
1963	3.142	2.632	3.302	1.612	2.412	2.432	1.162	5.692	13.832	15.552	13.552	8.792	74.1
1964	4.462	4.762	2.262	1.282	2.682	6.662	9.352	13.002	12.052	6.362	8.722	8.042	79.6
1965	3.442	1.472	2.002	1.862	0.422	6.352	7.892	5.222	8.152	14.332	16.232	9.872	77.2
1966	3.932	1.022	0.632	0.562	0.452	0.342	6.752	10.052	15.212	16.252	8.092	6.632	69.9
1967	6.182	5.272	2.402	1.012	1.042	0.432	4.112	12.452	16.412	17.632	15.532	7.212	89.7
1968	6.942	5.992	1.142	1.592	1.172	0.562	1.752	1.972	5.642	9.802	11.402	12.452	60.4
1969	9.652	4.332	0.602	0.352	0.412	0.412	0.332	8.222	17.872	17.122	16.202	12.982	88.5
1970	5.532	2.022	1.252	0.842	0.332	0.502	0.572	2.802	7.672	13.562	17.522	10.652	63.2
1971	2.492	1.192	0.872	1.042	0.702	0.422	6.902	12.472	10.542	7.972	8.302	8.092	61.0
1972	3.882	1.152	0.832	0.742	0.322	0.452	0.532	1.982	2.632	13.742	17.372	8.692	52.3
1973	5.552	1.812	2.442	2.202	0.362	0.352	0.352	7.212	17.002	15.752	27.552	27.252	107.8
1974	11.212	6.742	1.262	0.562	0.532	0.392	2.232	13.352	17.022	17.932	18.782	7.992	98.0
1975	3.682	3.012	0.952	0.352	0.302	0.662	1.262	3.432	21.262	31.752	18.722	9.622	95.0
1976	5.152	6.552	6.902	1.792	1.222	1.242	7.742	20.492	31.622	34.462	28.762	16.702	162.6
1977	5.182	1.792	0.822	0.542	0.432	1.392	2.572	3.932	3.662	2.542	11.992	15.082	49.9
1978	7.362	3.272	1.142	1.132	2.692	2.522	0.452	8.072	15.592	12.082	9.252	9.532	73.1
1979	10.482	6.262	0.562	0.602	0.852	0.592	2.292	9.502	16.132	10.842	7.762	8.052	73.9
1980	3.872	6.762	7.722	5.762	3.532	1.702	3.482	2.872	5.112	16.692	18.732	13.292	89.5
1981	8.412	2.192	1.172	1.022	0.812	0.362	4.282	7.762	11.702	16.712	12.812	5.522	72.7
1982	3.922	3.342	2.242	1.632	2.422	3.112	1.232	12.322	23.792	19.542	11.592	10.562	95.7
1983	7.532	1.132	0.602	0.512	0.382	2.252	3.922	15.112	17.292	11.142	10.592	10.912	81.4
1984	12.662	5.612	4.602	4.842	1.732	5.322	8.332	6.682	12.782	20.952	17.812	11.232	112.5
1985	5.182	1.322	0.522	0.432	0.502	2.572	4.512	4.752	14.362	20.062	21.542	16.982	92.7
1986	4.592	1.332	0.582	1.292	1.362	0.542	1.742	10.102	16.592	16.222	17.532	15.212	87.1
1987	6.892	1.262	1.952	1.822	0.342	0.392	4.092	8.452	8.382	10.932	15.752	13.352	73.6
1988	5.952	1.582	0.742	0.542	0.682	6.722	8.282	7.822	10.362	13.652	16.652	13.412	86.4
1989	8.382	4.332	1.972	0.422	0.742	0.732	10.692	14.592	13.182	19.802	14.532	5.552	94.9
1990	2.332	1.112	1.722	1.392	0.342	0.362	1.012	7.742	18.732	28.522	20.452	9.612	93.3
1991	7.842	2.392	0.622	0.332	0.732	1.102	6.282	10.592	19.002	21.422	11.782	7.332	89.4
1992	7.892	5.732	0.852	0.392	0.882	0.922	16.342	26.712	17.772	21.212	19.852	7.032	125.6
1993	1.602	0.602	0.442	0.502	0.432	0.322	0.932	2.512	21.992	27.592	10.742	7.032	74.7
1994	4.562	1.282	0.562	0.632	0.582	0.402	0.692	7.612	17.832	21.472	19.632	10.802	86.0
1995	7.052	5.562	2.072	1.792	1.012	1.572	2.012	3.632	17.572	23.192	16.632	15.752	97.8
1996	12.492	9.592	7.192	3.192	0.362	0.322	1.932	4.772	16.352	16.742	9.012	6.732	88.7
1997	1.822	7.382	6.972	0.512	0.372	0.382	2.072	17.472	20.662	11.382	9.052	4.032	82.1
1998	1.922	2.862	3.472	1.382	0.332	0.302	2.412	4.602	9.782	10.762	8.952	9.612	56.4
1999	4.692	1.142	0.602	0.502	0.482	0.502	0.552	3.702	6.922	11.442	14.922	13.992	59.4
2000	7.952	1.202	0.562	0.462	0.402	0.342	0.852	7.922	10.862	22.192	29.362	17.272	99.4
2001	8.902	2.932	0.702	5.022	5.132	0.522	2.862	9.342	14.762	17.142	17.022	11.022	95.3
2002	4.682	2.312	1.402	0.902	0.372	4.692	5.612	3.452	3.762	4.332	16.162	18.972	66.6
2003	8.212	2.812	1.512	1.872	0.892	0.452	3.792	4.032	6.472	11.832	12.022	8.512	62.4
2004	4.552	2.572	0.632	2.132	2.072	0.562	3.072	9.552	16.222	13.642	13.002	10.922	78.9
AVE :	6.34	3.31	1.74	1.12	1.03	1.32	3.59	8.76	13.80	15.83	15.18	11.36	83.4
SD :	3.28	1.98	1.59	1.03	1.06	1.57	3.16	5.40	6.62	7.12	5.39	4.21	21.6