water affairs

Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

WATER RESOURCE INFORMATION MANAGEMENT
LIMPOPO PROVINCE

STATUS ON MONITORING &
SURFACE WATER LEVEL TRENDS
OCTOBER 2009 to MARCH 2010

D VILJOEN
APRIL 2010

GH4320

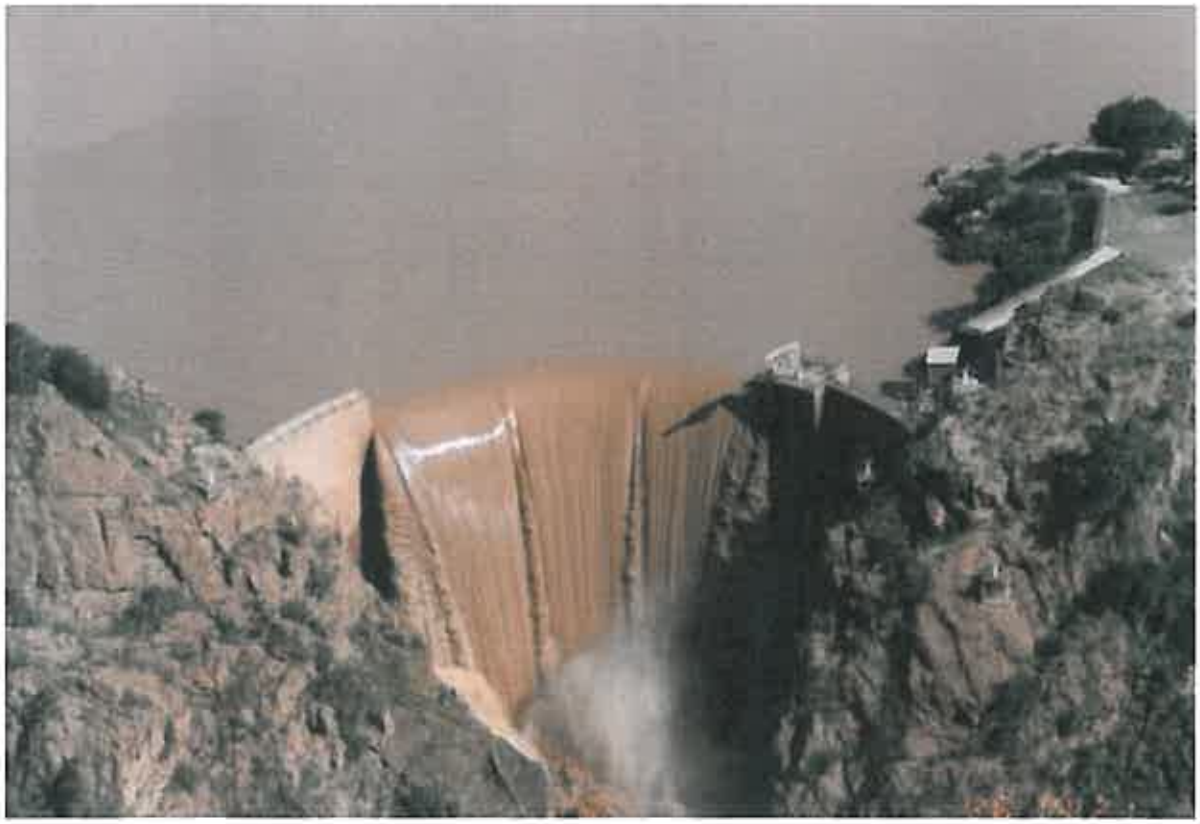


TABLE OF CONTENTS

LIST OF MAPS AND GRAPHS

1. EXECUTIVE SUMMARY

In the Luvuvhu / Letaba Water Management Area the majority of the bigger dams have more water than the corresponding period last year. **Middle Letaba and Albasini Dams are still areas of great concern as these dams are 6.9% and 27.2% full.**
The average storage volume for the Luvuvhu / Letaba WMA is 458.7 million cubic meters (70%) and has 24.4 million cubic meters more than the corresponding period last year (67%).
In the Limpopo Water Management Area the majority of dams have more water than the corresponding period last year. The average storage volume for the Limpopo WMA is 273 million cubic meters (97.2%) and has 12.5 million cubic meters more than the corresponding period last year (92.8%). Take note that these figures are derived from the attached WMA graphs, which also indicates which major dams were used for volume determination.
The problem in both of the WMA's is the fact that there are smaller dams, which supply water to communities that still need to be monitored. Owing to the lack of data these dams could not be included. Gauge plates have been installed at some of the smaller dams, but there are no observers to relay gauge plate readings to the Tzaneen Office. The Hydro office in Tzaneen has installed real-time data acquisitioning systems at Hout River Dam to alleviate above-mentioned problem.
Infrastructure at the smaller dams are also a major concern and will have to be put in place before any form of water level monitoring can be considered.

The information presented in this report is based on the status of all the major dams in the province up to the end of March 2010.

2. MONITORING NETWORK

The hydrological monitoring network for the Limpopo Province consists of the following amount of gauging stations:

81 river flow gauging stations (excluding canals and pipelines)
21 dam gauging stations
16 evaporation stations

It is important to take cognizance of the fact that the hydrological gauging stations in the Crocodile-West and Olifants Water Management Areas (shared boundaries) are being managed by the hydrological offices of Gauteng and Mpumalanga respectively.
For the purpose of this report and owing to the strategic location and importance of certain dams in the Olifants and Nkomati Water Management Areas, information regarding their status is also attached.

3. OVERVIEW

No river flow gauging stations were used in this report as their importance will only play a roll when inflow stream requirements have to be met or during big flood events. During April 2010 quite a number of gauging stations throughout the Province have recorded high flows and since more rainfall is anticipated for April 2010 further peak flows may occur. Information with regards to peak flow monitoring will be discussed in more detail in the next report.

3.1 Rainfall figures for the Limpopo WMA based on daily readings indicated on monthly returns.

DAM	OCT'09 (mm)	NOV'09 (mm)	DEC'09 (mm)	JAN'10 (mm)	FEB'10 (mm)	MAR'10 (mm)	TOTAL (mm)
Mokolo	91.8	105.8	117.2	133	37	27	511.8
Doorndraai	77.8	122.5	145.5	243.7	27.2	99	715.7
Glen Alpine	21	63	114.6	21.2	15.3	10	245.1
Nwanedzi	9.2	91.4	72.3	78.1	33.4	72.6	357
Nzhelele	4	86	68.2	39	7	34	238.2

3.2 Rainfall figures for the Levhuvhu / Letaba WMA based on daily readings indicated on monthly returns.

DAM	OCT'09 (mm)	NOV'09 (mm)	DEC'09 (mm)	JAN'10 (mm)	FEB'10 (mm)	MAR'10 (mm)	TOTAL (mm)
Albasini	40.8	65.3	92.8	129.4	0	31.2	359.5
Ebenezer	73.6	249.6	199.5	232.8	176.5	142.4	1074.4
Magoebaskloof	50.6	222.6	121.3	237.6	113.3	116.8	862.2
Tzaneen	23.7	201.7	207.1	145.1	72.6	52.4	706.6
Middle-Letaba	3	240	16	-	-	-	259
Nsami	36.9	281.4	181.5	73.5	37.5	-	610.8
Modjadji	-	78	39.6	240	88	13.9	459.5
Nandoni	1	191.6	144.6	99	53.4	18	507.6

3.3 Rainfall figures for the Olifants WMA based on daily readings indicated on monthly returns.

DAM	OCT'09 (mm)	NOV'09 (mm)	DEC'09 (mm)	JAN'10 (mm)	FEB'10 (mm)	MAR'10 (mm)	TOTAL (mm)
Loskop	66.5	94	103.5	112.5	93*	14*	483.5*
Flag Boshielo	90.5	150	74	151.9	24	19.6	510

* Unverified data!

3.4 Rainfall figures for the Inkomati WMA based on daily readings indicated on monthly returns

DAM	OCT'09 (mm)	NOV'09 (mm)	DEC'09 (mm)	JAN'10 (mm)	FEB'10 (mm)	MAR'10 (mm)	TOTAL (mm)
Kwena	121.8	296.1	78.3	139.3	33.8	28	697.3
Inyaka	59.0	230.2	116.4	122.5	72.3	20	620.4

To give an indication of what the percentage of normal rainfall was for the current hydrological year, see attached map (page 12). For information purposes a graph depicting provincial rainfall for the current hydrological year is attached (page 13).
This information was obtained from the South African Weather Service.

The graph depicting the percentage of full supply capacities for the whole province indicates the current situation clearly (page 15). See the graphs on pages 16-17 to get an indication of storage capacities in the Limpopo and Luvuvhu / Letaba Water Management Areas.
This information was obtained from Hydrological services, National Office.

The purpose for attaching graphs of individual dams is to give a broader picture of water storage and status in the sub drainage catchments.

4. LIMPOPO WATER MANAGEMENT AREA

The catchment consists of secondary drainage areas A4, A5, A6, A7 and A8.

4.1 A4 Drainage Area (Matlabas, Mokolo Rivers)

The Mokolo Dam (A4R001) was used as no other dam exists in the A4 hydrological monitoring network. The dam storage is at a storage level of 100.5% (146.09 x 10^6m^3) and 1.1 % lower than the previous year, which means that the storage volume is 1.59 million cubic meters less than the corresponding period last year. See attached graph!

4.2 A5 Drainage Area (Lephalala River)

Two small dams exists in the A5 hydrological network namely the Susandale Dam (A5R001) and the Vischgat Dam (A5R002). Owing to their relatively small storage volumes of approximately 0.6 million cubic meters in total, these dams have not been included in this report!

4.3 A6 Drainage Area (Nile, Sterk, Mogalakwena and Dorps Rivers)

The Doorndraai Dam (A6R001) and Glen Alpine Dam (A6R002) were used as no other dams exist in the A6 hydrological monitoring network. The Doorndraai Dam is at a storage level of 100.5% (43.98 x 10^6m^3) and 0.5% higher than the previous year, which means that the storage volume is 0.22 million cubic meters more than the previous year. See attached graph!
Glen Alpine Dam is at a storage level of 99.5% (18.797 x 10^6m^3) and 0.4% lower than the previous year, which means that the storage volume is 0.07 million cubic meters less than the corresponding period last year. See attached graph!
It must be noted that the full capacity storage of Glen Alpine Dam is only 18.889 million cubic and therefore the dam fills and empties much faster than Doorndraai Dam! The graph of Glen Alpine clearly indicates this!
Take note that the full supply capacity (18.889 x 10^6m^3) as supplied in the National Weekly Dam Status report, was used for calculation purposes!

4.4 A7 Drainage Area (Sand, Blood, Diep, Hout, Dwars and Brak Rivers)

There are no existing dam monitoring stations in the hydrological network for this drainage area!
The Tzaneen Area Office in conjunction with the Hydrometry office is currently busy with the installation of gauge plates at dams in both of the Water Management Areas. Hout River Dam has been equipped with gauge plates, but a futile exercise at Mashashane Dam just iterated the point that gauge plates should be installed once water levels are below lowest outlet levels!
Seshego and Rietfontein Dams will be investigated, but due to high water levels and the lack of infrastructure, the installation of gauge plates remains a huge challenge. According to preliminary investigations it seems obvious that the installation of gauge plates will only be feasible when water levels at these dams are on or below lowest outlet levels!

4.5 A8 Drainage Area (Nwanedzi and Nzhelele Rivers)

The Nzhelele Dam (A8R001), Luphephe (A8R002), Nwanedzi (A8R003) and Mutshedzi (A8R004) Dams were used as indicators!
The Nzhelele Dam is at a storage level of 89.4% (45.8 x 10^6m^3) and 23% higher than the previous year, which means that the storage volume is 11.79 million cubic meters more than the corresponding period last year. See attached graph!

Luphephe and Nwanedzi Dams are at storage levels of 83.7% and 81.7% respectively. Their combined storage is at 15.91 x 10^6m^3. The combined storage for the corresponding period the previous year was 13.14 x 10^6m^3. (69% of storage volume and 2.77 million cubic meters less than this year) See attached graphs!
Mutshedzi Dam, is at a storage level of 100.6% (2.35 x 10^6m^3) and 0.3% higher than the previous year, which means that the storage volume is 0.1 million cubic meters more than the corresponding period last year.

5. LUVUVHU / LETABA WATER MANAGEMENT AREA

The catchment consists of secondary drainage areas A9, B8 and B9.

5.1 A9 Drainage Area (Mutale, Luvuvhu Rivers)

The Albasini Dam (A9R001), Vondo Dam (A9R002) and Nandoni (A9R004) Dams were used as monitoring points in this report.

Albasini Dam is at a storage level of 27.2% (7.66 x 10^6m^3) and 2% lower than the previous year, which means that the storage volume is 0.57 million cubic meters less than the corresponding period last year. See attached graph!

Vondo Dam is at a storage level of 100.9% (30.73 x 10^6m^3) and 0.1% higher than the previous year, which means that the storage volume is 0.04 million cubic meters more than the corresponding period last year. See attached graph!

Nandoni Dam is at a storage level of 101.1% (167.95 x 10^6m^3) and 0.2% lower than the previous year, which means that the storage volume is 0.32 million cubic meters less than the corresponding period last year. See attached graph!

5.2 B8 Drainage Area (Groot, Middle and Klein Letaba Rivers)

The Ebenezer Dam (B8R001), Magoebaskloof Dam (B8R003), Tzaneen Dam (B8R005), Middle-Letaba Dam (B8R007), Nsami Dam (B8R009) and Modjadji Dam (B8R011), were used as monitoring points in this report. The Dap Naudé Dam (B8R006) is also being monitored, but was not included in this report!

Thapane Dam has been investigated but due to high water levels and the lack of infrastructure, the installation of gauge plates remains a huge challenge. According to preliminary investigations it seems obvious that the installation of gauge plates will only be feasible when the water level at this dam is on or below lowest outlet level!

The Ebenezer Dam is at a storage level of 93% (64.267 x 10^6m^3) and 8.7% higher than the previous year, which means that the storage volume is 5.98 million cubic meters more than the corresponding period last year. See attached graph!

Magoebaskloof Dam is at a storage level of 100.6% (4.87 x 10^6m^3) and 0.1% lower than the previous year. Due to the relative small storage volume of the dam the loss in storage in comparison to the previous year is omissible. See attached graph! **Take note that the full supply capacity (4.84 x 10^6m^3) as supplied in the National Weekly Dam Status report, was used for calculation purposes!**

Tzaneen Dam is at a storage level of 93.8% (146.88 x 10^6m^3) and 6.4% higher than the previous year, which means that the storage volume is 10.07 million cubic meters more than the corresponding period last year. See attached graph! **Take note that the full supply capacity (156.53 x 10^6m^3) as supplied in the National Weekly Dam Status report, was used for calculation purposes!**

Middle-Letaba Dam is at a storage level of 6.9% (11.91 x 10^6m^3) and 3.6% lower than the previous year, which means that the storage volume is 6.14 million cubic meters less than the corresponding period last year. See attached graph!

The Modjadji Dam is at a storage level of 90.9% (6.53 x 10^6m^3) and 5.2% lower than the previous year, which means that the storage volume is 0.37 million cubic meters less than the corresponding period last year. See attached graph!

5.3 B9 Drainage Area (Shingwedzi, Phugwane and Mphongolo Rivers)

Only a limited part of this drainage area falls outside the Kruger National Park!
There are no existing dam monitoring stations in the hydrological network for this drainage area!

6. OLIFANTS WATER MANAGEMENT AREA

Monitoring points in the B3, B5, B6 and, B7 sub drainage areas were also included in this report owing to their strategic location and importance to operational matters in the Limpopo Province.

6.1 B3 Drainage Area (Olifants, Elands, Bloed and Selons Rivers)

For information as well as operational matters the status of Loskop Dam (B3R002) has been included in this report.

Loskop Dam is at a storage level of 100.3% (362.48 x 10^6m^3) and 0.7% lower than the previous year, which means that the storage volume is 2.65 million cubic meters less than the corresponding period last year. See attached graph!

6.2 B5 Drainage Area (Olifants River)

For information as well as operational matters the status of Flag Boshielo Dam (B5R002) has been included in this report.

Flag Boshielo Dam is at a storage level of 101.6% (188.09 x 10^6m^3) and 2.1% lower than the previous year, which means that the storage volume is 3.89 million cubic meters less than the corresponding period last year. See attached graph!

6.3 B6 Drainage Area (Blyde and Ohrigstad Rivers)

For information as well as operational matters the status of Ohrigstad Dam (B6R001) and Blyde Rivierspoort Dam (B6R003) has been included in this report.

Ohrigstad Dam is at a storage level of 52.9% (7.12 x 10^6m^3) and 45.8% lower than the previous year, which means that the storage volume is 6.16 million cubic meters less than the corresponding period last year. See attached graph!
Take note that the full supply capacity (13.448 x 10^6m^3) as supplied in the National Weekly Dam Status report, was used for calculation purposes!

Blyde Dam is at a storage level of 100.6% (54.68 x 10^6m^3) and 0.2% lower than the previous year, which means that the storage volume is 0.12 million cubic meters less than the corresponding period last year. See attached graph!

Take note that the full supply capacity (54.369 x 10^6m^3) as supplied in the National Weekly Dam Status report, was used for calculation purposes!

6.4 B7 Drainage Area (Klaserie and Olifants Rivers)

For information as well as operational matters the status of Klaserie Dam (B7R001) has been included in this report.

Klaserie Dam is at a storage level of 101.1% (5.66 x 10^6m^3) and 0.5% higher than the previous year, which means that the storage volume is 0.03 million cubic meters more than the corresponding period last year. See attached graph!
Take note that the full supply capacity (5.604 x 10^6m^3) as supplied in the National Weekly Dam Status report, was used for calculation purposes!

7. NKOMATI WATER MANAGEMENT AREA

7.1 X2 Drainage Area (Crocodile River)

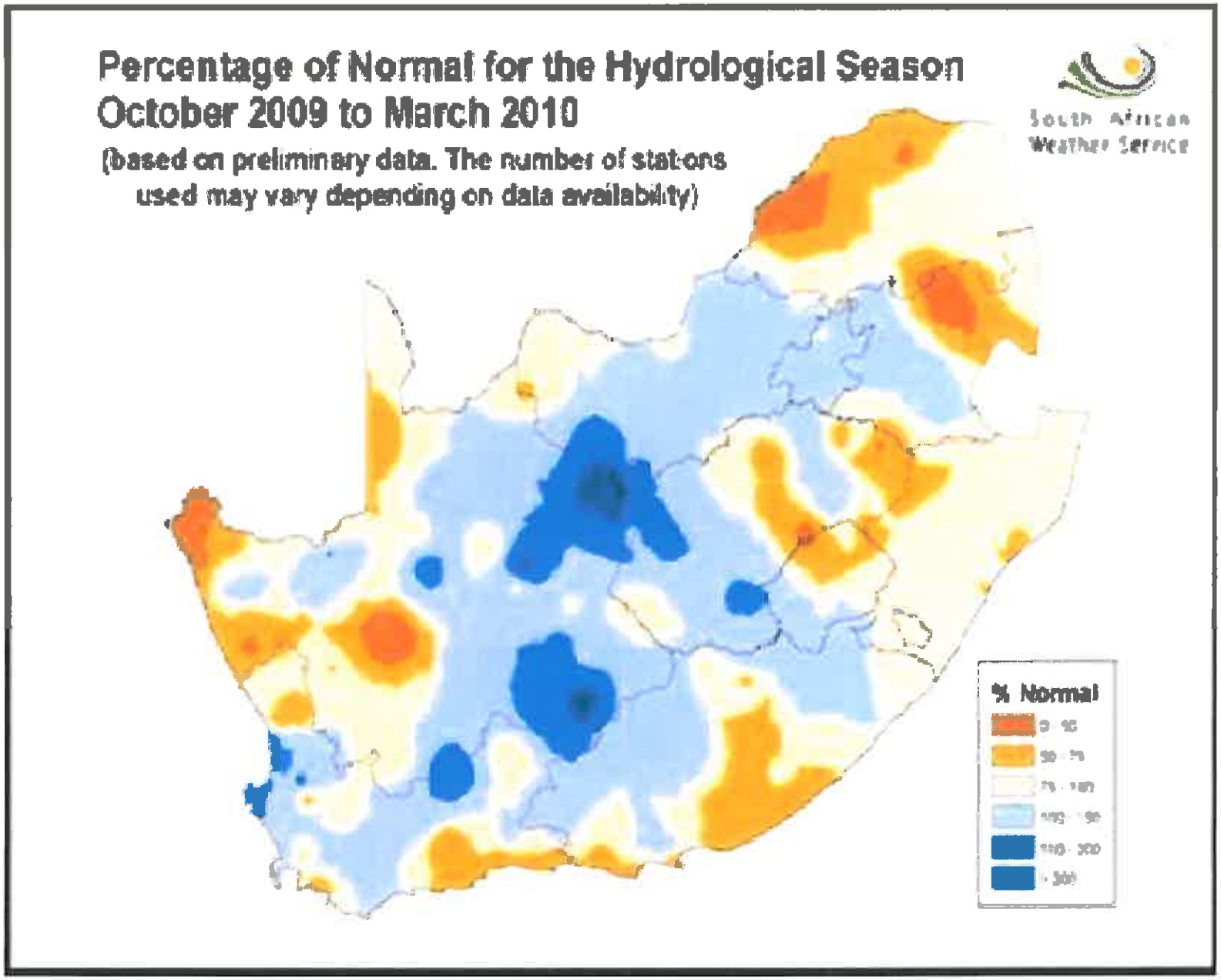
For information as well as operational matters the status of Kwena Dam (X2R005) has been included in this report.

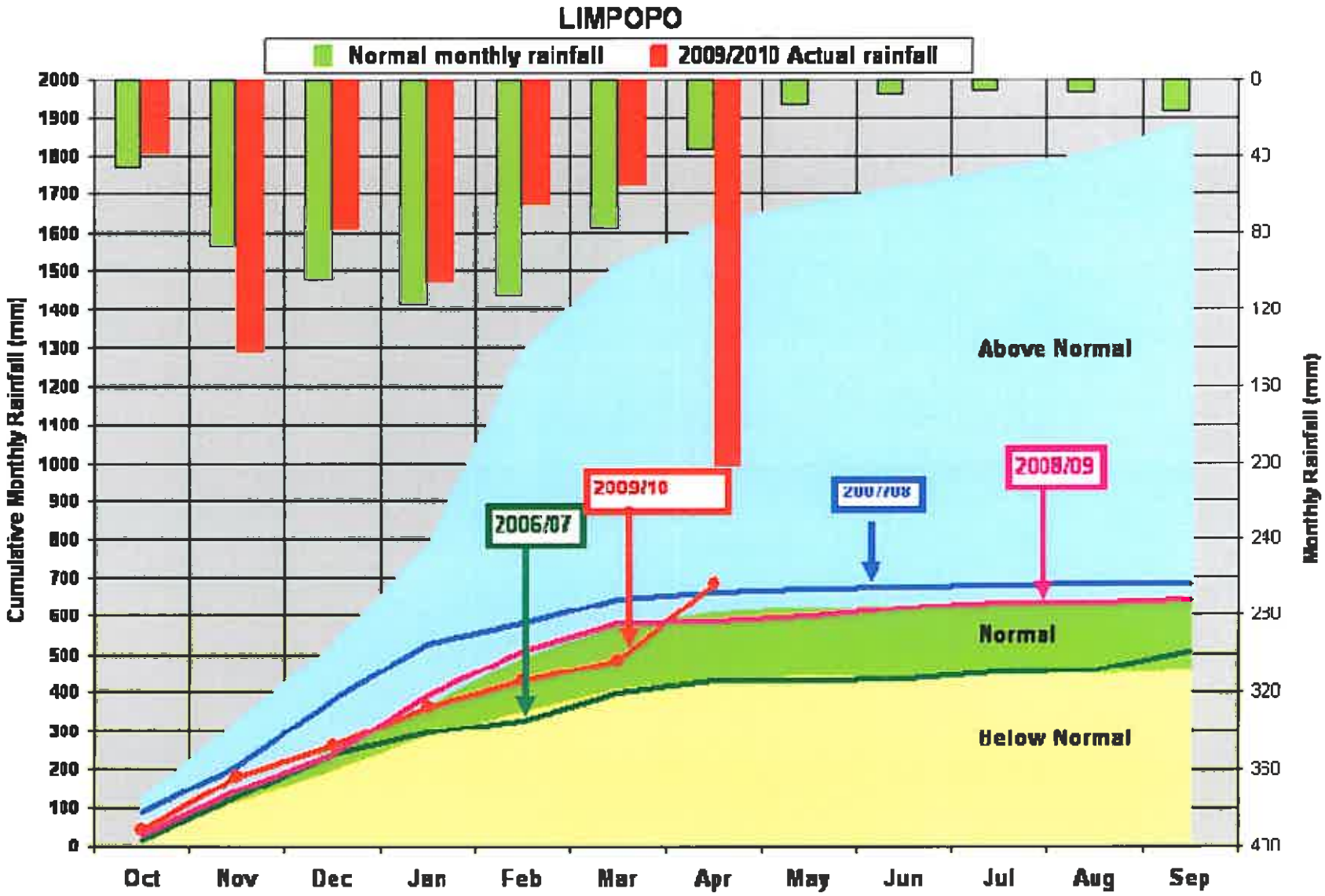
Kwena Dam is at a storage level of 100.5% (159.64 x 10^6m^3) and 0.1% higher than the previous year, which means that the storage volume is 0.11 million cubic meters more than the corresponding period last year. See attached graph!

7.2 X3 Drainage Area (Mariti River)

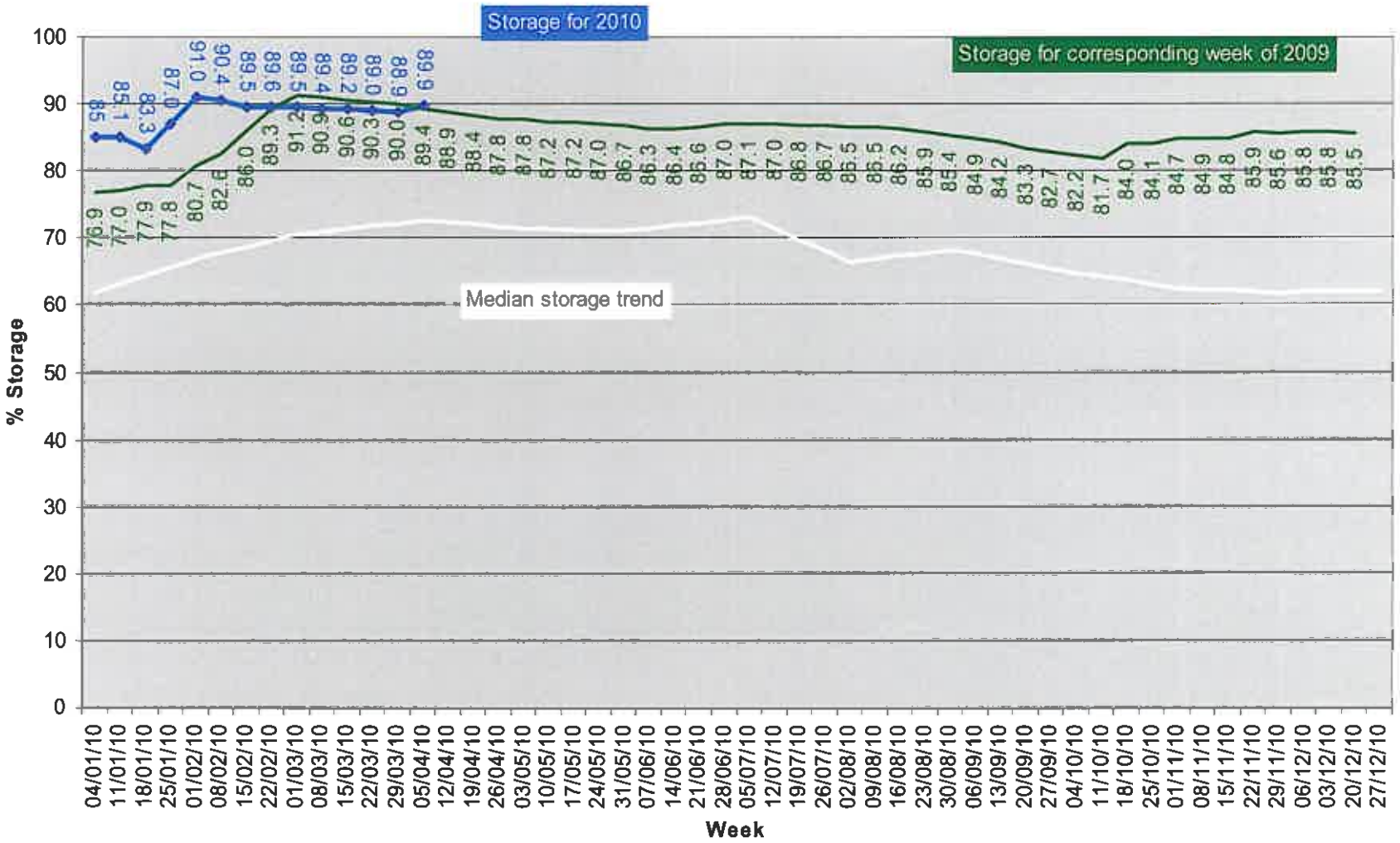
For information as well as operational matters the status of Inyaka Dam (X3R002) has been included in this report.

Inyaka Dam is at a storage level of 100.7% (124.55 x 10^6m^3) and 0.2% higher than the previous year, which means that the storage volume is 0.02 million cubic meters more than the corresponding period last year. See attached graph!

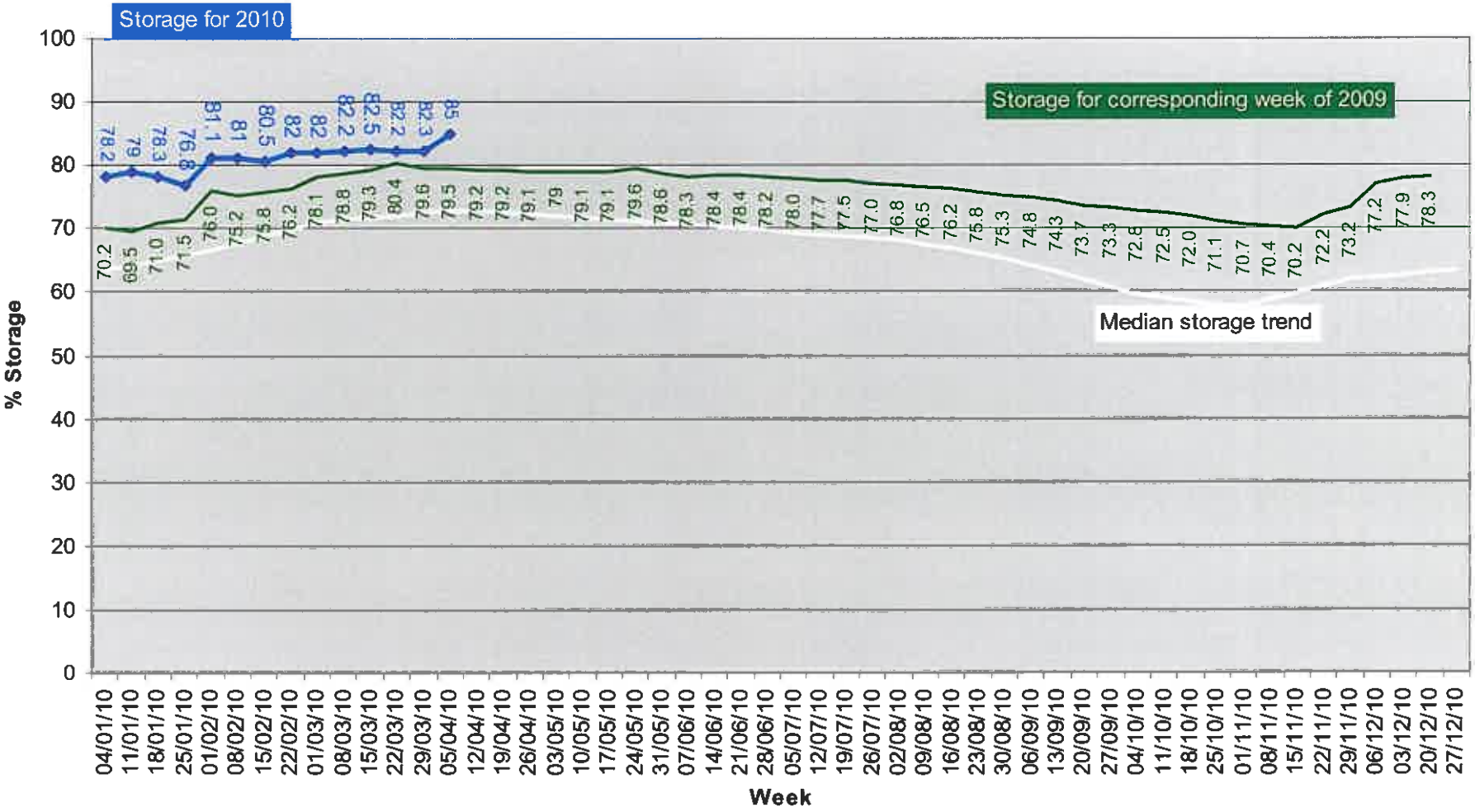

Percentage of Normal for the Hydrological Season
October 2009 to March 2010
(based on preliminary data. The number of stations used may vary depending on data availability)
South African Weather Service
% Normal


LIMPOPO
Normal monthly rainfall
2009/2010 Actual rainfall
Cumulative Monthly Rainfall (mm)
Monthly Rainfall (mm)
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
0
40
80
120
160
200
240
280
320
360
400
Above Normal
Normal
Below Normal
2006/07
2009/10
2007/08
2008/09
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep

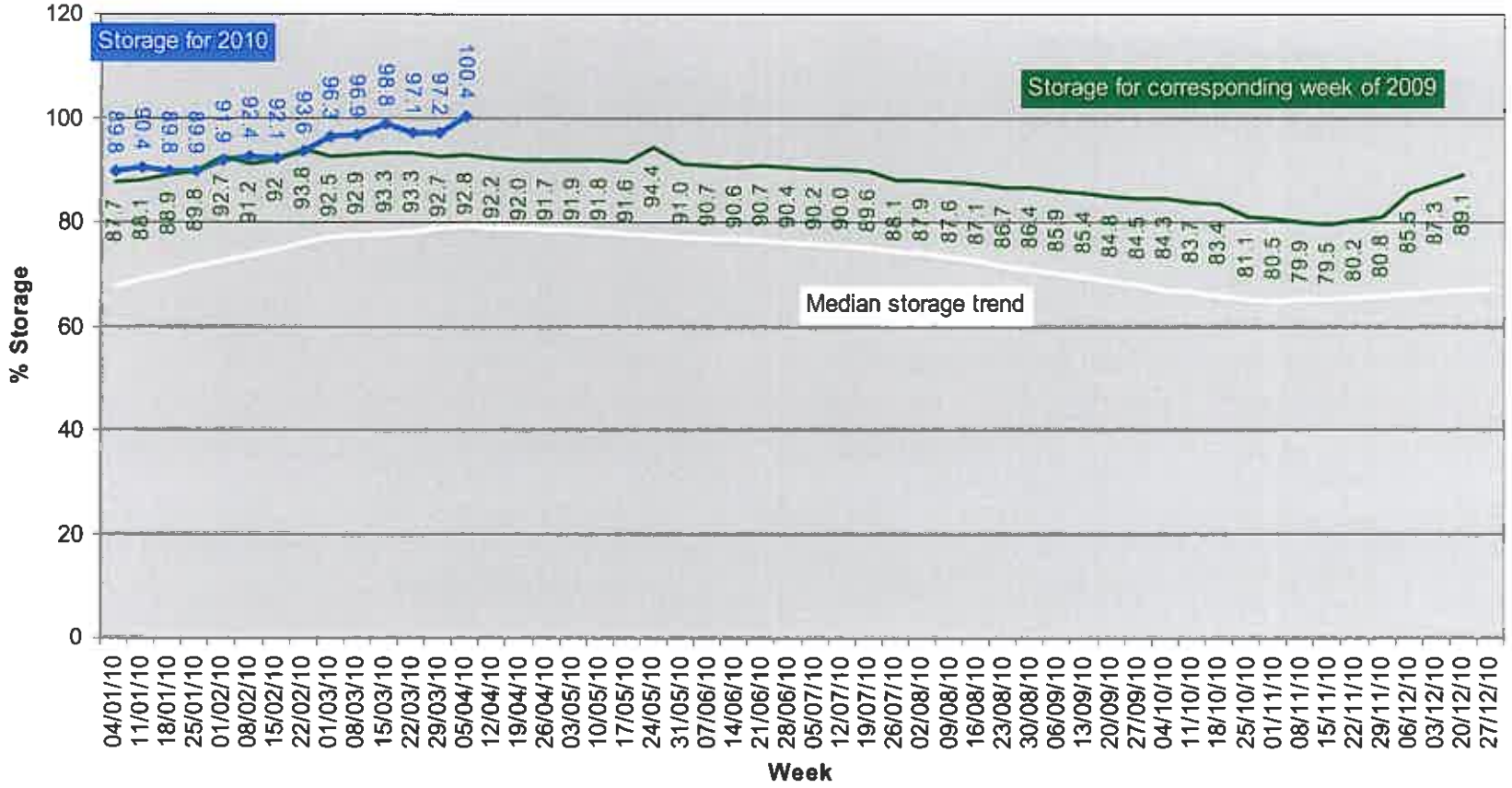
NATIONAL


Storage for 2010
Storage for corresponding week of 2009
Median storage trend
% Storage
Week
100
90
80
70
60
50
40
30
20
10
0
04/01/10
11/01/10
18/01/10
25/01/10
01/02/10
08/02/10
15/02/10
22/02/10
01/03/10
08/03/10
15/03/10
22/03/10
29/03/10
05/04/10
12/04/10
19/04/10
26/04/10
03/05/10
10/05/10
17/05/10
24/05/10
31/05/10
07/06/10
14/06/10
21/06/10
28/06/10
05/07/10
12/07/10
19/07/10
26/07/10
02/08/10
09/08/10
16/08/10
23/08/10
30/08/10
06/09/10
13/09/10
20/09/10
27/09/10
04/10/10
11/10/10
18/10/10
25/10/10
01/11/10
08/11/10
15/11/10
22/11/10
29/11/10
06/12/10
03/12/10
20/12/10
27/12/10

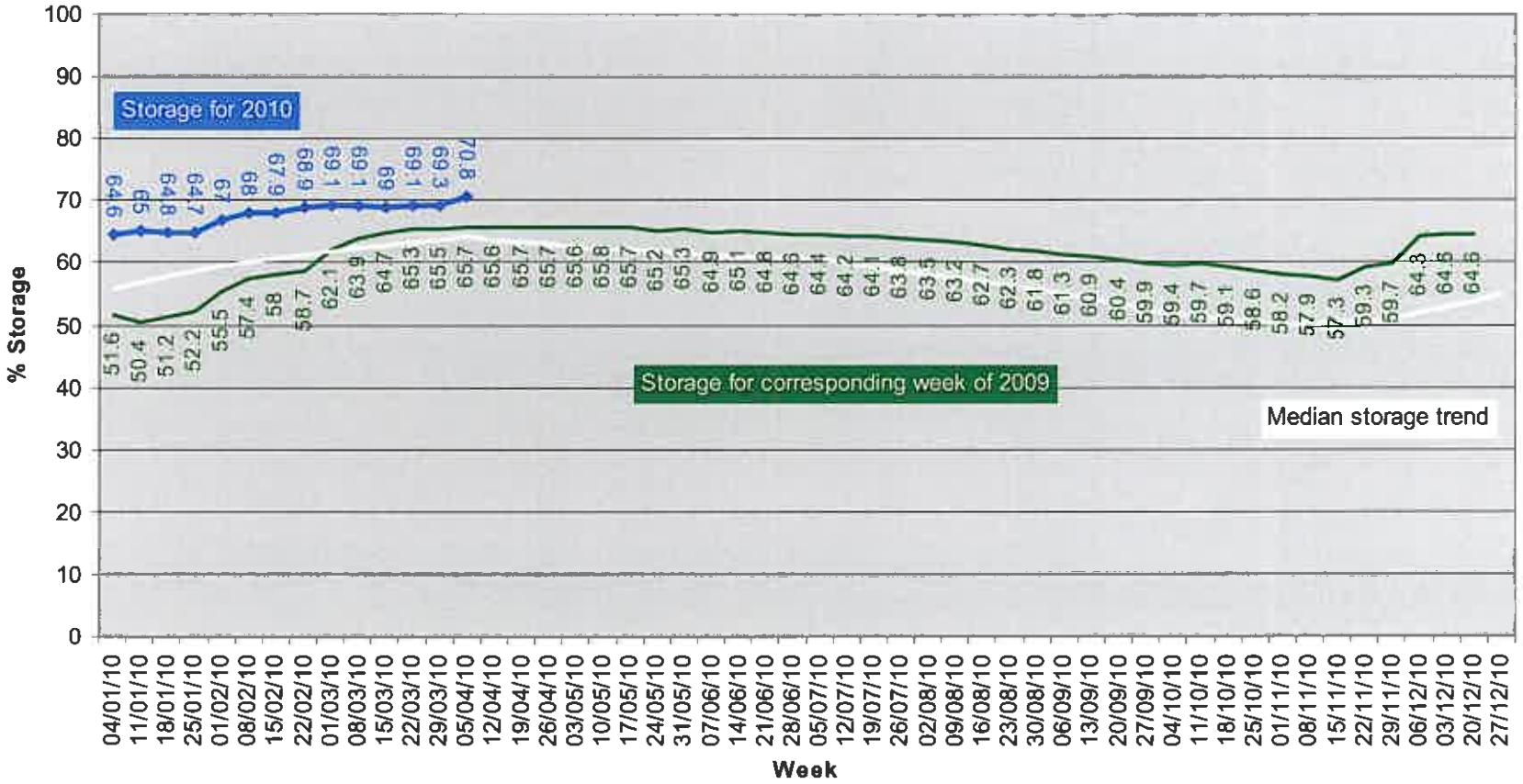
LIMPOPO

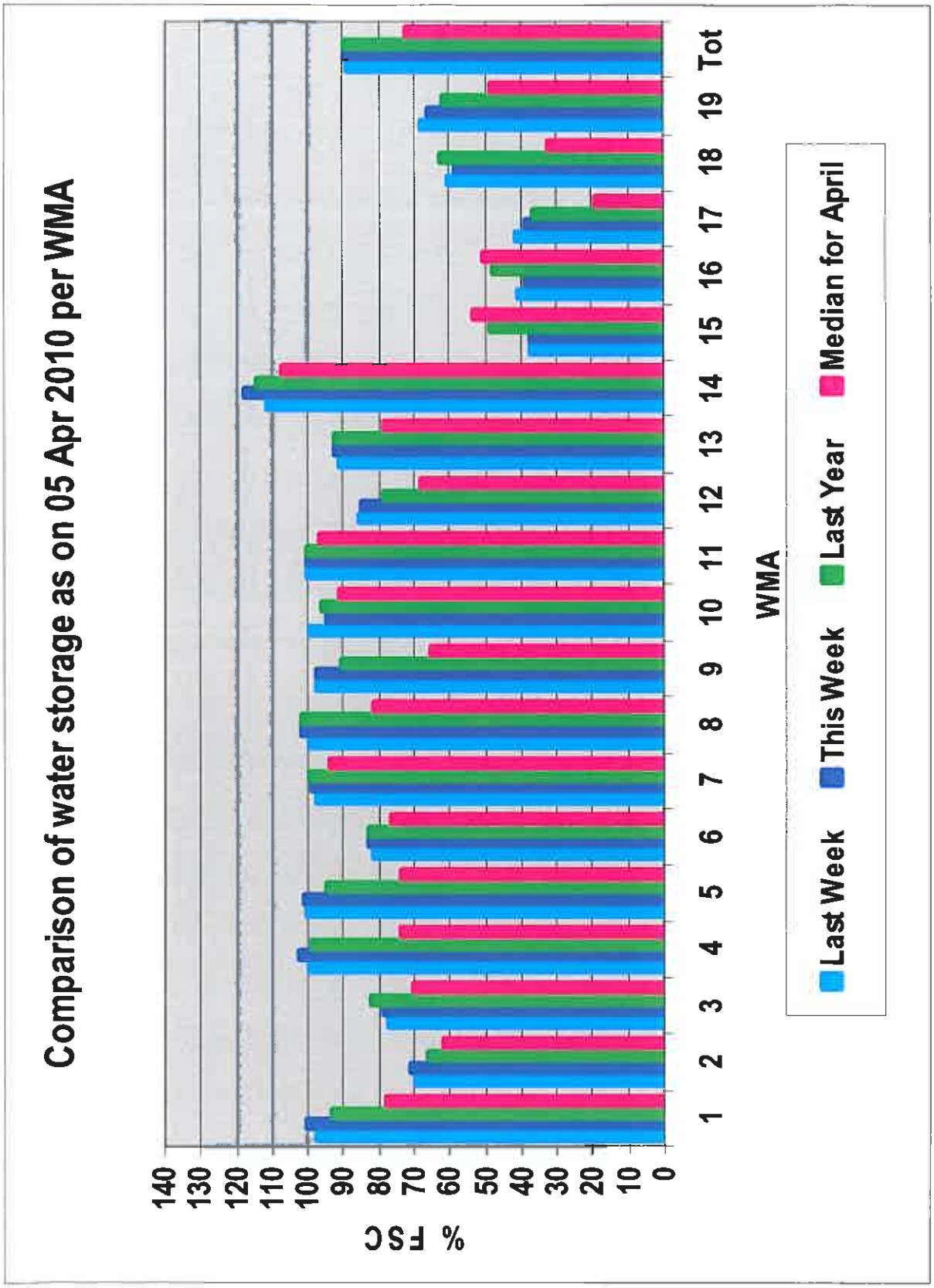

Storage for 2010
Storage for corresponding week of 2009
Median storage trend
% Storage
Week
100
90
80
70
60
50
40
30
20
10
0
78.2 79 78.3 76.8 81.1 81 80.5 82 82 82.2 82.5 82.2 82.3 85
70.2 69.5 71.0 71.5 76.0 75.2 75.8 76.2 78.1 78.8 79.3 80.4 79.6 79.5 79.2 79.2 79.1 79 79.1 79.1 79.6 78.6 78.3 78.4 78.4 78.2 78.0 77.7 77.5 77.0 76.8 76.5 76.2 75.8 75.3 74.8 74.3 73.7 73.3 72.8 72.5 72.0 71.1 70.7 70.4 70.2 72.2 73.2 77.2 77.9 78.3
04/01/10
11/01/10
18/01/10
25/01/10
01/02/10
08/02/10
15/02/10
22/02/10
01/03/10
08/03/10
15/03/10
22/03/10
29/03/10
05/04/10
12/04/10
19/04/10
26/04/10
03/05/10
10/05/10
17/05/10
24/05/10
31/05/10
07/06/10
14/06/10
21/06/10
28/06/10
05/07/10
12/07/10
19/07/10
26/07/10
02/08/10
09/08/10
16/08/10
23/08/10
30/08/10
06/09/10
13/09/10
20/09/10
27/09/10
04/10/10
11/10/10
18/10/10
25/10/10
01/11/10
08/11/10
15/11/10
22/11/10
29/11/10
06/12/10
03/12/10
20/12/10
27/12/10

WMA 1: Limpopo



WMA 2:Luvubu & Letaba

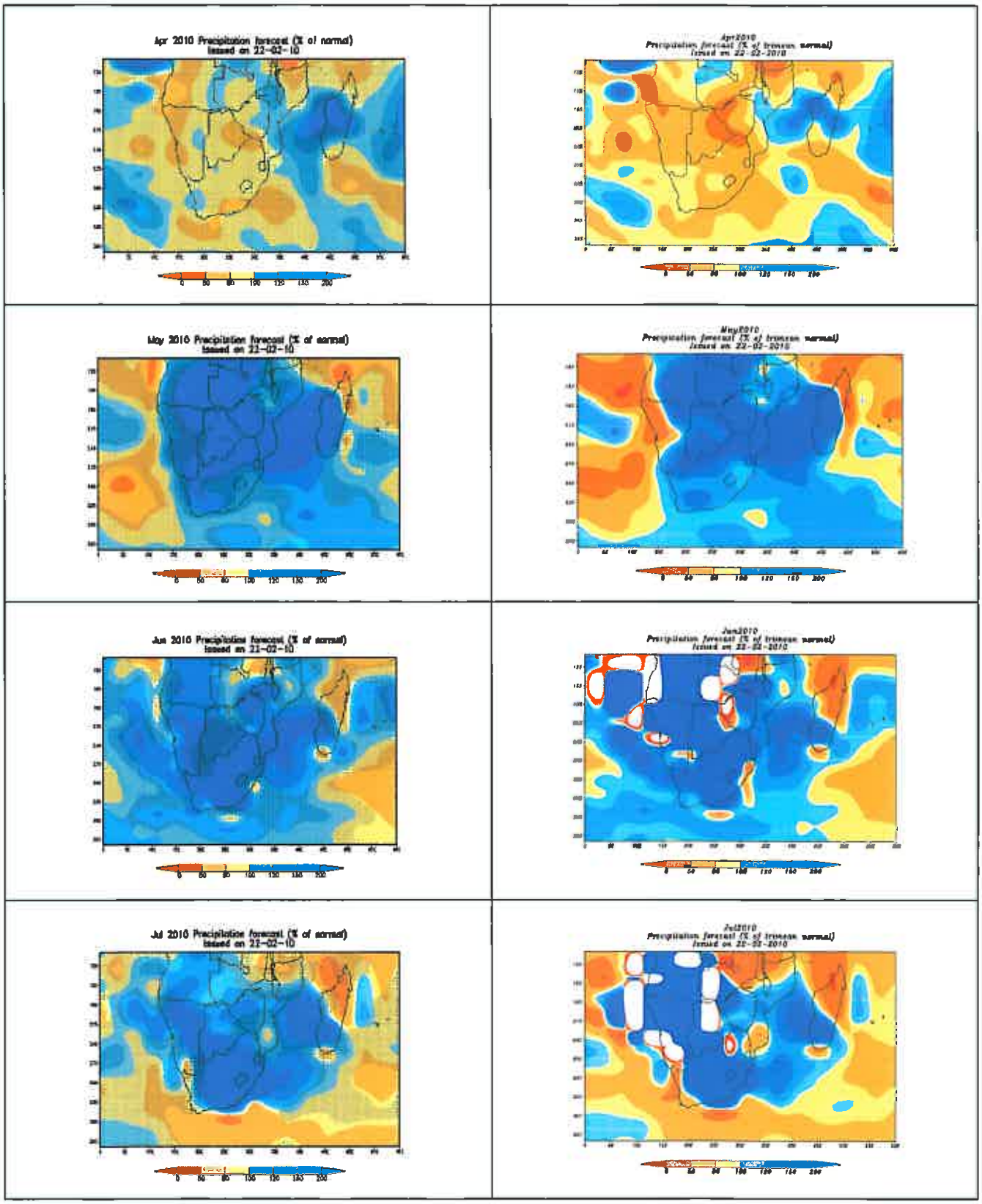


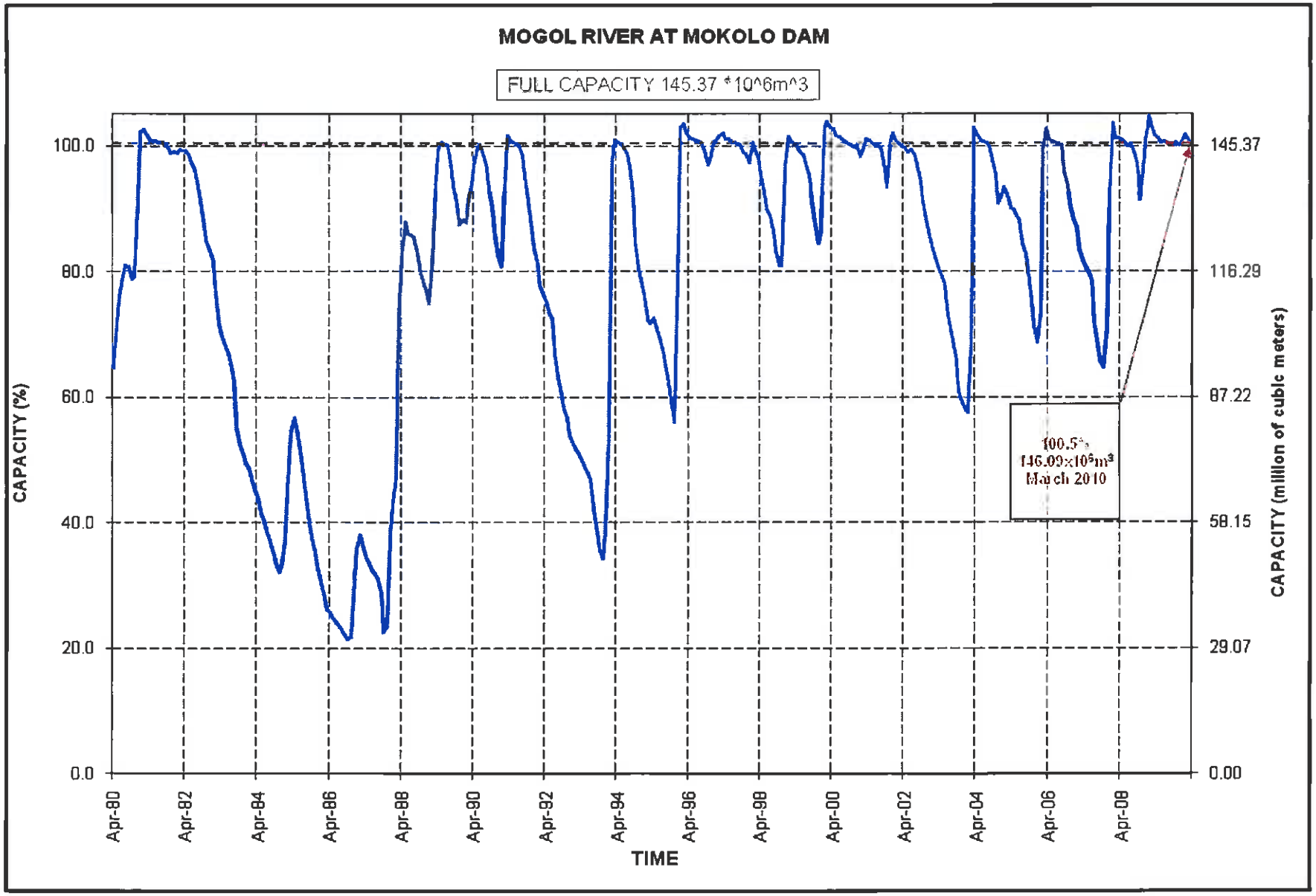

Comparison of water storage as on 05 Apr 2010 per WMA
% FSC
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
Tot
WMA
Last Week
This Week
Last Year
Median for April

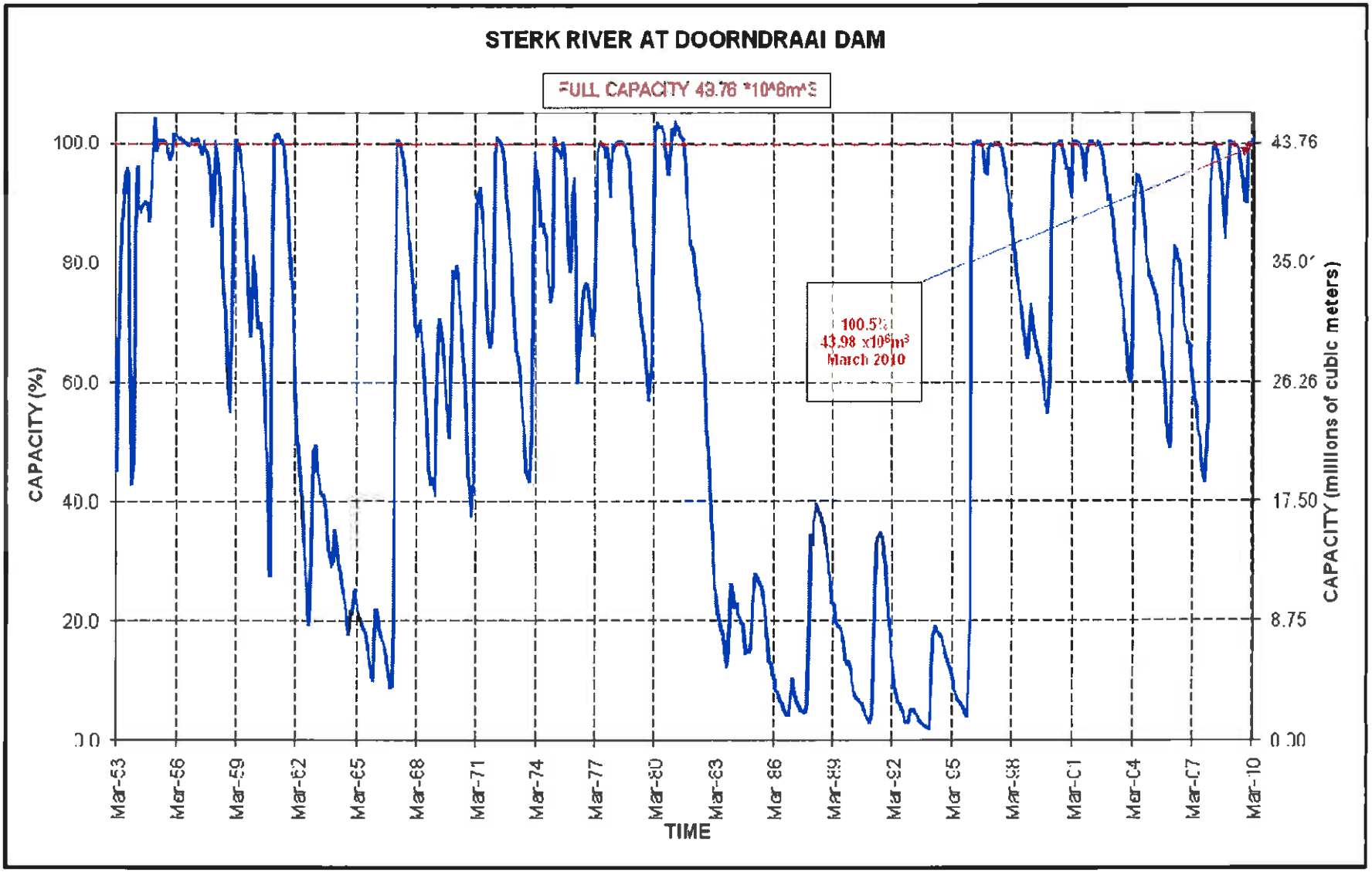
WMA STORAGE SUMMARY

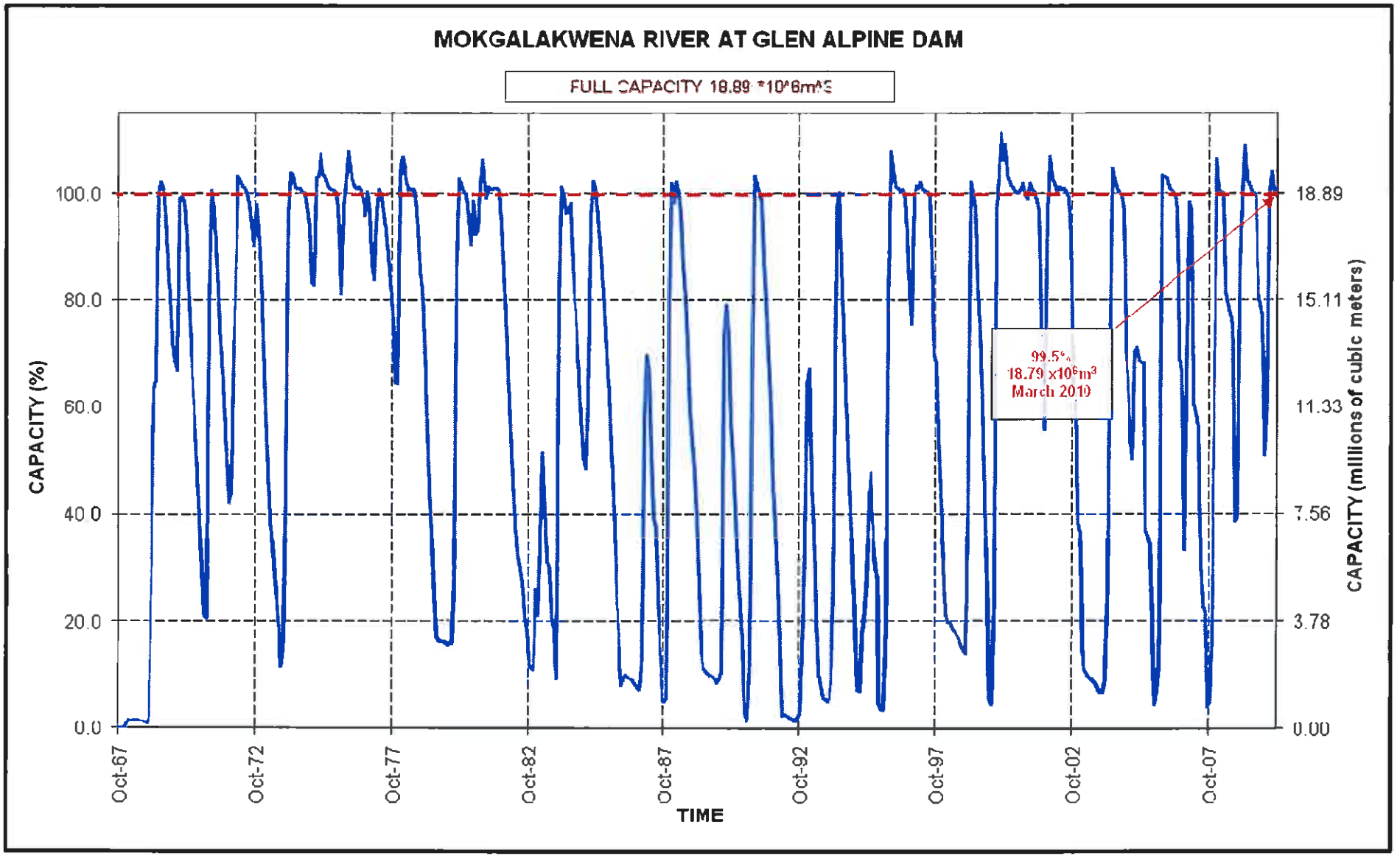
WMA	Last Week	This Week	5-Apr-10	Last Year	Median
	%Full	%Full	% Rise	%Full	April
1 Limpopo	97.2	100.4	3.2	92.8	77.5
2 Luvubu/Letaba	69.3	70.8	1.5	65.7	61.6
3 Crocodile (West) Marico	76.7	78.1	1.4	81.9	70
4 Olifants	99.3	102.3	3.0	98.5	73.6
5 Inkomati	100.1	100.9	0.8	94.8	73.2
6 Usutu/Mhlatuze	81.5	82.8	1.3	82.5	76.2
7 Thukela	97.6	99	1.4	99.4	93.7
8 Upper Vaal	99.6	101.3	1.7	101.6	81
9 Middle Vaal	97.5	97.3	-0.2	90.5	64.8
10 Lower Vaal	99.1	94.7	-4.4	96	90.9
11 Mvoti/Umzimkulu	100	100	0.0	100.4	96.5
12 Mzimvubu/Keiskamma	85.4	84.4	-1.0	78.5	67.9
13 Upper Orange	90.9	92.5	1.6	92.7	78.4
14 Lower Orange	111.3	117.5	6.2	113.8	107.4
15 Fish/Tsitsikamma	37.1	37.1	0.0	48.4	53
16 Gouritz	40.4	38.2	-2.2	47.7	50.2
17 Olifants/Doorn	41.4	38.5	-2.9	36.7	18.7
18 Breede	59.9	58.4	-1.5	62.1	32.5
19 Berg	68.2	66	-2.2	61.9	48
GRAND TOTAL	**88.9**	**89.9**	**1.0**	**89.5**	**72.4**

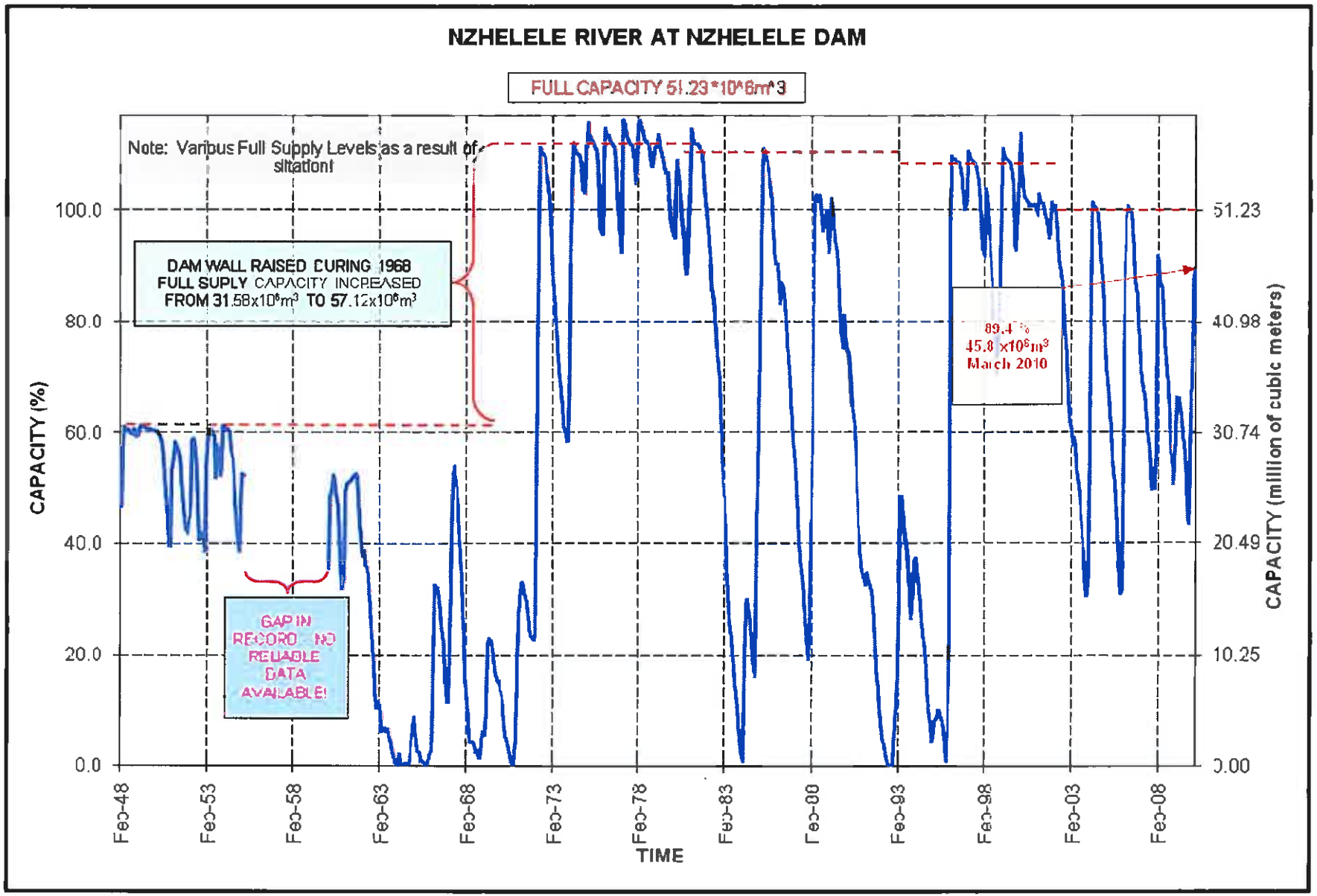
SEASONAL FORECAST ISSUED BY SAWS ON 22 FEBRUARY 2010

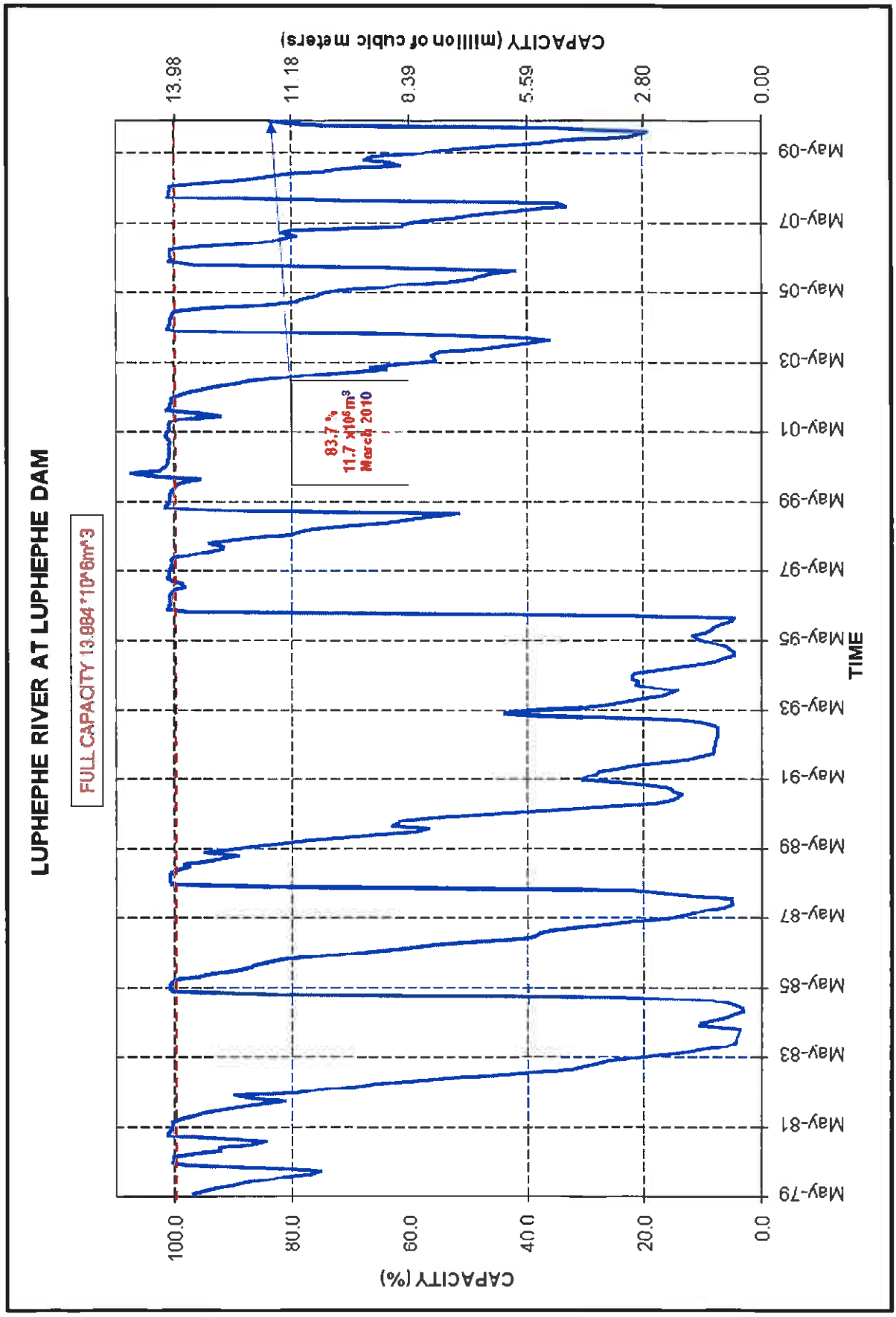


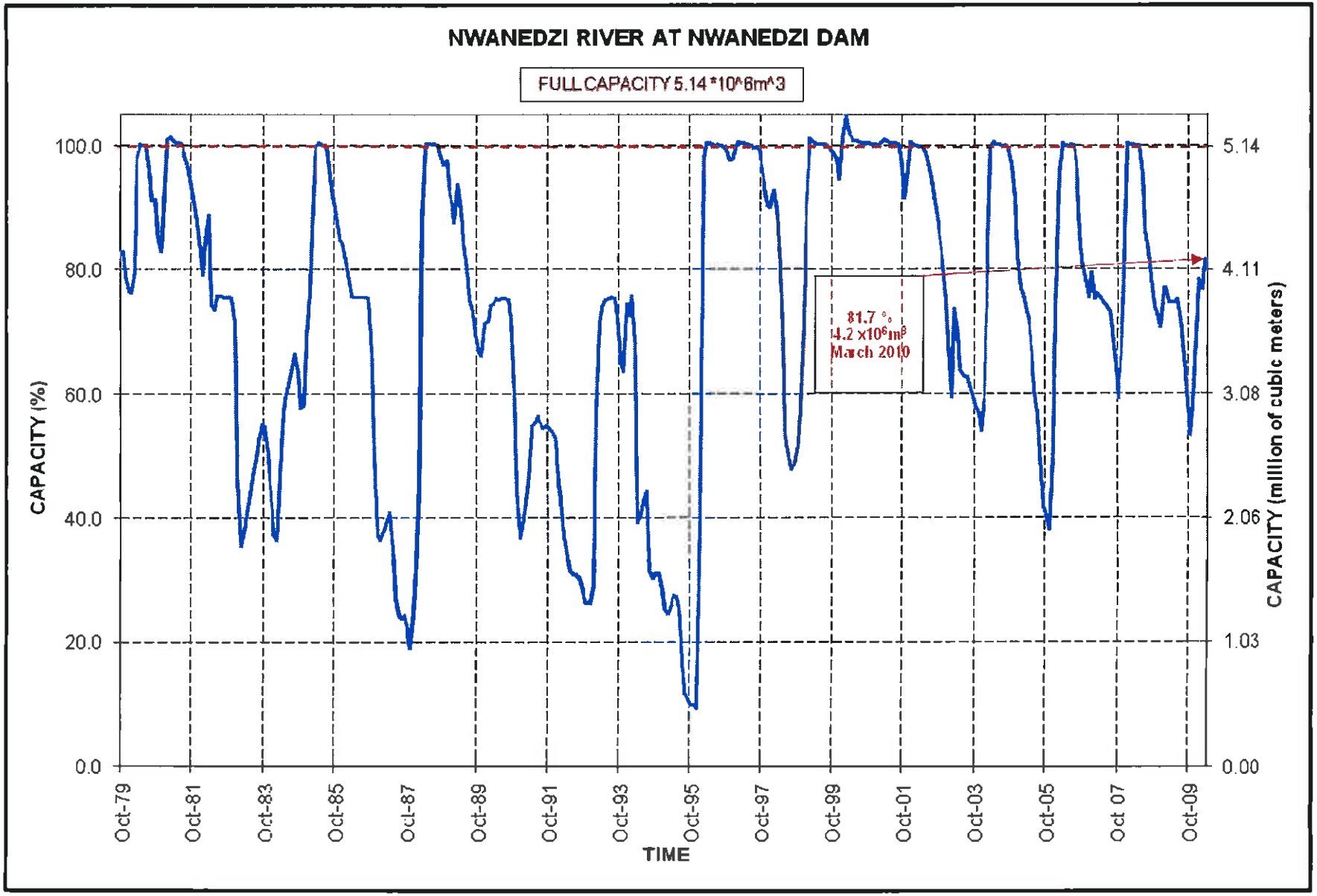

MOGOL RIVER AT MOKOLO DAM
FULL CAPACITY 145.37 *10^6m^3
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
145.37
116.29
87.22
58.15
29.07
0.00
CAPACITY (million of cubic meters)
100.5%
146.09x10^6m^3
March 2010
Apr-80
Apr-82
Apr-84
Apr-86
Apr-88
Apr-90
Apr-92
Apr-94
Apr-96
Apr-98
Apr-00
Apr-02
Apr-04
Apr-06
Apr-08
TIME

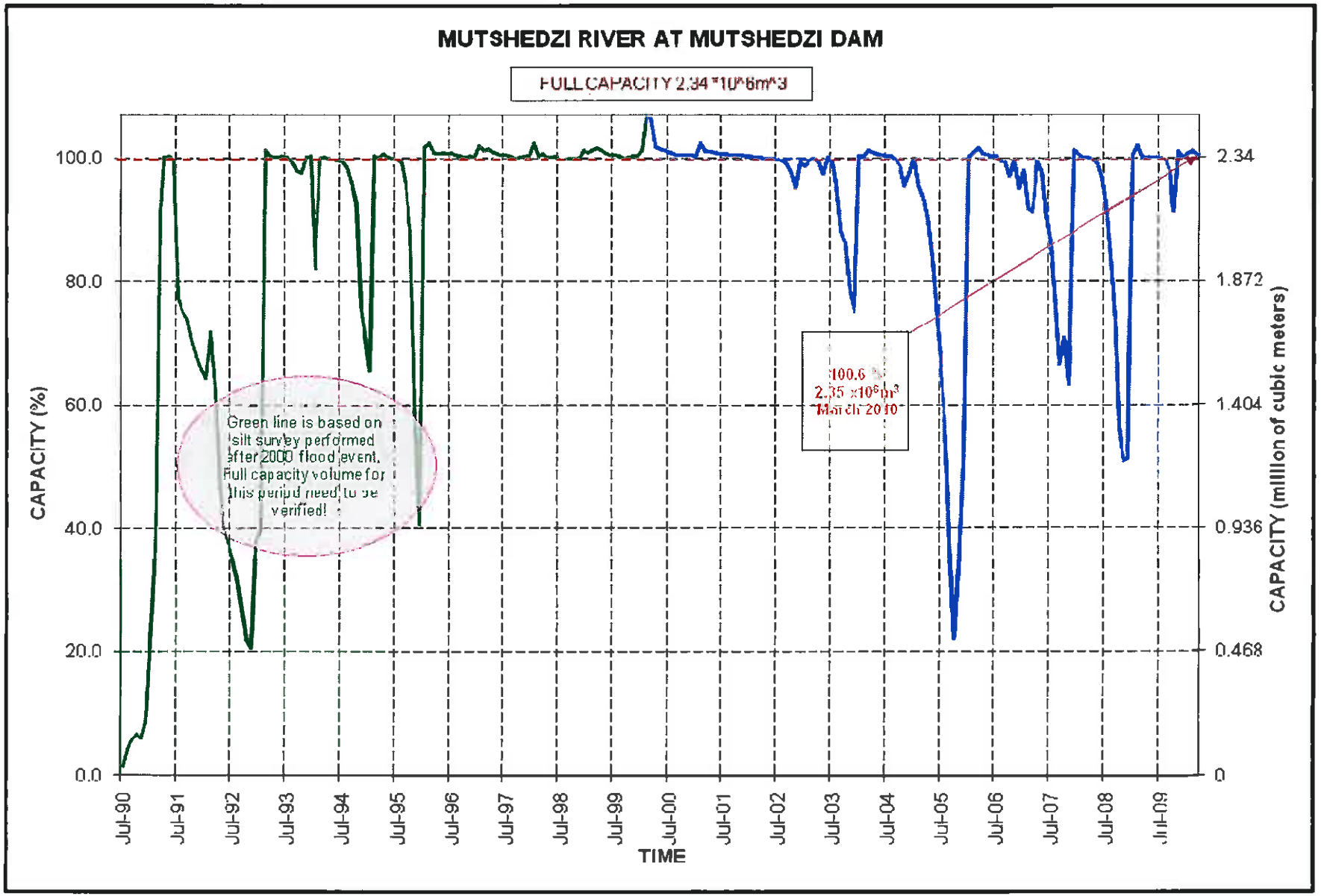

STERK RIVER AT DOORNDRAAI DAM
FULL CAPACITY 43.76 *10^6m^3
100.5%
43.98 x10^6m^3
March 2010
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
43.76
35.0
26.26
17.50
8.75
0.00
CAPACITY (millions of cubic meters)
Mar-53
Mar-56
Mar-59
Mar-62
Mar-65
Mar-68
Mar-71
Mar-74
Mar-77
Mar-80
Mar-83
Mar 86
Mar-89
Mar-92
Mar 95
Mar-98
Mar-01
Mar-04
Mar-07
Mar-10
TIME

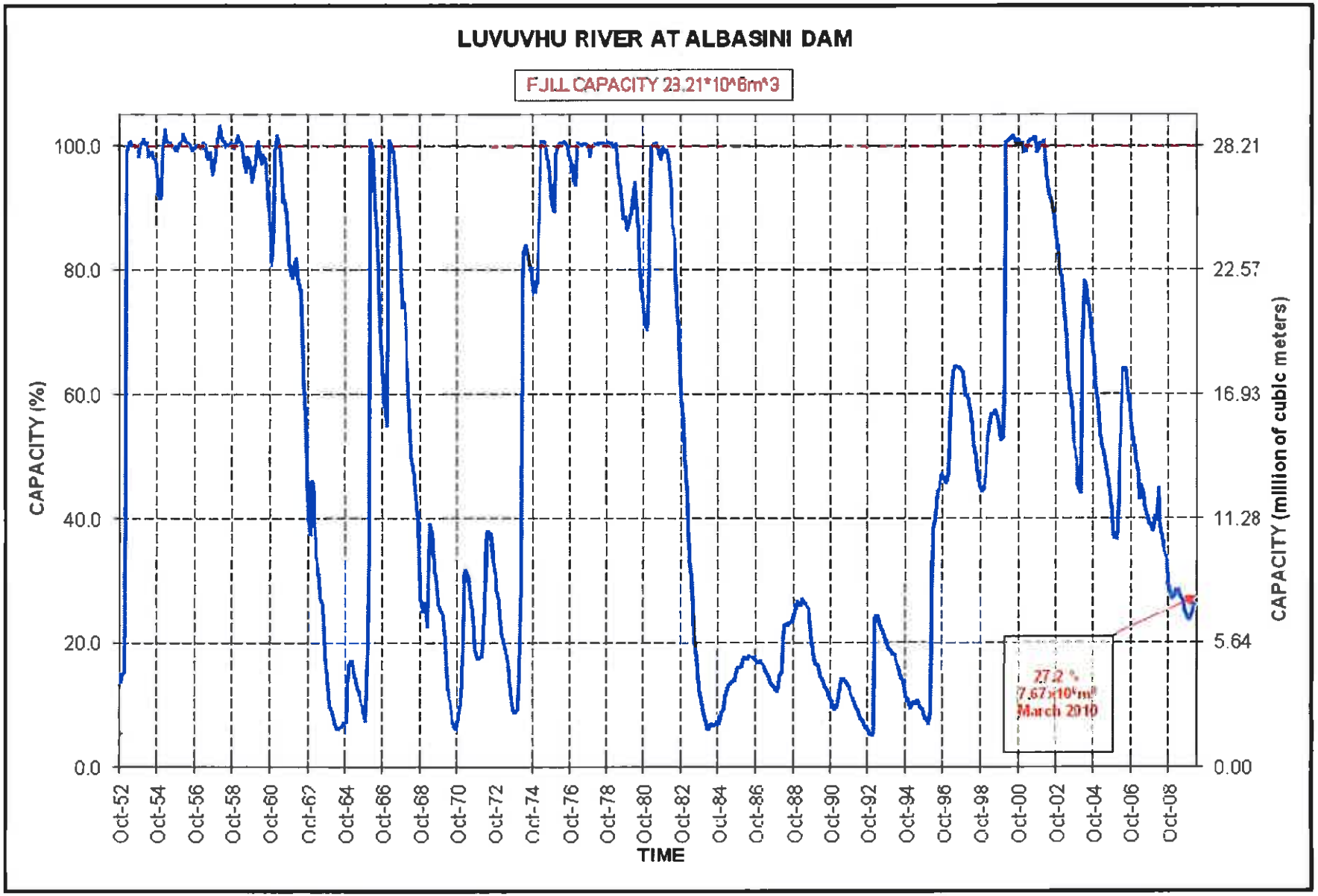

MOKGALAKWENA RIVER AT GLEN ALPINE DAM
FULL CAPACITY 18.89 *10^6m^3
100.0
80.0
60.0
40.0
20.0
0.0
CAPACITY (%)
18.89
15.11
11.33
7.56
3.78
0.00
CAPACITY (millions of cubic meters)
99.5%
18.79 x10^6m^3
March 2010
Oct-67
Oct-72
Oct-77
Oct-82
Oct-87
Oct-92
Oct-97
Oct-02
Oct-07
TIME

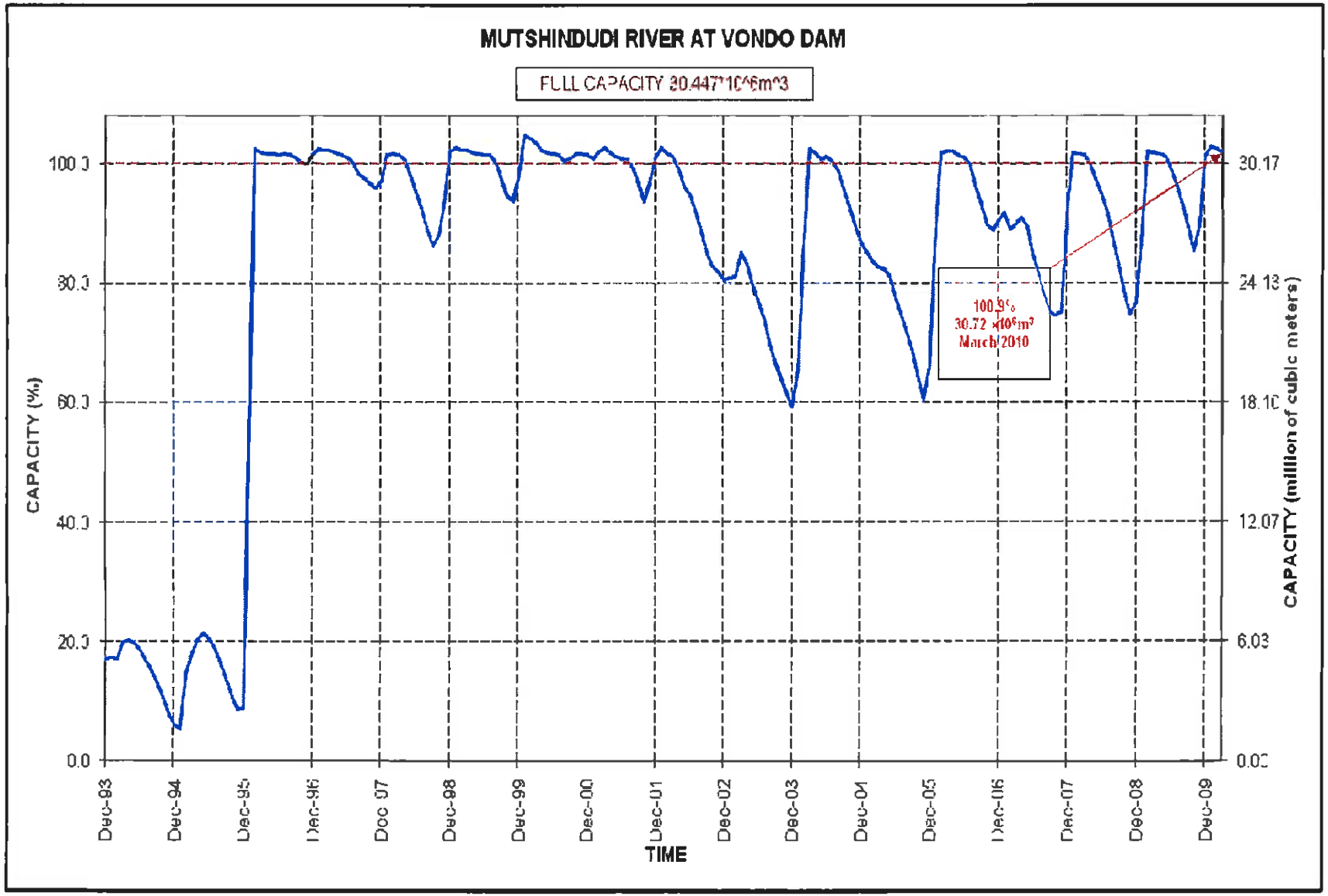

NZHELELE RIVER AT NZHELELE DAM
FULL CAPACITY 51.23*10^6m^3
Note: Various Full Supply Levels as a result of silitation!
DAM WALL RAISED DURING 1968
FULL SUPLY CAPACITY INCREASED
FROM 31.58x10^6m^3 TO 57.12x10^6m^3
GAP IN RECORD NO RELIABLE DATA AVAILABLE!
89.4 %
45.8 x10^6m^3
March 2010
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
51.23
40.98
30.74
20.49
10.25
0.00
CAPACITY (million of cubic meters)
Feb-48
Feb-53
Feb-58
Feb-63
Feb-68
Feb-73
Feb-78
Feb-83
Feb-88
Feb-93
Feb-98
Feb-03
Feb-08
TIME

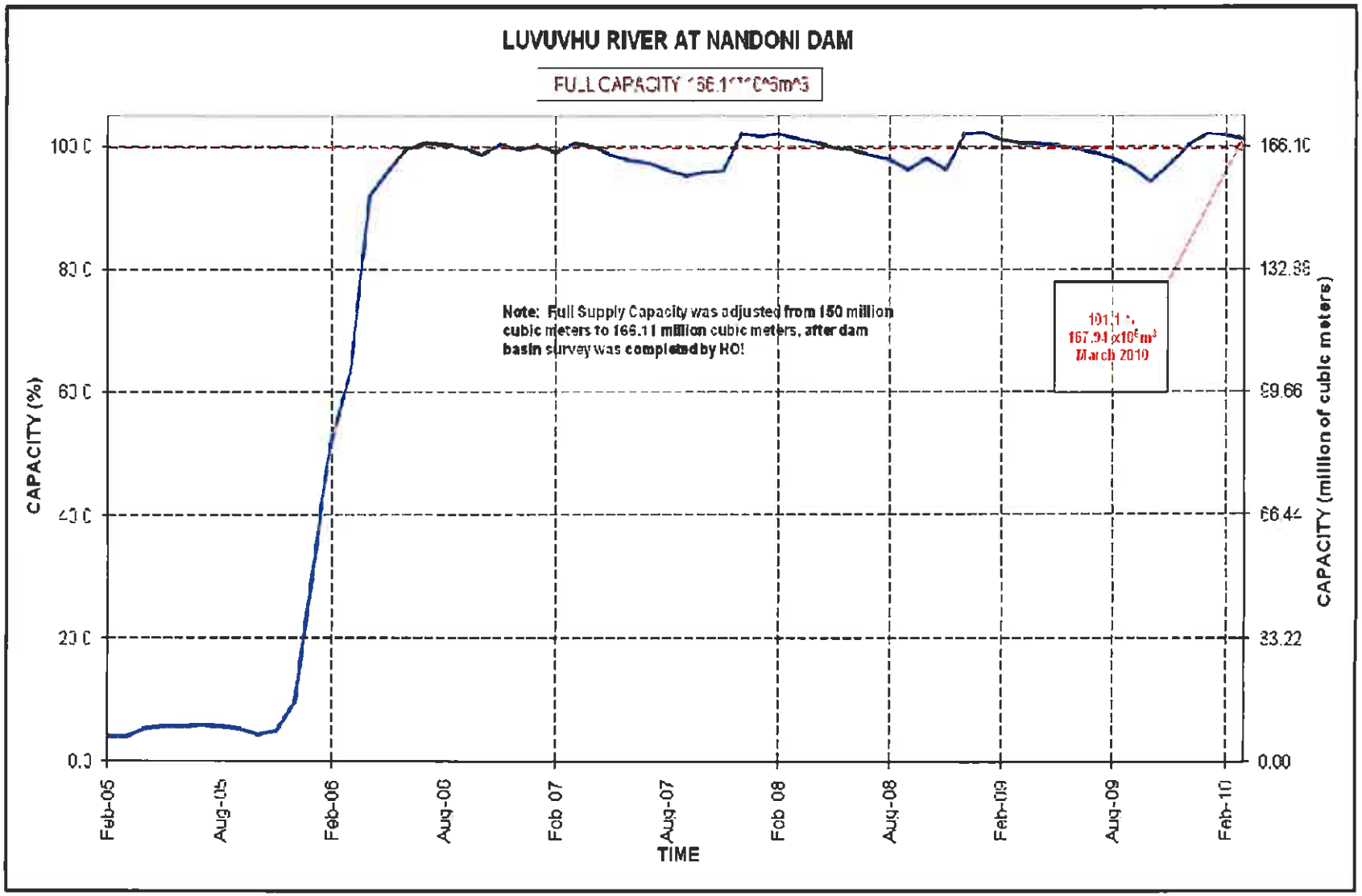

LUPHEPHE RIVER AT LUPHEPHE DAM
FULL CAPACITY 13.984 *10^6m^3
CAPACITY (million of cubic meters)
13.98
11.18
8.39
5.59
2.80
0.00
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
83.7 %
11.7 x10^6m^3
March 2010
May-79
May-81
May-83
May-85
May-87
May-89
May-91
May-93
May-95
May-97
May-99
May-01
May-03
May-05
May-07
May-09
TIME

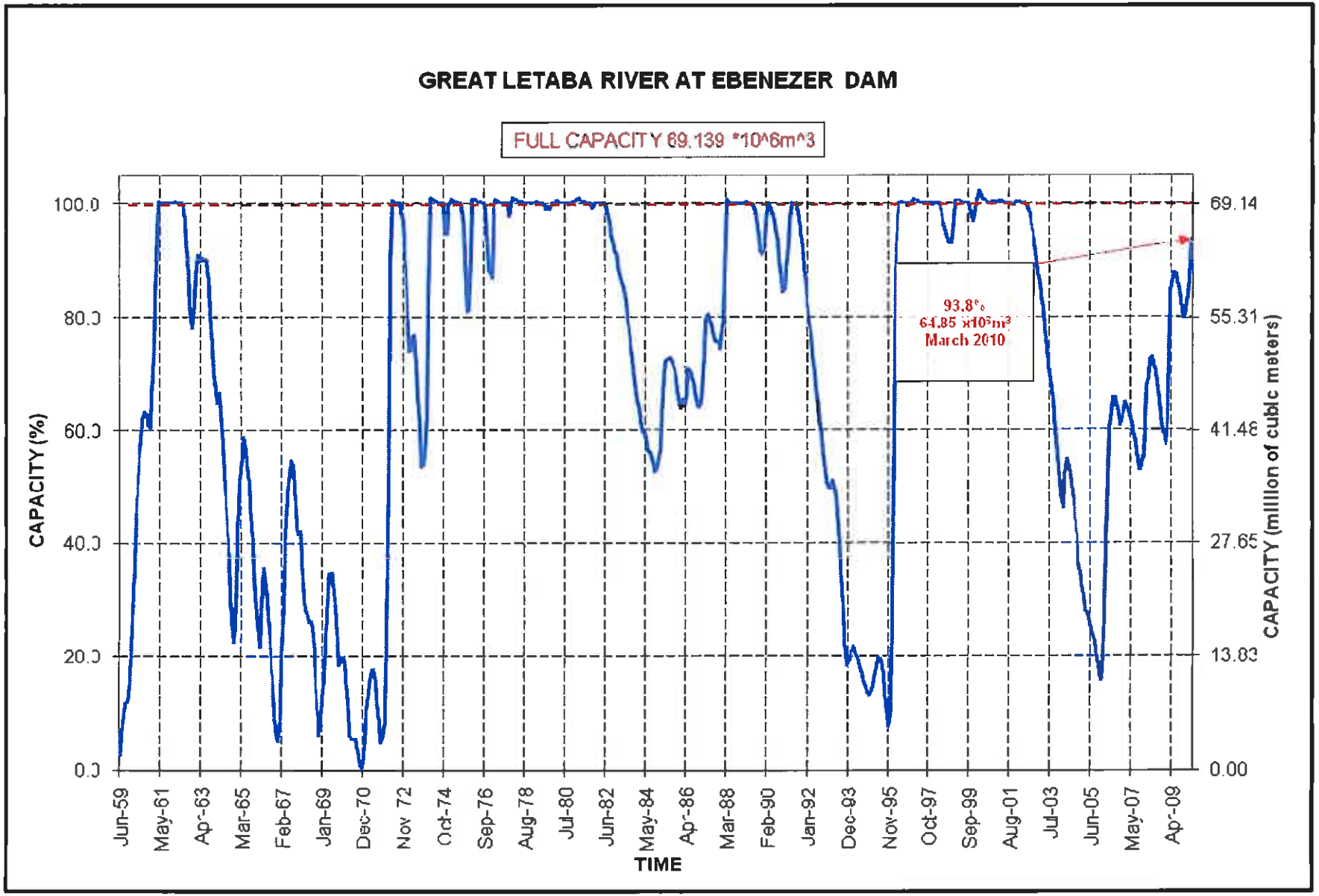

NWANEDZI RIVER AT NWANEDZI DAM
FULL CAPACITY 5.14 *10^6m^3
81.7 %
4.2 x10^6m^3
March 2010
CAPACITY (%)
CAPACITY (mllllion of cubic meters)
TIME
100.0
80.0
60.0
40.0
20.0
0.0
5.14
4.11
3.08
2.06
1.03
0.00
Oct-79
Oct-81
Oct-83
Oct-85
Oct-87
Oct-89
Oct-91
Oct-93
Oct-95
Oct-97
Oct-99
Oct-01
Oct-03
Oct-05
Oct 07
Oct-09

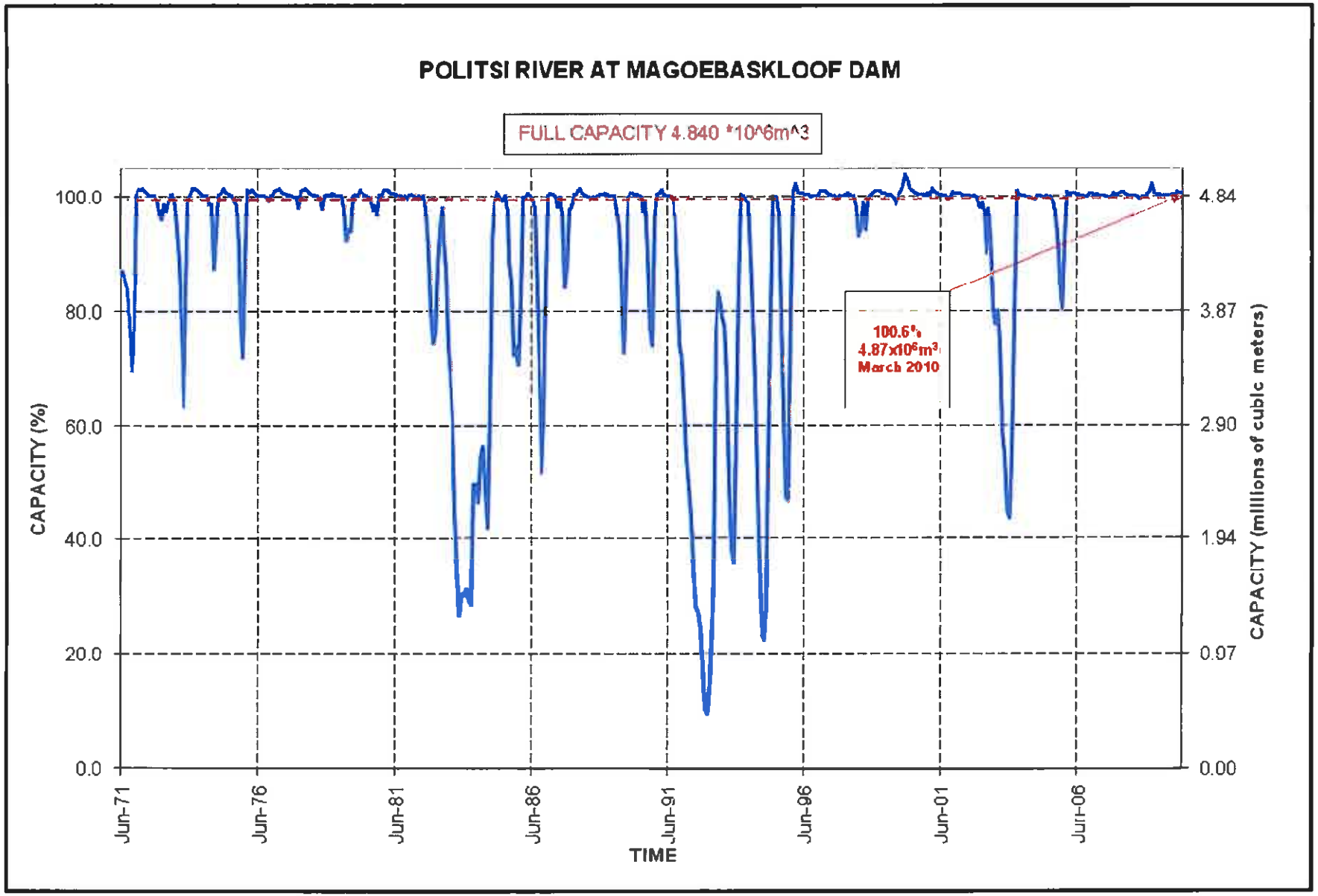

MUTSHEDZI RIVER AT MUTSHEDZI DAM
FULL CAPACITY 2.34 *10^6m^3
100.0
80.0
60.0
40.0
20.0
0.0
CAPACITY (%)
2.34
1.872
1.404
0.936
0.468
0
CAPACITY (millIion of cubic meters)
Green line is based on silt survey performed after 2000 flood event. Full capacity volume for this period need to be verified!
100.6 %
2.35 x10^6 m^3
March 2010
Jul-90
Jul-91
Jul-92
Jul-93
Jul-94
Jul-95
Jul-96
Jul-97
Jul-98
Jul-99
Jul-00
Jul-01
Jul-02
Jul-03
Jul-04
Jul-05
Jul-06
Jul-07
Jul-08
Jul-09
TIME

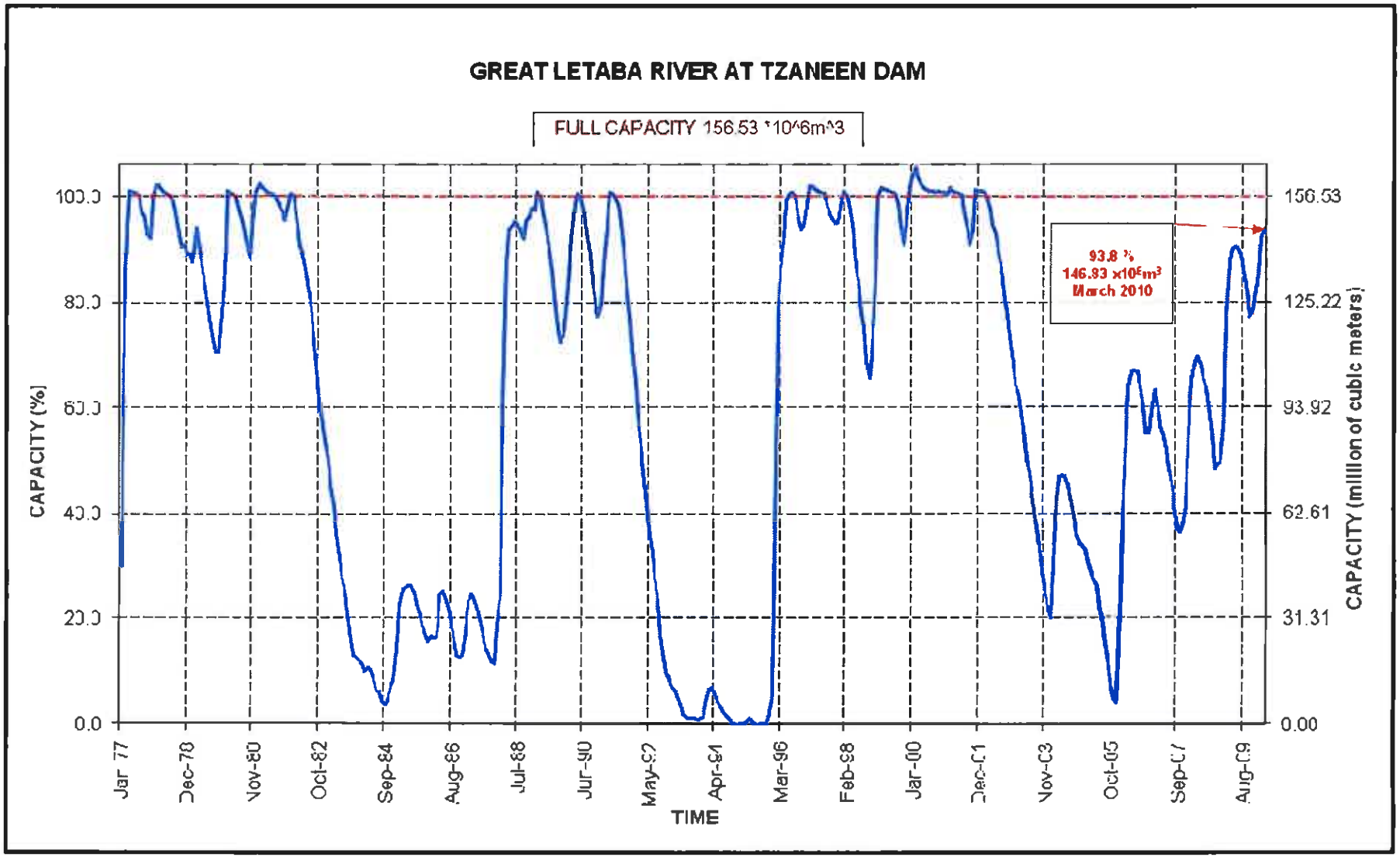

LUVUVHU RIVER AT ALBASINI DAM
FULL CAPACITY 23.21*10^6m^3
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
28.21
22.57
16.93
11.28
5.64
0.00
CAPACITY (million of cubic meters)
27.2 %
7.67x10^6m^3
March 2010
Oct-52
Oct-54
Oct-56
Oct-58
Oct-60
Oct-62
Oct-64
Oct-66
Oct-68
Oct-70
Oct-72
Oct-74
Oct-76
Oct-78
Oct-80
Oct-82
Oct-84
Oct-86
Oct-88
Oct-90
Oct-92
Oct-94
Oct-96
Oct-98
Oct-00
Oct-02
Oct-04
Oct-06
Oct-08
TIME

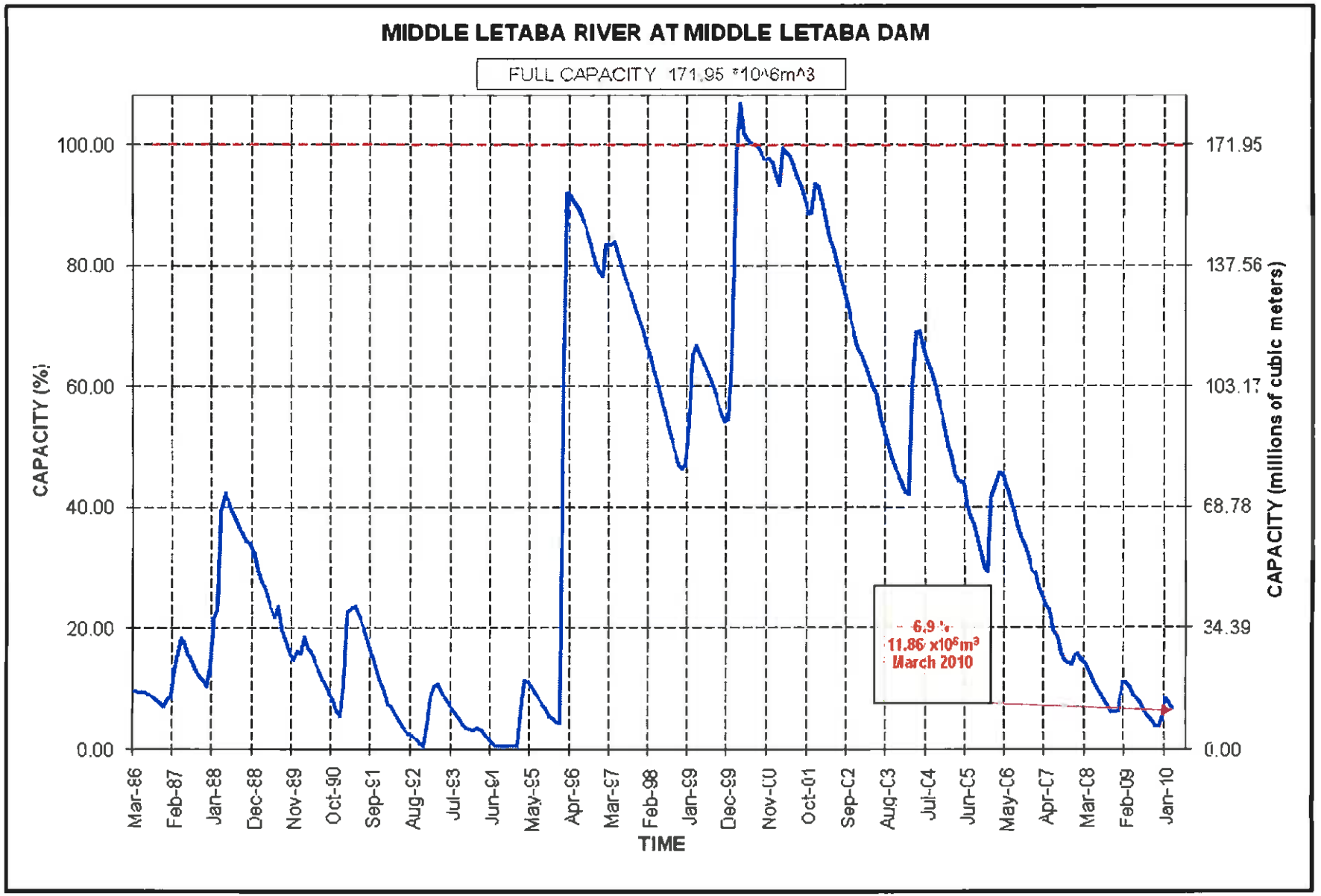

MUTSHINDUDI RIVER AT VONDO DAM
FULL CAPACITY 20.447*10^6m^3
100.0
80.0
60.0
40.0
20.0
0.0
CAPACITY (%)
30.17
24.13
18.10
12.07
6.03
0.00
CAPACITY (million of cubic meters)
100.5%
30.72 x10^6m^3
March 2010
Dec-93
Dec-94
Dec-95
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
TIME

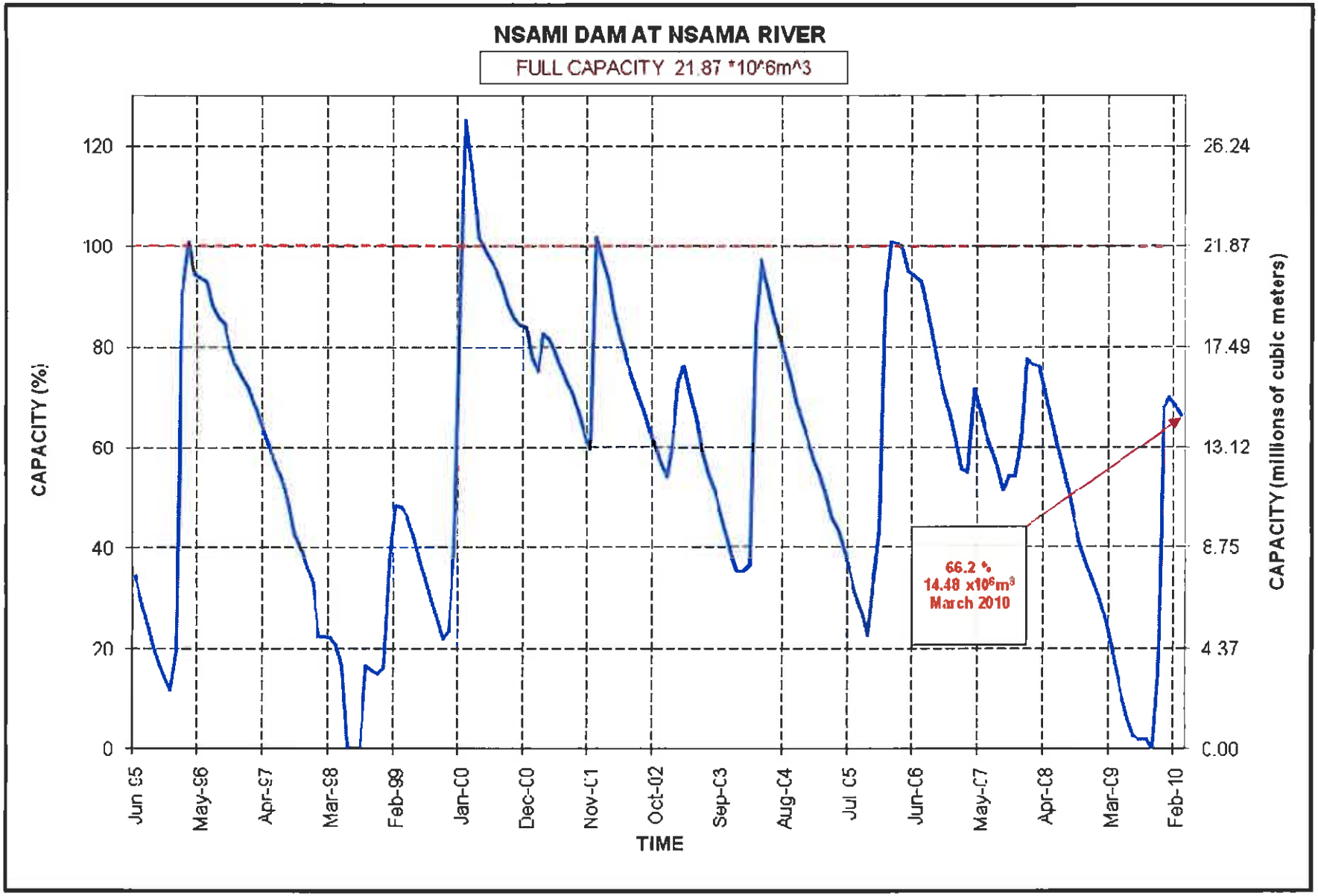

LUVUVHU RIVER AT NANDONI DAM
FULL CAPACITY
Note: Full Supply Capacity was adjusted from 150 million cubic meters to 166.11 million cubic meters, after dam basin survey was completed by RQI
167.94 x10^6 m^3
March 2010
CAPACITY (%)
CAPACITY (million of cubic meters)
166.10
132.88
99.66
66.44
33.22
0.00
Feb-05
Aug-05
Feb-06
Aug-06
Feb 07
Aug-07
Feb 08
Aug-08
Feb-09
Aug-09
Feb-10
TIME

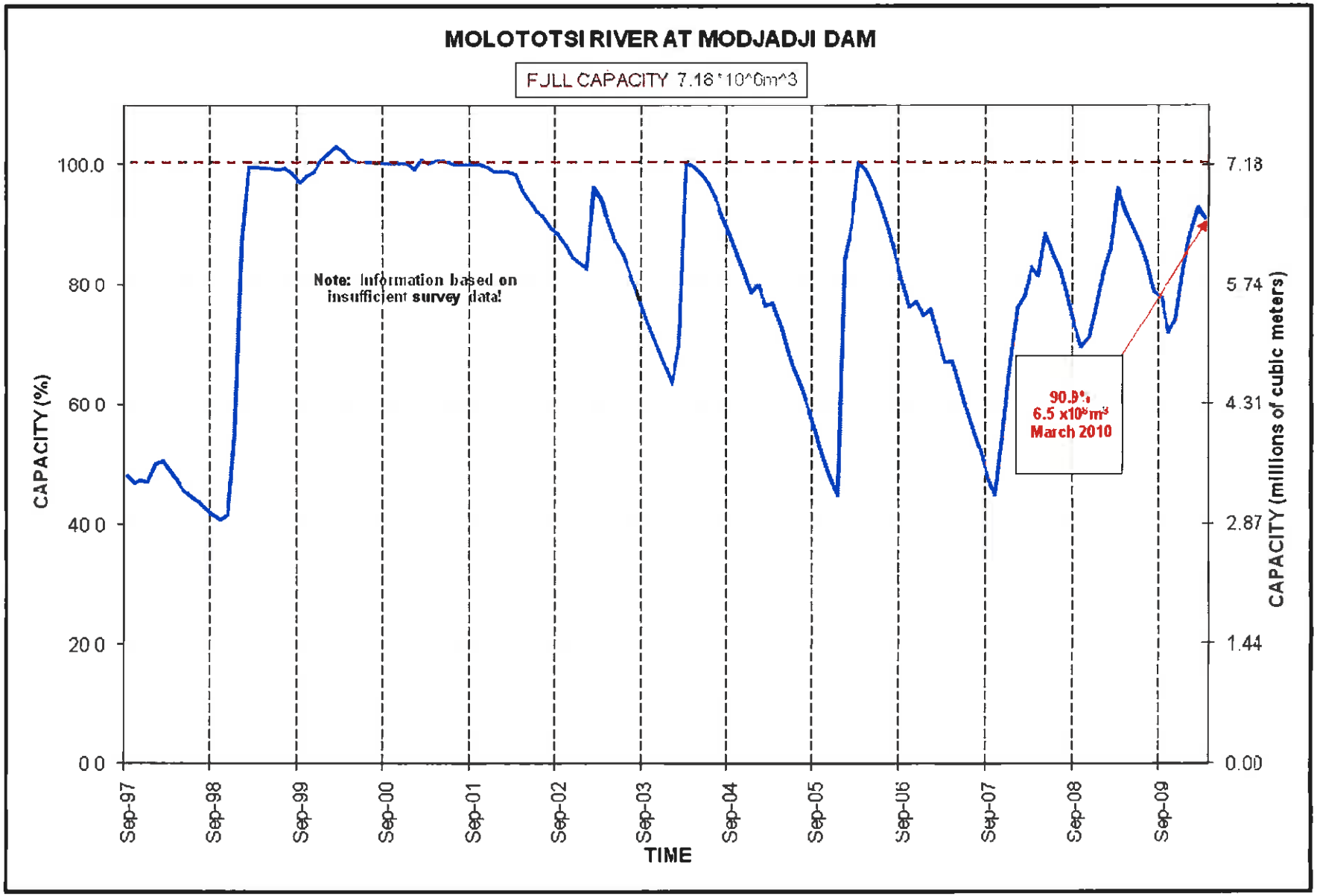

GREAT LETABA RIVER AT EBENEZER DAM
FULL CAPACITY 69.139 *10^6m^3
93.8%
64.85 x10^6m^3
March 2010
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
CAPACITY (million of cubic meters)
69.14
55.31
41.48
27.65
13.83
0.00
Jun-59
May-61
Apr-63
Mar-65
Feb-67
Jan-69
Dec-70
Nov 72
Oct-74
Sep-76
Aug-78
Jul-80
Jun-82
May-84
Apr-86
Mar-88
Feb-90
Jan-92
Dec-93
Nov-95
Oct-97
Sep-99
Aug-01
Jul-03
Jun-05
May-07
Apr-09
TIME

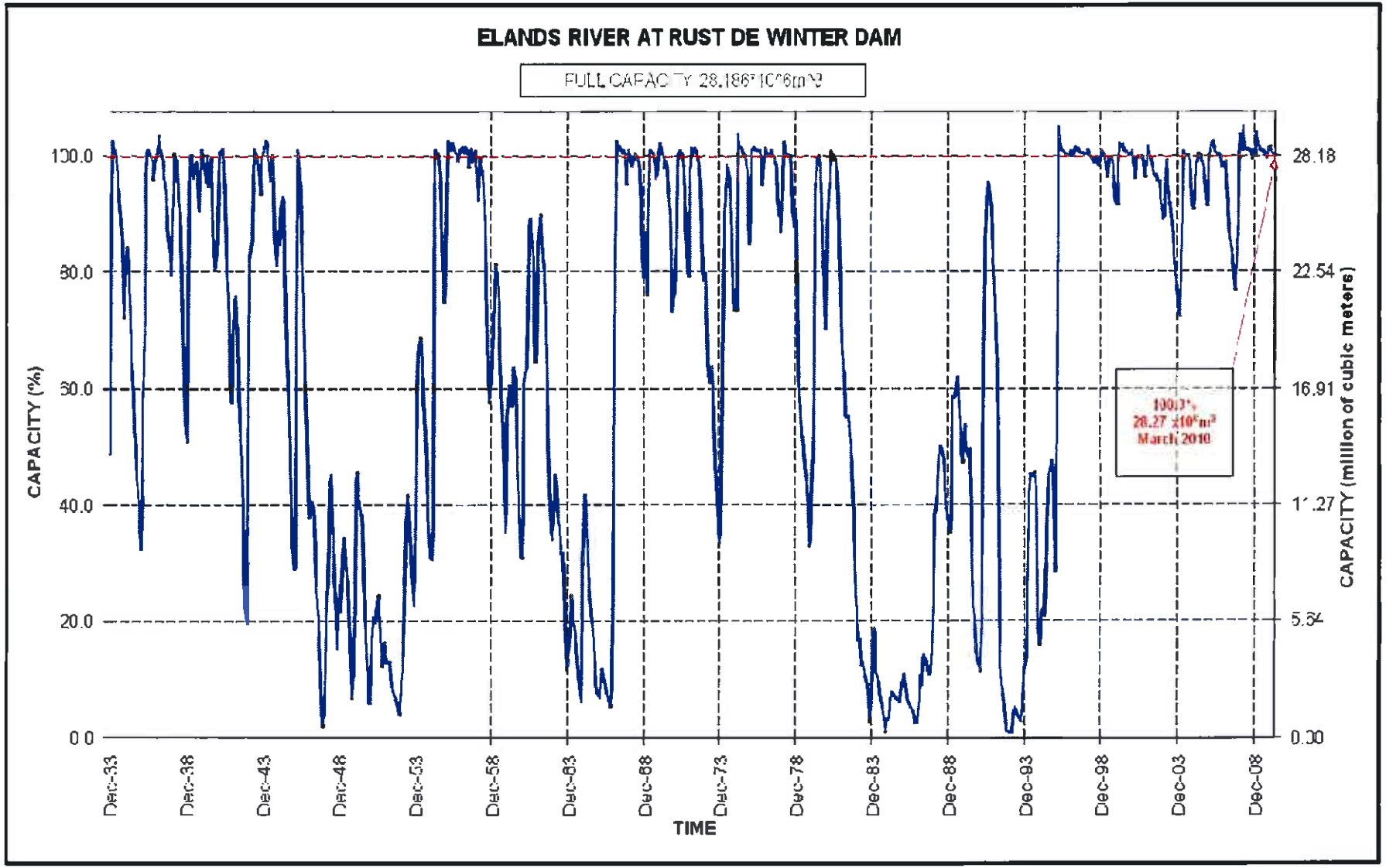

POLITSI RIVER AT MAGOEBASKLOOF DAM
FULL CAPACITY 4.840 *10^6m^3
100.6%
4.87x10^6m^3
March 2010
CAPACITY (%)
CAPACITY (millions of cubic meters)
TIME
100.0
80.0
60.0
40.0
20.0
0.0
4.84
3.87
2.90
1.94
0.97
0.00
Jun-71
Jun-76
Jun-81
Jun-86
Jun-91
Jun-96
Jun-01
Jun-06

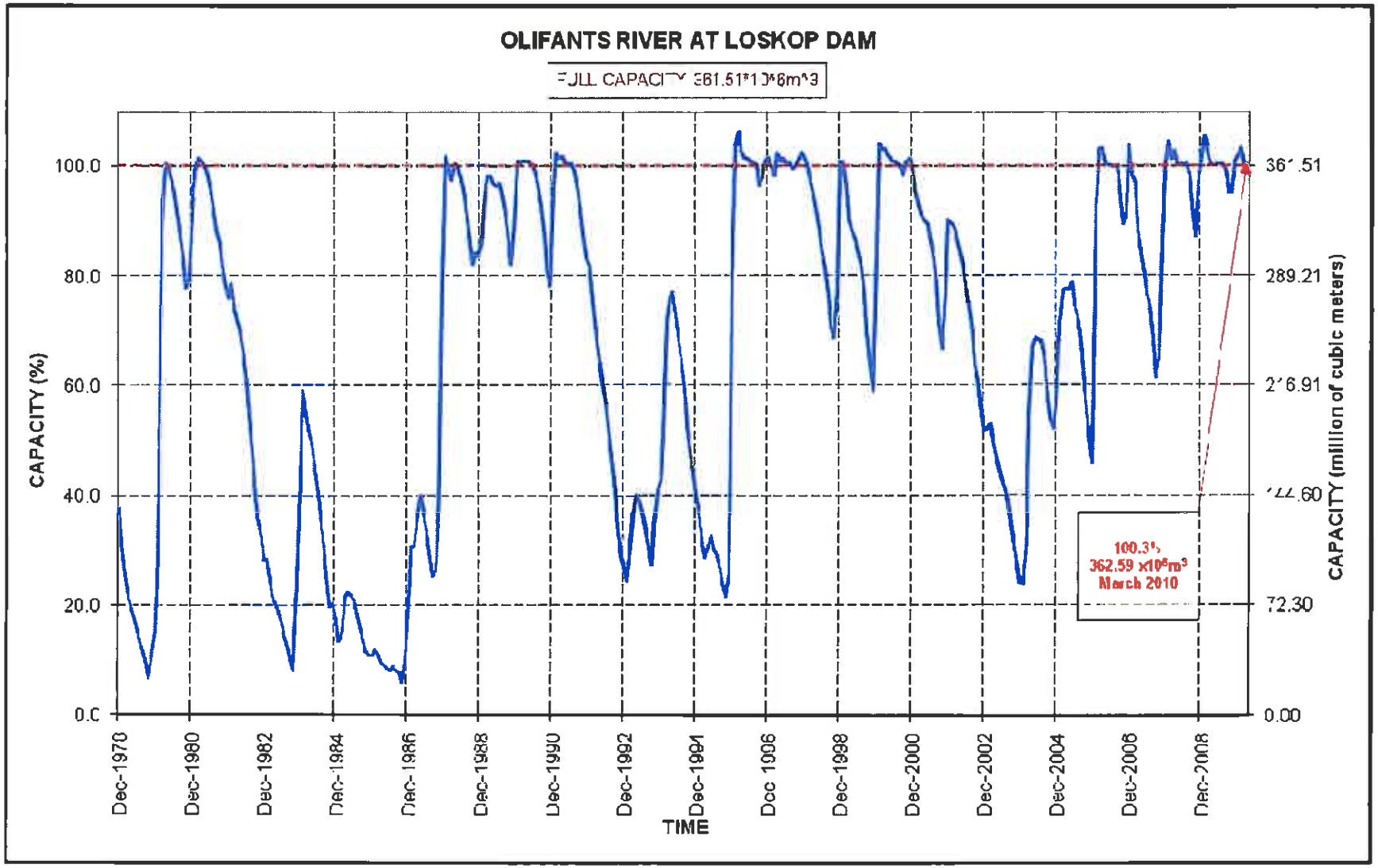

GREAT LETABA RIVER AT TZANEEN DAM
FULL CAPACITY 156.53 *10^6m^3
93.8 %
146.83 x10^6m^3
March 2010
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
156.53
125.22
93.92
62.61
31.31
0.00
CAPACITY (millllon of cubic meters)
Jan-77
Dec-78
Nov-80
Oct-82
Sep-84
Aug-86
Jul-88
Jun-90
May-92
Apr-94
Mar-96
Feb-98
Jan-00
Dec-01
Nov-03
Oct-05
Sep-07
Aug-09
TIME

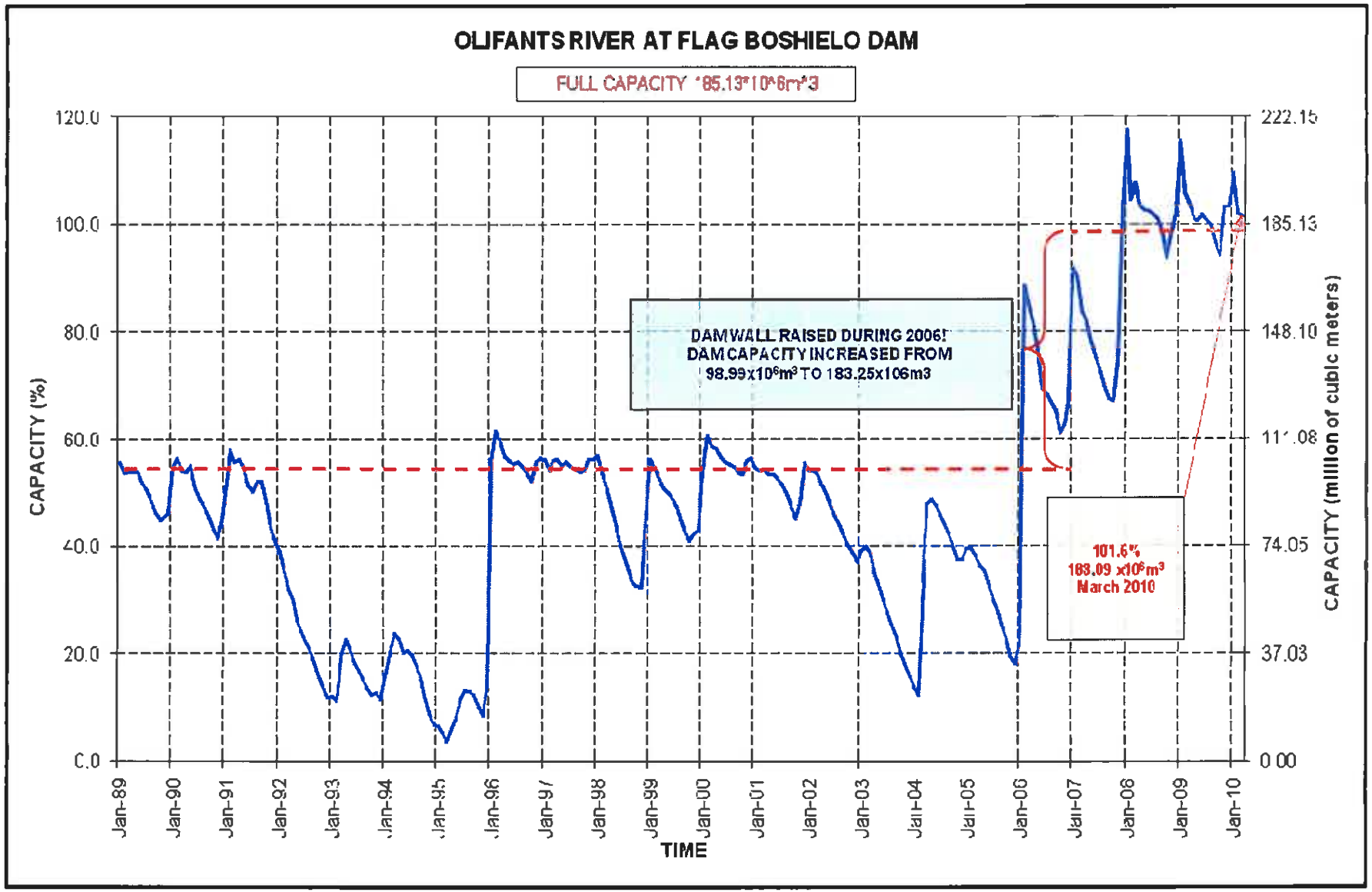

MIDDLE LETABA RIVER AT MIDDLE LETABA DAM
FULL CAPACITY 171.95 *10^6m^3
CAPACITY (%)
100.00
80.00
60.00
40.00
20.00
0.00
171.95
137.56
103.17
68.78
34.39
0.00
CAPACITY (millions of cubic meters)
6.9 %
11.86 x10^6m^3
March 2010
Mar-86
Feb-87
Jan-88
Dec-88
Nov-89
Oct-90
Sep-91
Aug-92
Jul-93
Jun-94
May-95
Apr-96
Mar-97
Feb-98
Jan-99
Dec-99
Nov-00
Oct-01
Sep-02
Aug-03
Jul-04
Jun-05
May-06
Apr-07
Mar-08
Feb-09
Jan-10
TIME

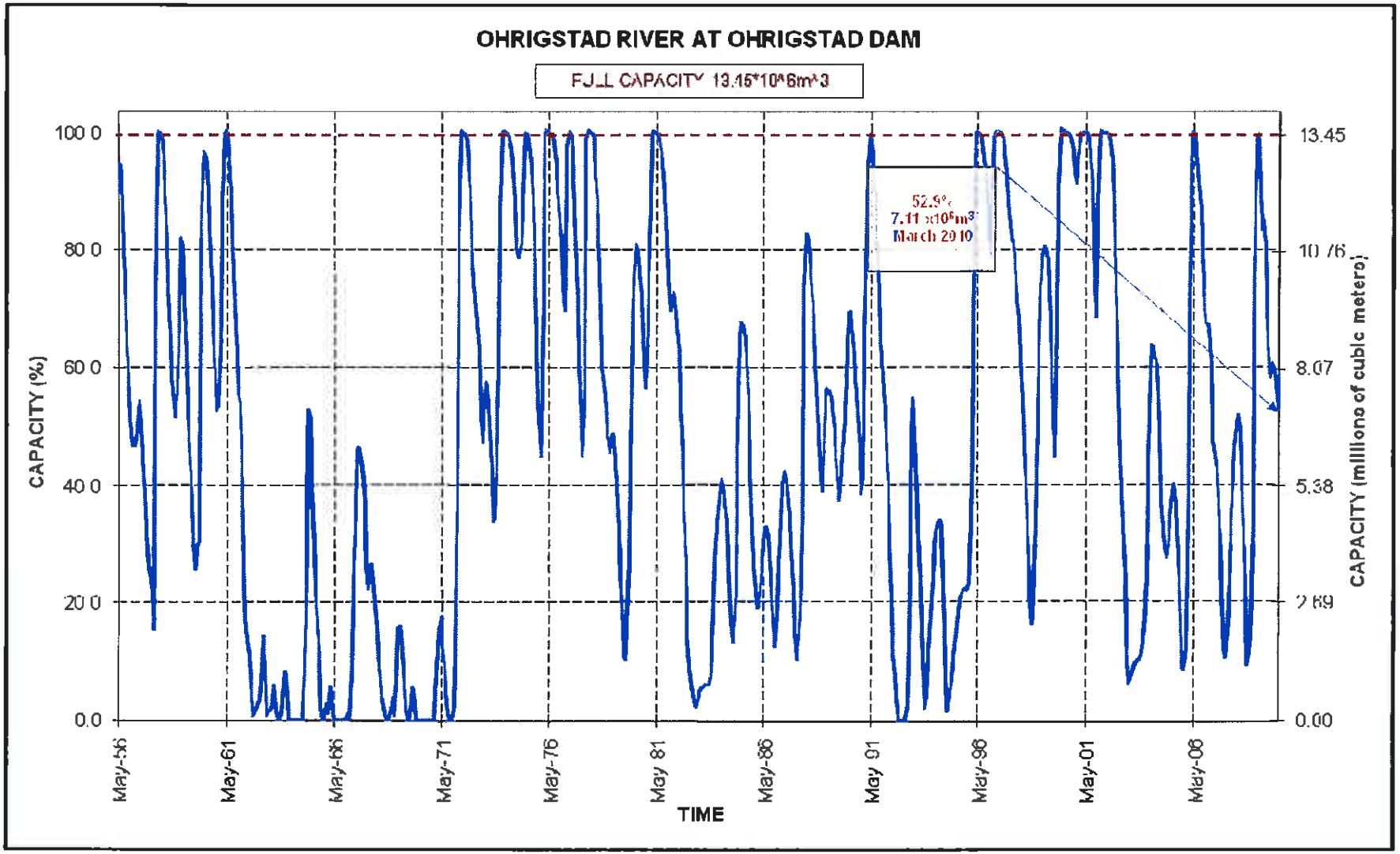

NSAMI DAM AT NSAMA RIVER
FULL CAPACITY 21.87 *10^6m^3
CAPACITY (%)
CAPACITY (millions of cubic meters)
TIME
120
100
80
60
40
20
0
26.24
21.87
17.49
13.12
8.75
4.37
0.00
Jun-05
May-06
Apr-07
Mar-08
Feb-09
Jan-00
Dec-00
Nov-01
Oct-02
Sep-03
Aug-04
Jul-05
Jun-06
May-07
Apr-08
Mar-09
Feb-10
66.2 %
14.48 x10^6m^3
March 2010

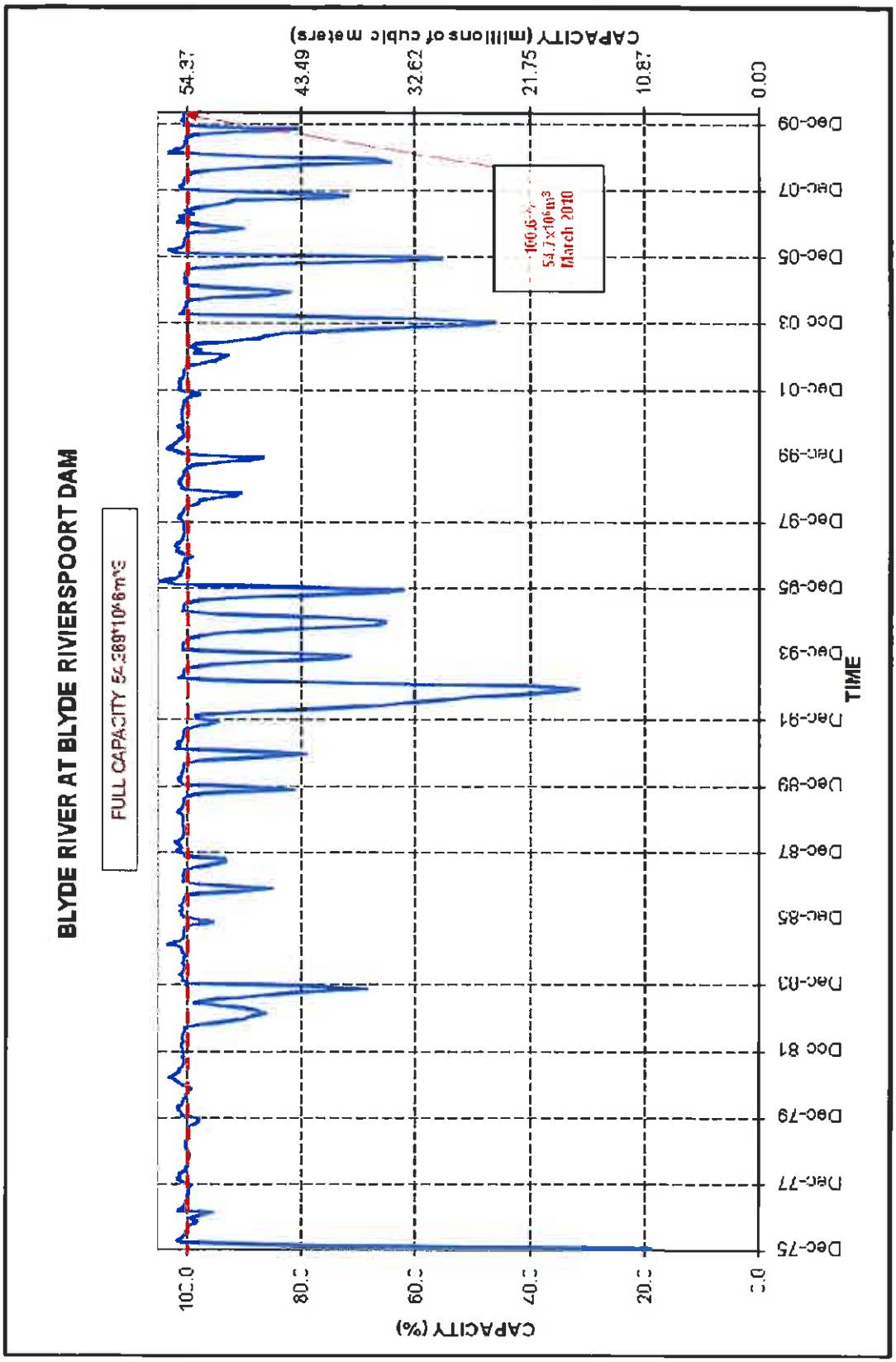

MOLOTOTSI RIVER AT MODJADJI DAM
FULL CAPACITY 7.18*10^6m^3
Note: Information based on insufficient survey data!
90.9%
6.5 x10^6m^3
March 2010
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
CAPACITY (millions of cubic meters)
7.18
5.74
4.31
2.87
1.44
0.00
Sep-97
Sep-98
Sep-99
Sep-00
Sep-01
Sep-02
Sep-03
Sep-04
Sep-05
Sep-06
Sep-07
Sep-08
Sep-09
TIME

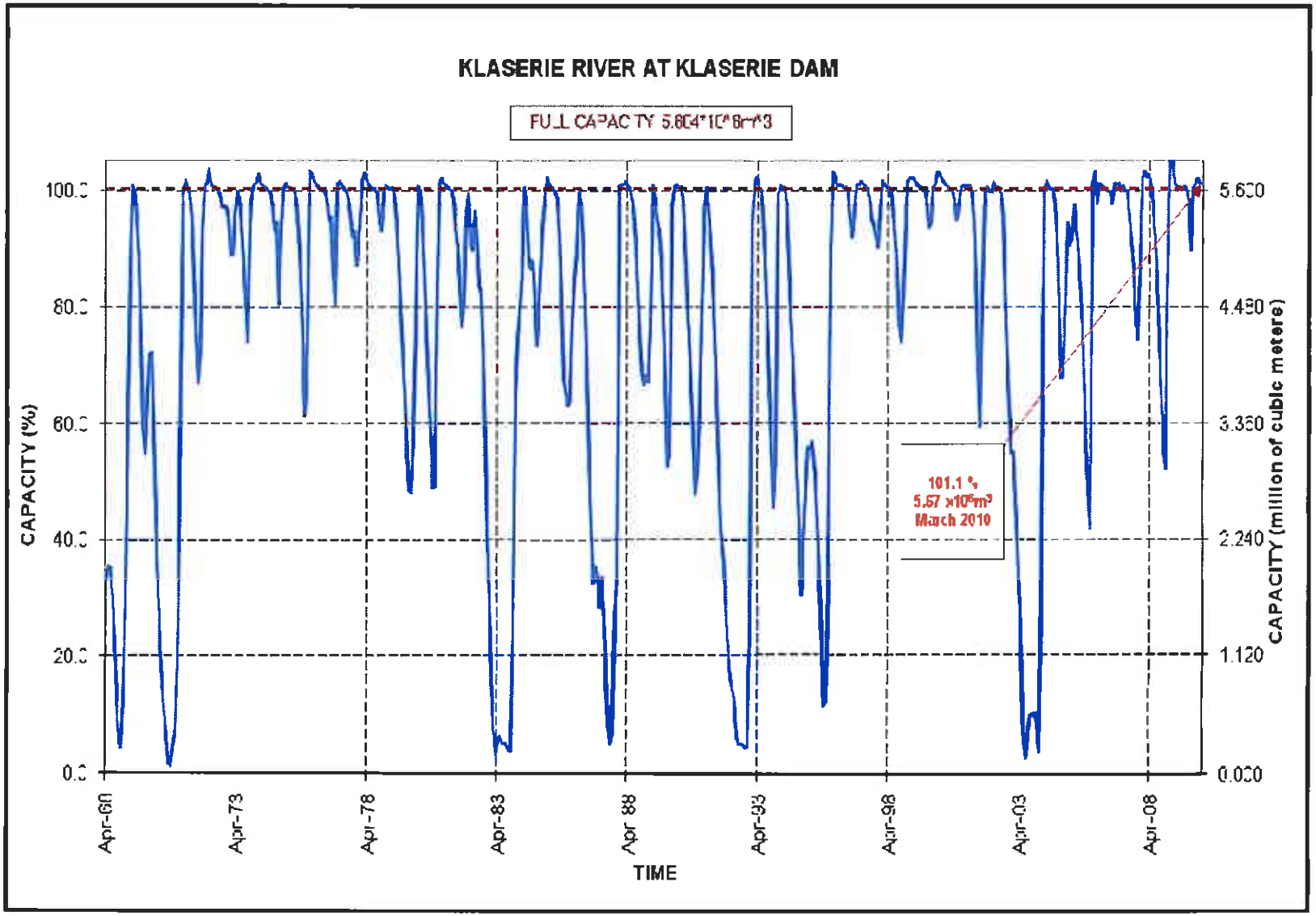

ELANDS RIVER AT RUST DE WINTER DAM
FULL CAPACITY 28.186*10^6m^3
100.0
80.0
60.0
40.0
20.0
0.0
CAPACITY (%)
28.18
22.54
16.91
11.27
5.64
0.00
CAPACITY (million of cubic meters)
100.3%
28.27 x10^6m^3
March 2010
Dec-33
Dec-38
Dec-43
Dec-48
Dec-53
Dec-58
Dec-63
Dec-68
Dec-73
Dec-78
Dec-83
Dec-88
Dec-93
Dec-98
Dec-03
Dec-08
TIME

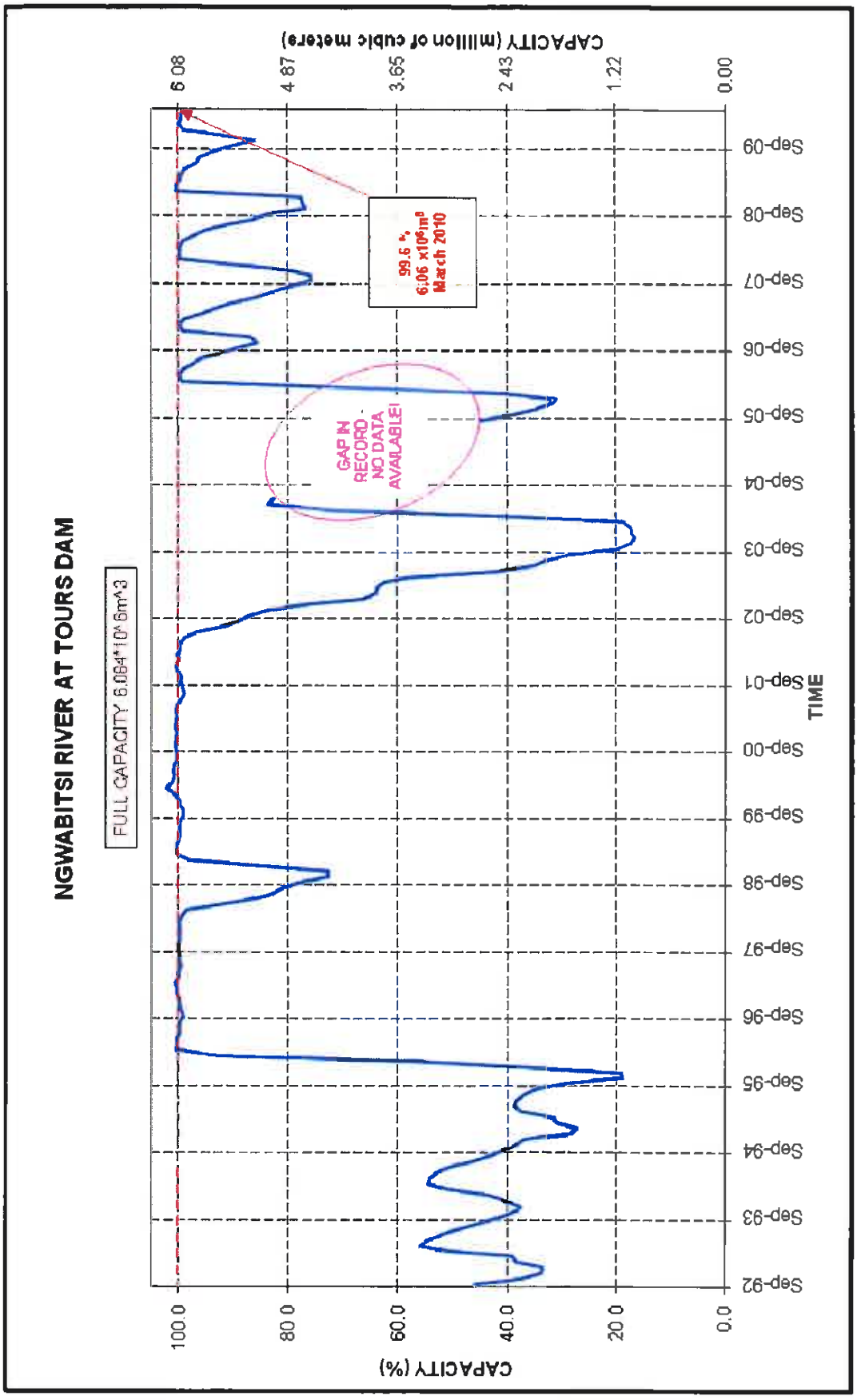

OLIFANTS RIVER AT LOSKOP DAM
FULL CAPACITY 361.51*10^6m^3
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
CAPACITY (million of cubic meters)
361.51
289.21
216.91
144.60
72.30
0.00
100.3%
362.59 x10^6m^3
March 2010
Dec-1970
Dec-1980
Dec-1982
Dec-1984
Dec-1986
Dec-1988
Dec-1990
Dec-1992
Dec-1994
Dec 1996
Dec-1998
Dec-2000
Dec-2002
Dec-2004
Dec-2006
Dec-2008
TIME

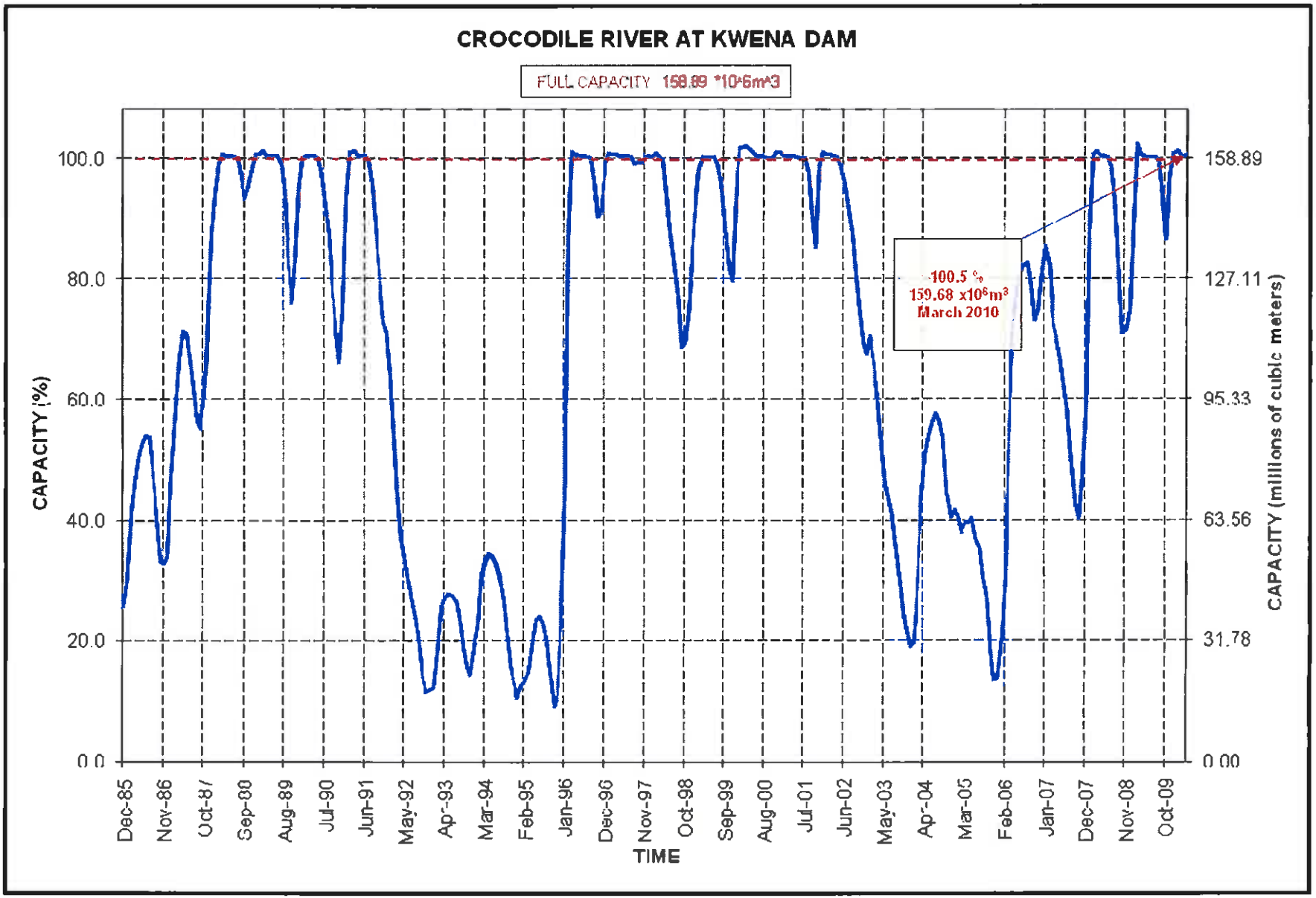

OLIFANTS RIVER AT FLAG BOSHIELO DAM
FULL CAPACITY *85.13*10^6m^3
DAM WALL RAISED DURING 2006!
DAM CAPACITY INCREASED FROM
98.99x10^6m^3 TO 183.25x106m3
101.6%
183.09 x10^6m^3
March 2010
CAPACITY (%)
CAPACITY (million of cubic meters)
TIME
120.0
100.0
80.0
60.0
40.0
20.0
0.0
222.15
185.13
148.10
74.05
37.03
0.00
Jan-89
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10

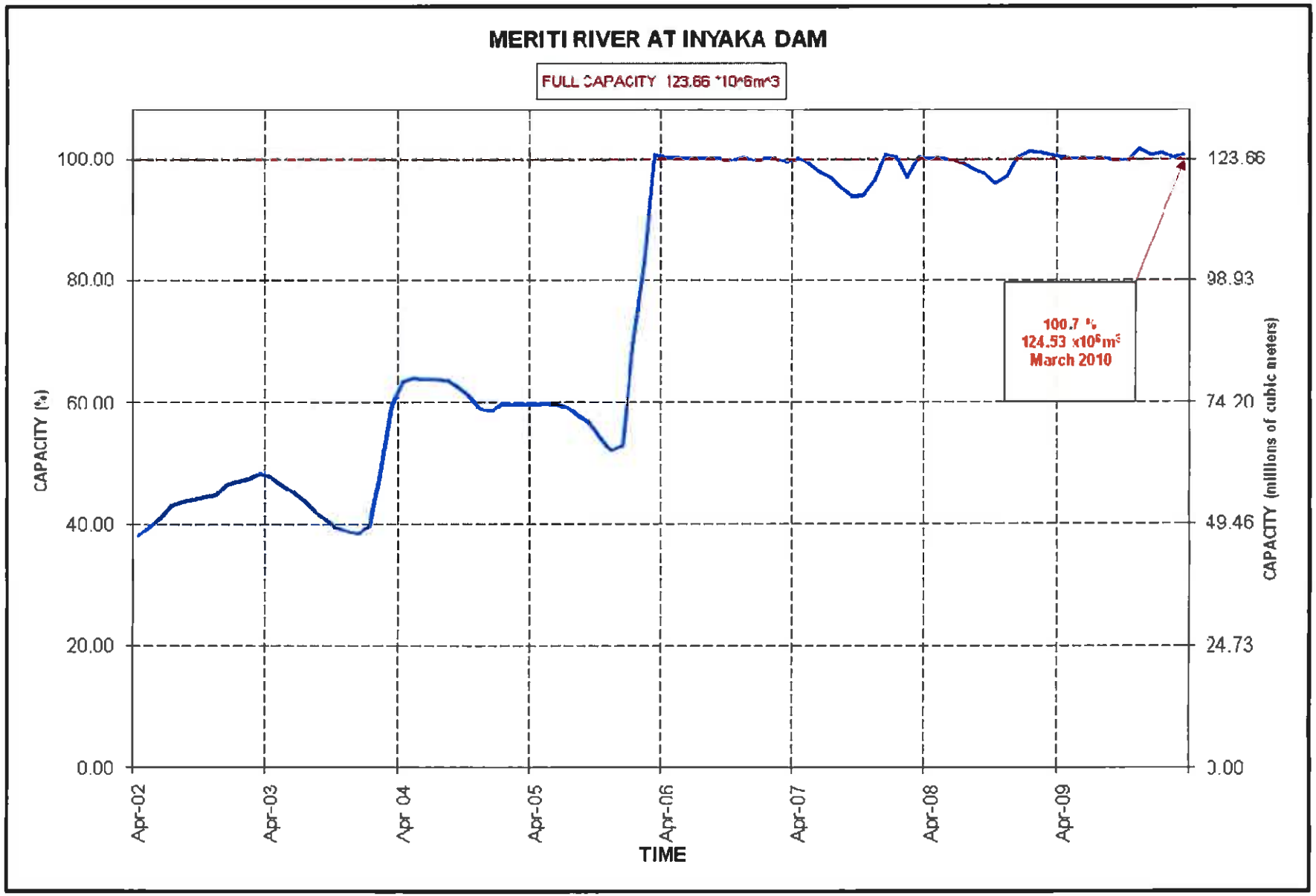

OHRIGSTAD RIVER AT OHRIGSTAD DAM
FULL CAPACITY 13.45*10^6m^3
52.9%
7.11 x10^6m^3
March 2010
100.0
80.0
60.0
40.0
20.0
0.0
13.45
10.76
8.07
5.38
2.69
0.00
CAPACITY (%)
CAPACITY (millions of cubic meters)
May-56
May-61
May-66
May-71
May-76
May-81
May-86
May-91
May-96
May-01
May-06
TIME


BLYDE RIVER AT BLYDE RIVIERSPOORT DAM
FULL CAPACITY 54.369*10^6m^3
CAPACITY (%)
CAPACITY (millions of cubic meters)
TIME
54.37
43.49
32.62
21.75
10.87
0.00
100.0
80.0
60.0
40.0
20.0
0.0
Dec-75
Dec-77
Dec-79
Dec 81
Dec-83
Dec-85
Dec-87
Dec-89
Dec-91
Dec-93
Dec-95
Dec-97
Dec-99
Dec-01
Dec 03
Dec-05
Dec-07
Dec-09
March 2010


KLASERIE RIVER AT KLASERIE DAM
FULL CAPACITY 5.604*10^6m^3
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
5.600
4.480
3.360
2.240
1.120
0.000
CAPACITY (million of cubic meters)
101.1 %
5.57 x10^6m^3
March 2010
Apr-68
Apr-73
Apr-78
Apr-83
Apr-88
Apr-93
Apr-98
Apr-03
Apr-08
TIME


NGWABITSI RIVER AT TOURS DAM
FULL CAPACITY 6.064*10^6m^3
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
CAPACITY (million of cubic metres)
6.08
4.87
3.65
2.43
1.22
0.00
TIME
Sep-92
Sep-93
Sep-94
Sep-95
Sep-96
Sep-97
Sep-98
Sep-99
Sep-00
Sep-01
Sep-02
Sep-03
Sep-04
Sep-05
Sep-06
Sep-07
Sep-08
Sep-09
99.6 %
6.06 x10^6m^3
March 2010
GAP IN
RECORD -
NO DATA
AVAILABLE!


CROCODILE RIVER AT KWENA DAM
FULL CAPACITY 158.89 *10^6m^3
100.5 %
159.68 x10^6m^3
March 2010
CAPACITY (%)
CAPACITY (millions of cubic meters)
TIME
100.0
80.0
60.0
40.0
20.0
0.0
158.89
127.11
95.33
63.56
31.78
0.00
Dec-85
Nov-86
Oct-87
Sep-88
Aug-89
Jul-90
Jun-91
May-92
Apr-93
Mar-94
Feb-95
Jan-96
Dec-96
Nov-97
Oct-98
Sep-99
Aug-00
Jul-01
Jun-02
May-03
Apr-04
Mar-05
Feb-06
Jan-07
Dec-07
Nov-08
Oct-09


MERITI RIVER AT INYAKA DAM
FULL CAPACITY 123.66 *10^6m^3
100.00
80.00
60.00
40.00
20.00
0.00
CAPACITY (%)
123.66
98.93
74.20
49.46
24.73
0.00
CAPACITY (millions of cubic meters)
100.7 %
124.53 x10^6m^3
March 2010
Apr-02
Apr-03
Apr 04
Apr-05
Apr-06
Apr-07
Apr-08
Apr-09
TIME