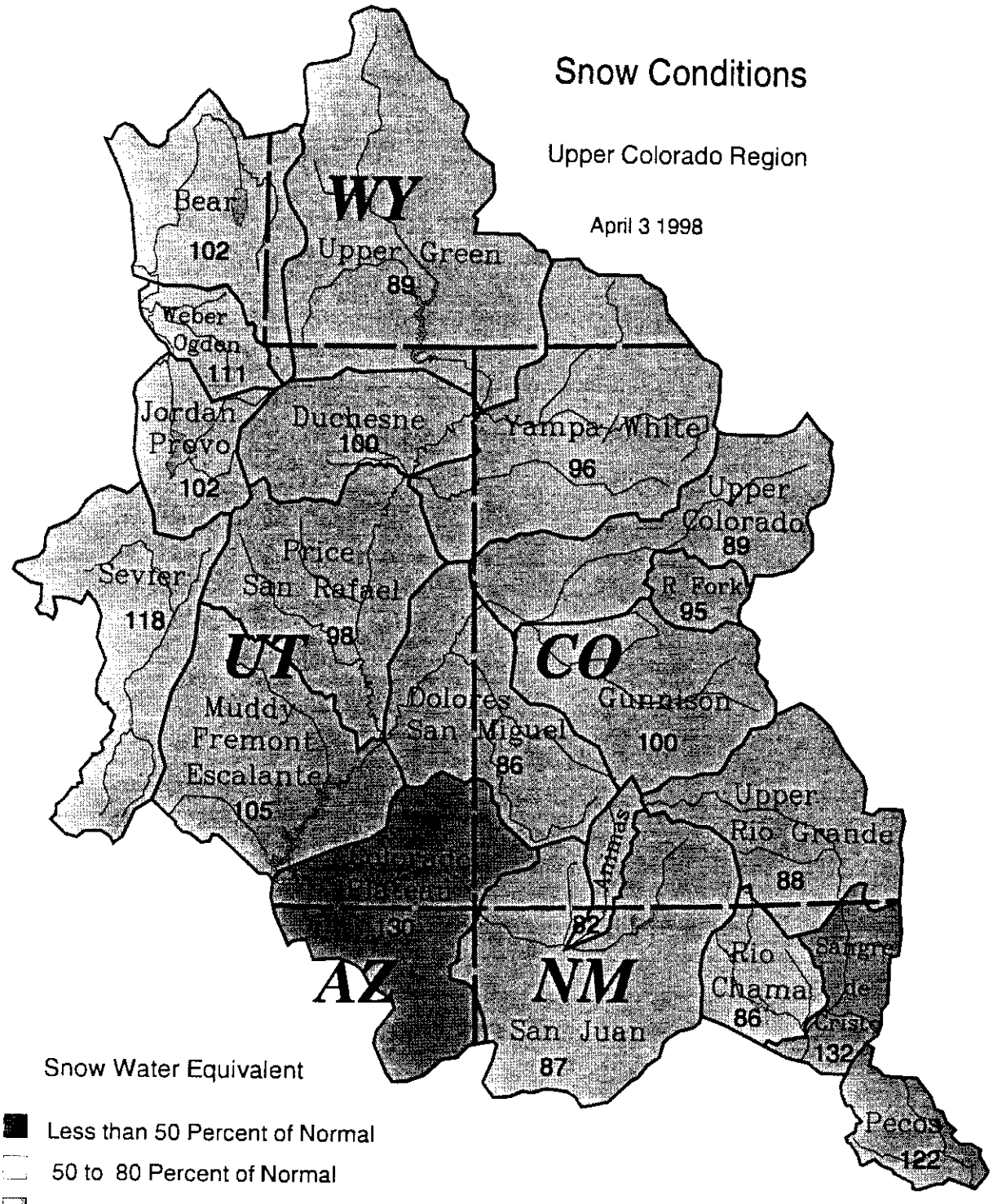
Snow Conditions

Upper Colorado Region

April 3 1998



Snow Water Equivalent

- Less than 50 Percent of Normal
- 50 to 80 Percent of Normal
- 80 to 120 Percent of Normal
- 120 to 150 Percent of Normal
- Greater than 150 Percent of Normal

Upper Colorado
GIS
Region

Data Provided by the Natural Resource Conservation Service

From: oper on hp <oper@rocky.cbrfc.gov>
To: ibr4dm10.ibr4smtp("wcook@uc.usbr.gov","tom@ucsun1....
Date: 4/3/98 5:53pm
Subject: River Forecast Center ESPSLR forecast

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ZCZC SLCESPSLR CSW
TTAA00 KSLR DDHHMM
:National Weather Service
:Colorado Basin River Forecast Center
:Salt Lake City Utah

:April Final Forecast        April 3, 1998
:
:**  FINAL FORECASTS APPEAR APPROXIMATELY 7 DAYS AFTER PRELIMINARY FORECASTS **
:
.B SLC 980801 M DH24/DC9804031800/DVM04/QCVFEZ5/QCVFEZF/QCVFEZT

:FLOOD CONTROL RESERVOIR UNREGULATED INFLOW FORECASTS
:1 APRIL THROUGH 31 JULY 1998 (units:  1000's  ACRE-FEET)

:RESERVOIR                    MOST
:ID   NAME                 PROBABLE     MAXIMUM     MINIMUM
HODA3 :LAKE MEAD        :/     7075/       10045/       4475
GLDA3 :LAKE POWELL      :/     6800/        9550/       4340
NVRN5 :NAVAJO RES       :/      625/         925/        405
VCRC2 :VALLECITO RES    :/      165/         222/        105
BMDC2 :BLUE MESA RES    :/      600/         865/        395
GRNU1 :FLAMING GORGE    :/     1000/        1550/        490
:
.END
.B SLC M DH24 /DC9804031800/
.B1 DY980430 /QCMFEZ5/DRE+1/QCMFEZ5/DRE+2/QCMFEZ5
:
:                    MONTHLY DISTRIBUTION OF FLOW (1000's   A-F)
:
:                           OBS                                  FORECAST        OUTLOOK
:                           Dec    Jan    Feb    Mar  %AVG    Apr  May  Jun Ap-Jul  %AVG
GLDA3 :LAKE POWELL          567    469    435    664  110%:1000/1970/2600/   6800   88%
SAPC2 :BLUE MESA             31     30     25     43  130%:  70/ 185/ 235/    600   86%
MPSC2 :MORROW POINT                                      :   /    /    /      650   85%
CLSC2 :CRYSTAL UNREG**       39     38     33     54  129%:  95/ 235/ 310/    770   85%
GBRW4 :FONTENELLE            39     38     35     62  137%:  95/ 150/ 285/    700   82%
GRNU1 :FLAMING GORGE         40     58     54    139  146%: 150/ 240/ 395/   1000   84%
VCRC2 :VALLECITO             e7     e6   e4.7    8.7  138%:  17/  54/  65/    165   84%
NVRN5 :NAVAJO UNREG          23     20     20     77  100%: 135/ 225/ 200/    625   81%
VCRC2 :vallecito chg stg      0    0.5    1.5      0      :   5/  22/  20/
CHUN5 :Azotea tunnel flo      0      0      0      0      :  15/  35/  35/
NVRN5 :NAVAJO REGLTD *       23   19.5   18.5     77      : 115/ 168/ 145/
.END
:   * REGULATED FORECASTS ARE DERIVED FROM ANALYZING THE RECORD
:     AND COMPARING IT TO AVERAGES.  THESE FORECASTS HAVE AN
:     ADDITIONAL SOURCE OF ERROR BECAUSE THE RESERVOIR AND TUNNEL
:     OPERATORS MAY SUBSTANTIALLY DEVIATE FROM THE ESTIMATED
:     REGULATION.
: ** UNREGULATED CRYSTAL INFLOW COMBINES BLUE MESA UNREGULATED
:     INFLOW PLUS THE SIDE INFLOW TO BOTH MORROW POINT AND CRYSTAL

                    PRECIPITATION SUMMARY - % OF AVERAGE BY MONTH - WY 1998
RIVER BASIN:              OCT   NOV   DEC   JAN   FEB   MAR
GREEN
   ABV FLAMING GORGE       95    60    60   150    85   150
   ABV GRN RVR,UT(TOTAL)  105    65    50   135   120   115
COLORADO
   ABV  GRAND JUNCTION    150    90    45   105    95    95
   GUNNISON BASIN         140   105    50    90    95   120
   ABV CISCO (TOTAL)      140    95    50   100    95   110
SAN JUAN
   ABV BLUFF (TOTAL)      110   100    65    80   100   140

C. McCarthy/J. Smith/D. Van Cor
CBRFC (801-524-5130)
NNNN
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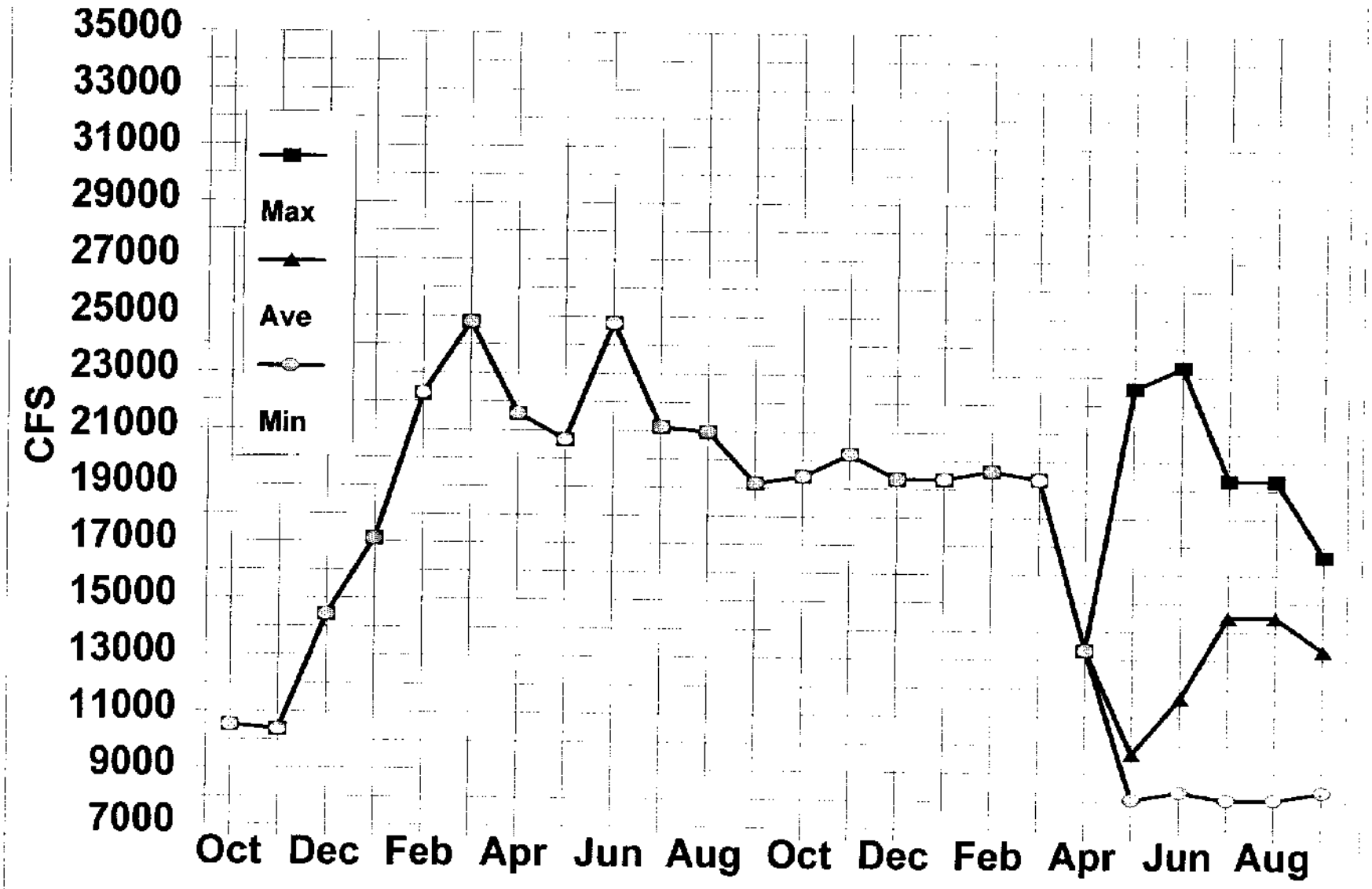
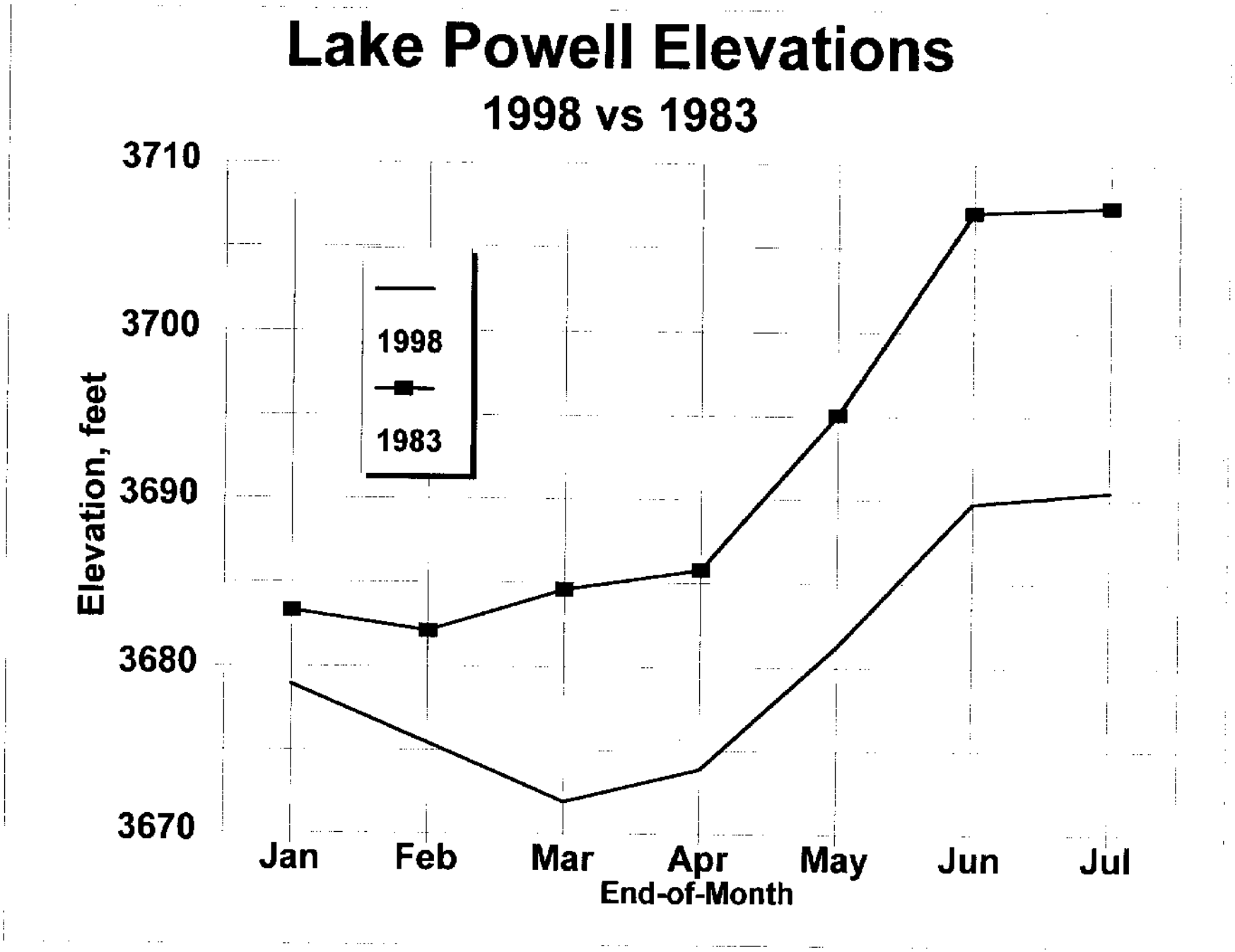
Glen Canyon Releases

1997 - 1998




Lake Powell Elevations
1998 vs 1983
3710
3700
3690
3680
3670
Elevation, feet
1998
1983
Jan
Feb
Mar
Apr
May
Jun
Jul
End-of-Month

From: Randall Peterson
To: RPETERSON
Date: 4/2/98 3:40pm
Subject: Update on Glen Canyon releases

Glen Canyon Dam Updated April 2, 1998

Unregulated inflows to Lake Powell were 110 percent of normal in March and the current basinwide snowpack conditions are about 91 percent of normal. Precipitation throughout the basin was near normal during March.

Glen Canyon Dam average daily releases are being reduced to a daily average of about 13,000 to 14,000 cfs and will remain at this level through the end of April. This flow rate is about normal for this time of year. Hourly flows likely will be ranging from about 10,000 cfs to 18,000 cfs, with flows slightly lower than this on the weekends. Lake Powell actual inflows are about 23,000 cfs and the current lake elevation is now about 3673 feet with a live storage of 20.3 MAF. The lake elevation has reached its minimum for the year and is now beginning to rise.

The preliminary April spring runoff forecast by the National Weather Service issued April 1, 1998 predicts slightly below normal inflows during the April July 1998 period (7.3 MAF, 94 percent of normal). This is the same forecast as the projection issued 2 weeks ago. At this time we expect that releases during April through June will average about 10,000 to 14,000 cfs, and the risk of an uncontrolled spill will be less than 5 percent. To protect the reservoir against the potential of a repeat of the 1983 floods, the reservoir has been drawn down about 13 feet lower in elevation than it was at this time in 1983, providing an additional 2 MAF buffer against the possibility of higher than expected spring inflows. Spring weather will dictate the magnitude of the releases during the next few months; if cool and wet the releases will be increased, if warm and dry the releases will be in the 10,000 to 14,000 cfs range.

Yesterday, April 1, 1998, the releases from Glen Canyon Dam violated the operating criteria for the operation of the powerplant. This criteria allows for an upramp rate of 4,000 cfs, a downramp rate of 1,500 cfs, and maximum daily fluctuations of 8,000 cfs. Yesterday, upramps were as high as 4,400 cfs, downramps as high as 2,800 cfs, and the daily fluctuation was about 12,000 cfs. Western Area Power Administration yesterday transferred dispatch control of Glen Canyon Dam from Montrose to Phoenix and this may have had something to do with the violations. Western is reviewing yesterday's operation and will report its findings tomorrow. You can read about it then on Western's web site at www.wapa.gov.crsp/crsp.htm

From: Randall Peterson
To: RPETERSON
Date: 4/3/98 9:26am
Subject: WAPA explanation of April 1, 1998 Glen Canyon release violations

The following is WAPA's writeup from their webpage at www.wapa.gov/crsp/crsp.htm I hesitate to translate, but what this seems to say is that one customer caused an extreme deviation from scheduled generation due a misunderstanding of when the splitting of the CRSP control area would occur, which in turn drove Glen Canyon releases outside the GCDEIS constraints.

Glen Canyon Constraints Violated, April 1, 1998

Glen Canyon Plant operations suffered on April. 1st. It appears that a couple of events occurred that caused hourly ramping and daily maximum fluctuation violations.

1. The Montrose Office did not have the WALC firm loads in their spreadsheet and marketed power without this information. The indications to the marketer was that 90 to 180 MW's of energy needed to be sold between the hours of 0100 and 1300 for proper operation of the plant. Sales were prescheduled on this premise. Approximately 1900 on March 31, Montrose and WALC could not check out the next day schedules and at that time it was discovered that Montrose did not have the WALC firm loads in the spread sheet. A conscious decision was made at that time not to cut the prescheduled sales, but to cover the deficiency with Glen Canyon generation. This decision would not have caused any violations of the GC operating criteria. It would increase the total daily releases from GC which would have been made up at a later date. The result was "no adverse impact".
2. A Western customer thought that the control area separation was to take place at 0100 on the 1st as opposed to 1300 on the 1st. They scheduled 120 to 145 MW's per hour for the first four hours into their Western pseudo control area. This schedule into the CRSP area forced the GC generation down by this amount. For hour ending 0100, the WACM control area inadvertant was +134 MW's. For some reason the GC plant did not ramp down as requested by AGC. Over the next 3 hours the customer was still scheduling as though the split had taken place. GC plant generation was allowed to ramp down at the AGC request. This brought GC hourly average generation to 405 MW's for hour ending 0400 which meant that the maximum output for the day would have been lowered to 724 MW's. At hour 0500, the customer may have been convinced that the control area had not been split and changed scheduling practices for the following hours, which raised the GC generation by the amount that they were scheduling in, plus the amount that CRSP had scheduled to cover the CRSP generation requirements. The low generation output at 0400 coupled with the requirement to cover CRSP requirements later in the day contributed to the 8,000 cfs daily fluctuation violation.