Grand Canyon Monitoring and Research Center

WY 2003 Experimental Fine-Sediment Update Between Lees Ferry & Phantom Ranch
Annual Paria River Sand Inputs

PARIA RIVER ANNUAL SAND INPUT

- COMPUTATION
- COMPUTATION +/- 20%
- MEDIAN ANNUAL SAND INPUT
  (WITH 20% UNCERTAINTY)

MILLION METRIC TONS

CALENDAR YEAR

Preliminary Data – Subject to Review and Revision 03/03/04
Annual Little Colorado River Sand Inputs

LITTLE COLORADO RIVER ANNUAL SAND INPUT

- COMPUTATION
- COMPUTATION +/- 30%

MEDIAN ANNUAL SAND INPUT (WITH 30% UNCERTAINTY)

MILLION METRIC TONS

CALENDAR YEAR

Preliminary Data – Subject to Review and Revision 03/03/04
MASS-BALANCE SAND BUDGET BETWEEN LEES FERRY AND THE GRAND CANYON GAGE

MASS-BALANCE UNCERTAINTY ENVELOPE
WATER DISCHARGE

DISCHARGE AT THE LEES FERRY GAGE (ft³/s)

SAND MASS IN REACH RELATIVE TO THAT ON AUG 15, 1999 (million metric tons)

ACCUMULATION
EROSION

PARIA RIVER FLOODS
LCR FLOOD

Preliminary Data – Subject to Review and Revision 03/03/04
JUL 2003 AUG 2003 SEP 2003 OCT 2003

CUMULATIVE SAND LOAD (million metric tons)

SEPTEMBER 1 THRESHOLD FOR ALTERNATING 2-WEEK STEADY 8,000 cfs AND FLUCTUATING 6,500-9,000 cfs SEDIMENT-RETENTION FLOWS

OCTOBER 31 THRESHOLD FOR CONTINUING SEDIMENT-RETENTION FLOWS, DECIDE ON DECEMBER 1 WHICH MORE EFFECTIVE JANUARY 1 THRESHOLD FOR 2-DAY 45,000 cfs BHBF

ESTIMATED SAND RETAINED IN MARBLE CANYON ON 1-1-04

Preliminary Data – Subject to Review and Revision 03/03/04
Southwest Biological Science Center - GCMRC

Take Home Messages

SAND INPUTS & TRIGGERS  Paria River sand Inputs were below levels required for EHF trigger, as well as the 1st trigger required for 8,000 cfs vs low fluctuating flow comparison in Sept. & October (close, but not quite there)

SAND BAR UPDATE  Bar volumes in Upper Marble Canyon are less than measured in 1990 and continue to erode within both the active fluctuating and high-elevation zones.

Bar volumes between 8,000 and 25,000 cfs are less than 1990 conditions except at sites between rm 65 and 104, while high-elevation volumes below rm 40 are still higher than 1990