

Appendix 1. Aerial Photographs and Locations of Stream Centerlines and Cross Sections of the Madison River Downstream from Earthquake Lake, Montana.

Incremental-channel movement was determined from 14 aerial photographs taken between 1970 and 2006. Aerial photographs from the years 1980, 1981, 1987, 1990, and 2002 are not included in this appendix because substantial channel movement was not observed from those photographs, except for the 40 ft (plus or minus 30 ft) of movement at cross section 700 and movement towards the road about 0.25 mi downstream from cross section 400, both observed in the 1987 photograph. The 2006 digital orthophotograph was used as a reference to which the earlier photographs were rectified. On each aerial photograph, two stream centerlines were drawn: one centerline corresponded to the stream location shown on the photograph, and the other centerline corresponded to the stream location from the previous aerial photograph. In the

more braided subreaches downstream from the Madison Slide, centerlines were drawn along the dominant flow-conveying channel at the date and streamflow corresponding to the aerial photograph. At higher streamflows, more than one of the braided channels could be inundated, and the differences between the centerlines would not be as dramatic. As discussed in the section “Methods,” channel-movement distances measured between centerlines on the aerial photographs are plus or minus 30 ft, due to potential errors in rectification of the photographs.

The nine aerial photographs (figs. A–1 to A–9) are located in the CD-ROM on the inside back cover of this report. This appendix also can be downloaded from <http://pubs.usgs.gov/sir/2012/5024>.

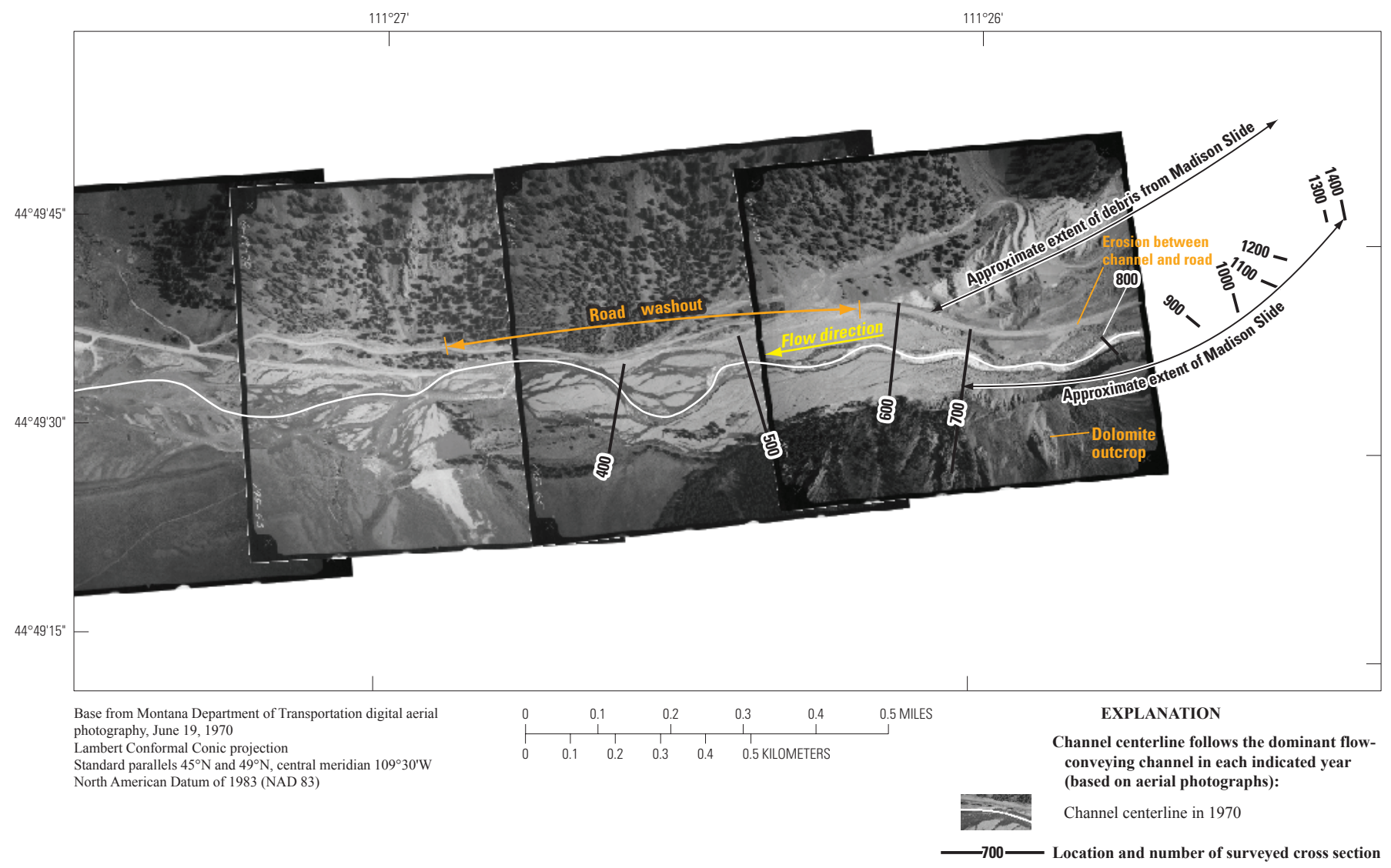


Figure A-1. Aerial photograph (1970), surveyed cross sections (2006), and centerline of the Madison River downstream from Earthquake Lake, Montana. Daily mean streamflow on date of photograph was 2,820 cubic feet per second at Madison River below Hebgen Lake, near Grayling, Mont. (gaging station 06038500).

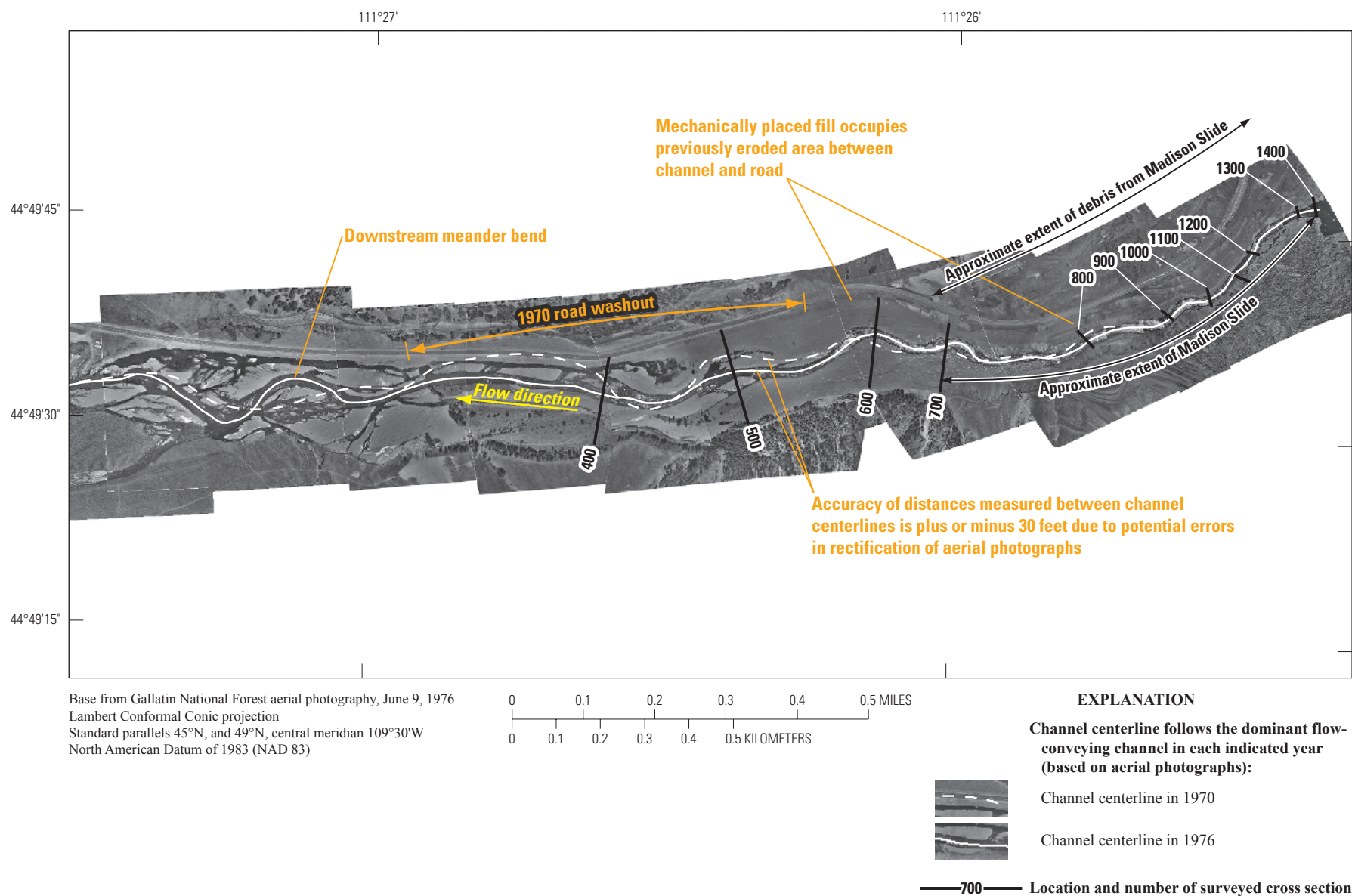


Figure A-2. Aerial photograph (1976), surveyed cross sections (2006), and centerlines of the Madison River downstream from Earthquake Lake, Montana. Daily mean streamflow on date of photograph was 1,040 cubic feet per second at Madison River below Hebgen Lake, near Grayling, Mont. (gaging station 06038500).

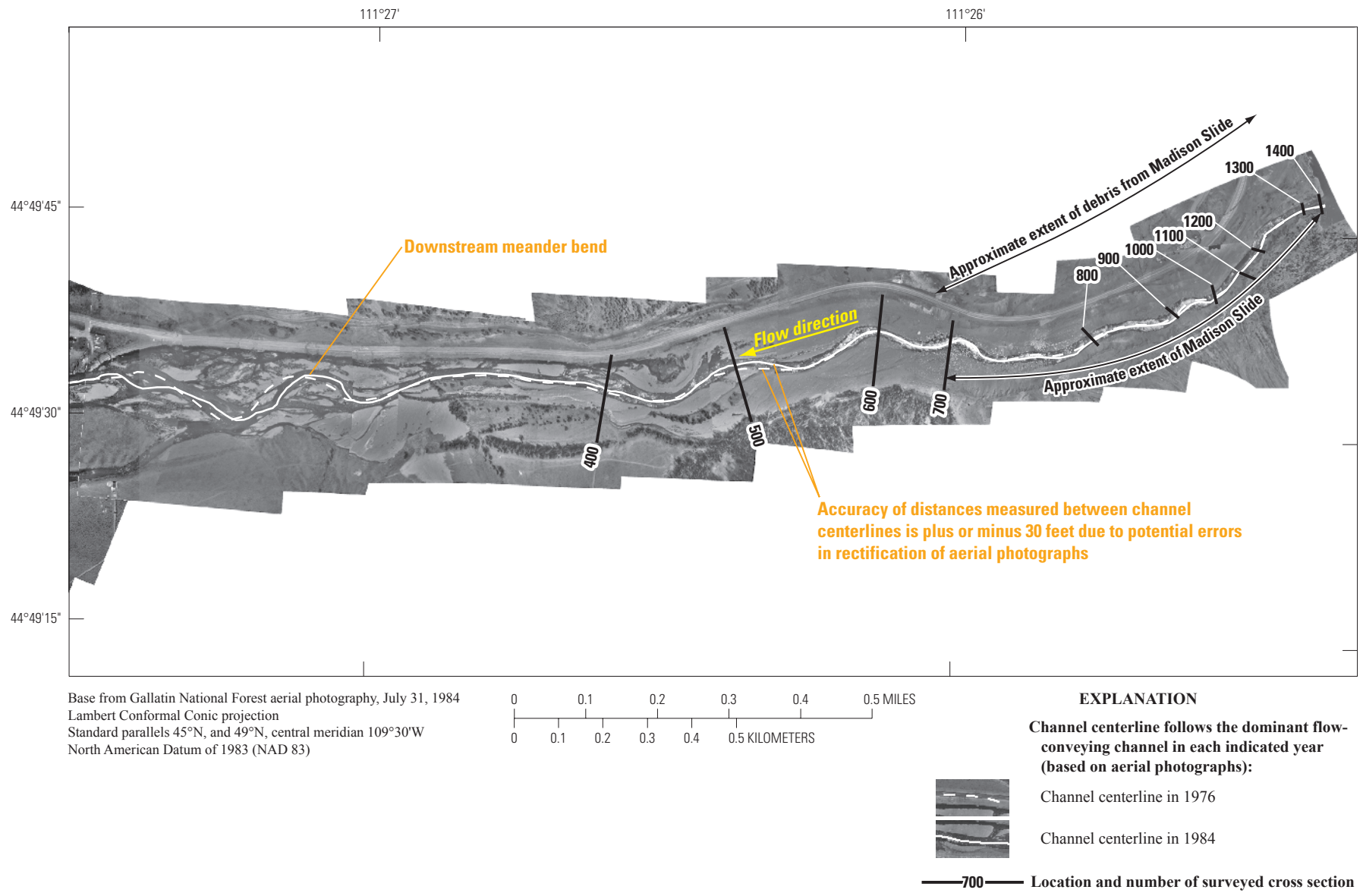


Figure A-3. Aerial photograph (1984), surveyed cross sections (2006), and centerlines of the Madison River downstream from Earthquake Lake, Montana. Daily mean streamflow on date of photograph was 1,680 cubic feet per second at Madison River at Kirby Ranch, near Cameron, Mont. (gaging station 06038800).

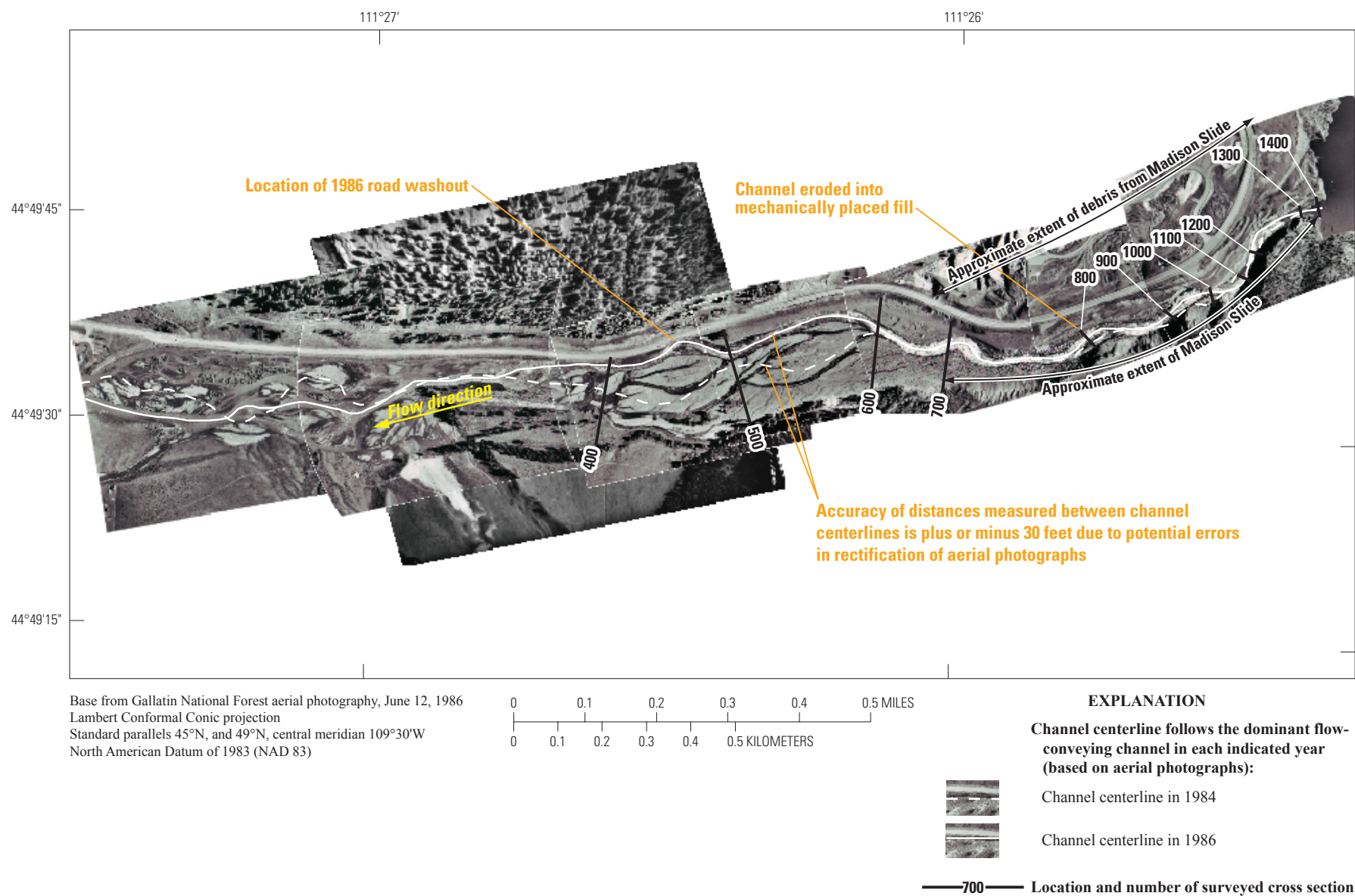


Figure A-4. Aerial photograph (1986), surveyed cross sections (2006), and centerlines of the Madison River downstream from Earthquake Lake, Montana. Daily mean streamflow on date of photograph was 3,400 cubic feet per second at Madison River at Kirby Ranch, near Cameron, Mont. (gaging station 06038800).

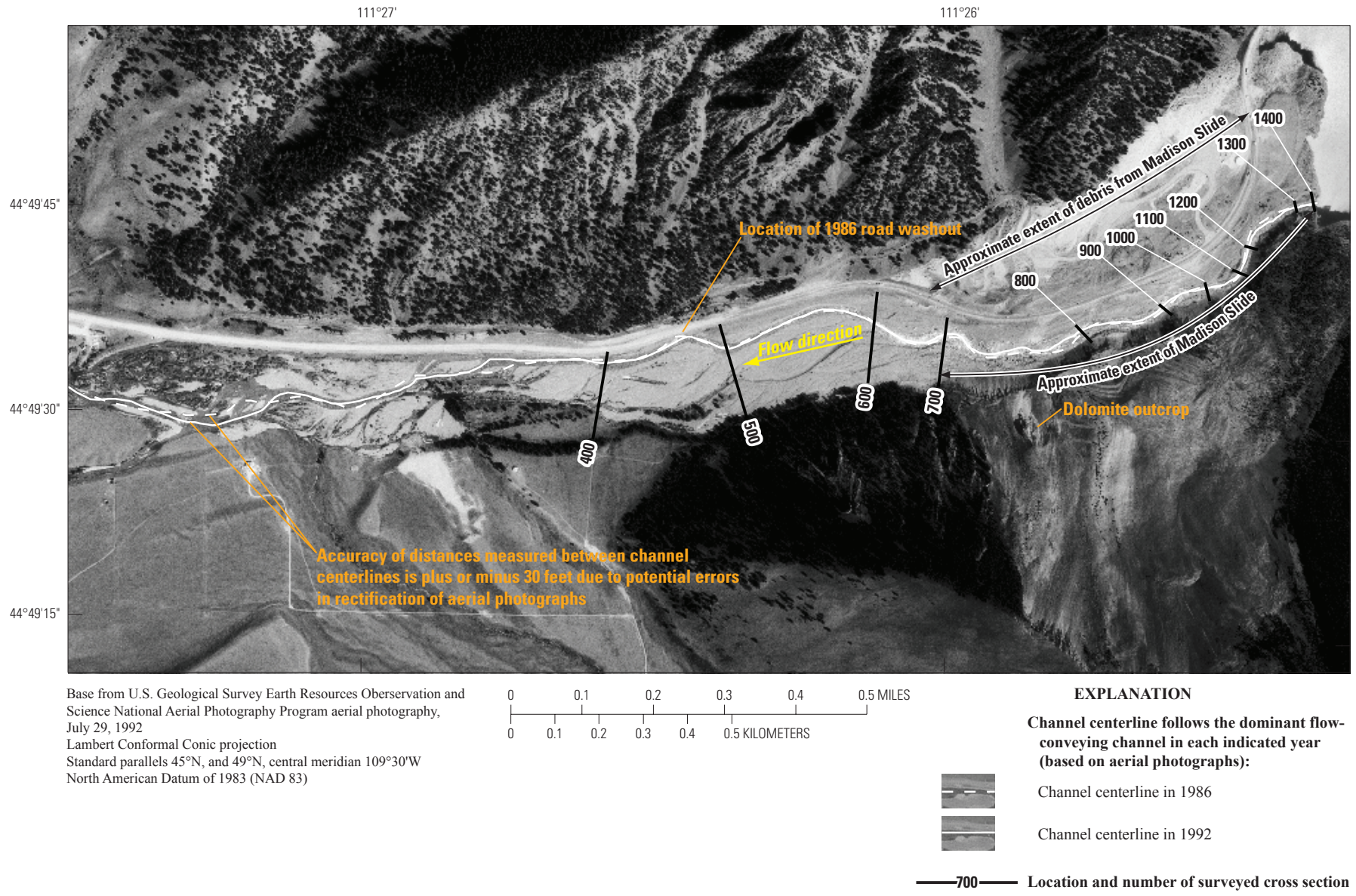


Figure A-5. Aerial photograph (1992), surveyed cross sections (2006), and centerlines of the Madison River downstream from Earthquake Lake, Montana. Daily mean streamflow on date of photograph was 1,010 cubic feet per second at Madison River at Kirby Ranch, near Cameron, Mont. (gaging station 06038800).

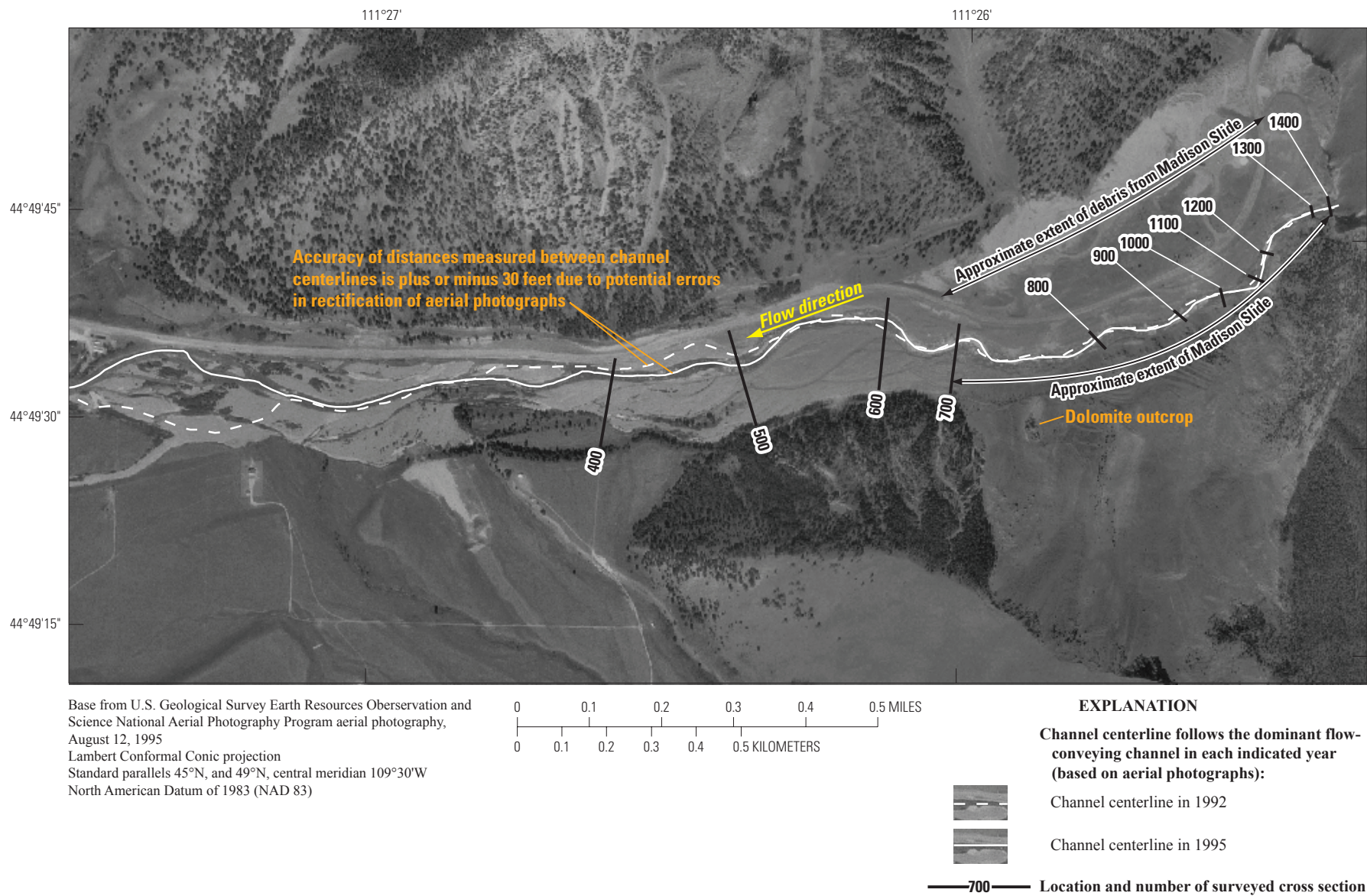


Figure A-6. Aerial photograph (1995), surveyed cross sections (2006), and centerlines of the Madison River downstream from Earthquake Lake, Montana. Daily mean streamflow on date of photograph was 1,100 cubic feet per second at Madison River below Hebgen Lake, near Grayling, Mont. (gaging station 06038500).

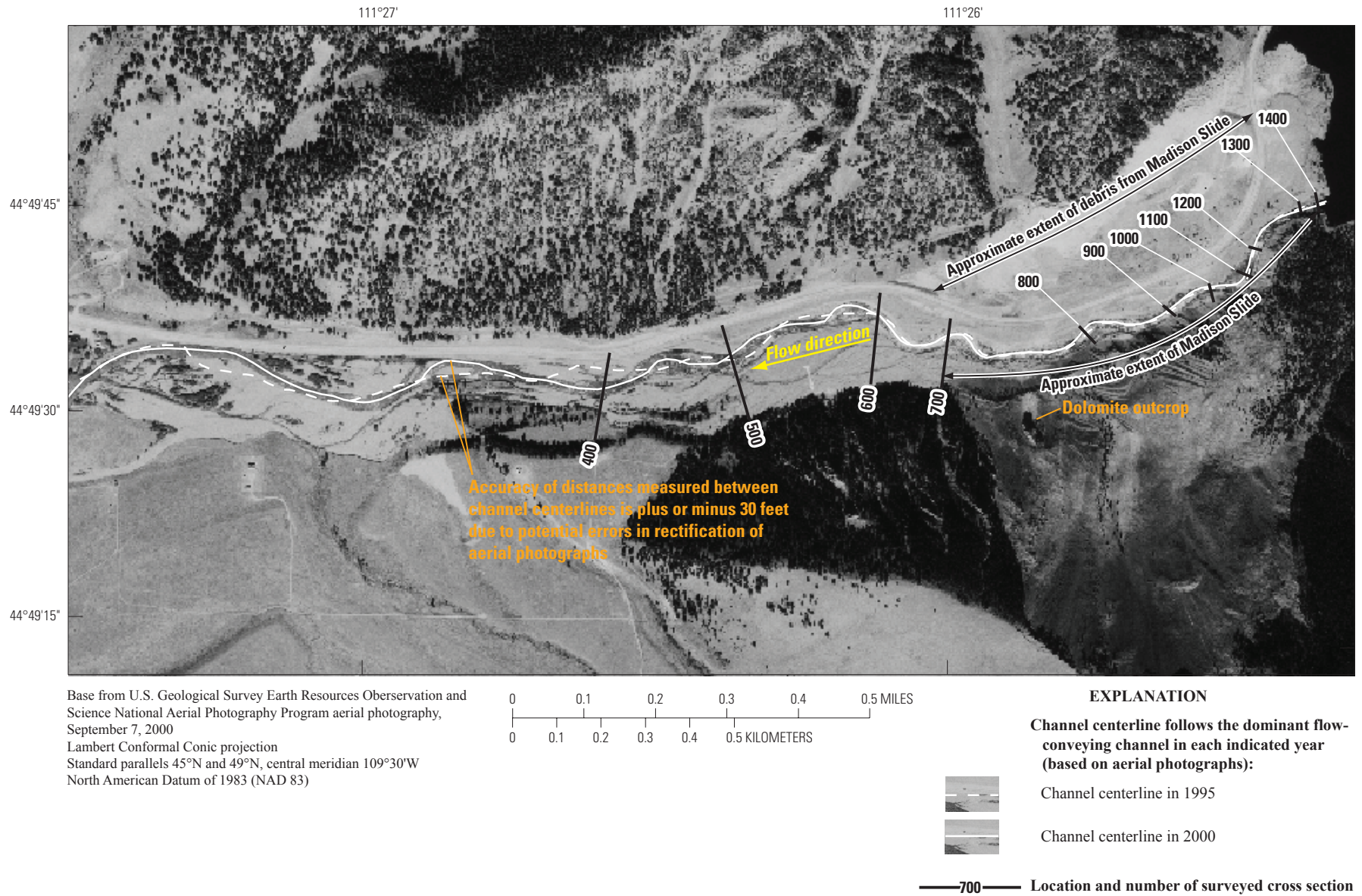


Figure A-7. Aerial photograph (2000), surveyed cross sections (2006), and centerlines of the Madison River downstream from Earthquake Lake, Montana. Daily mean streamflow on date of photograph was 1,080 cubic feet per second at Madison River at Kirby Ranch, near Cameron, Mont. (gaging station 06038800).

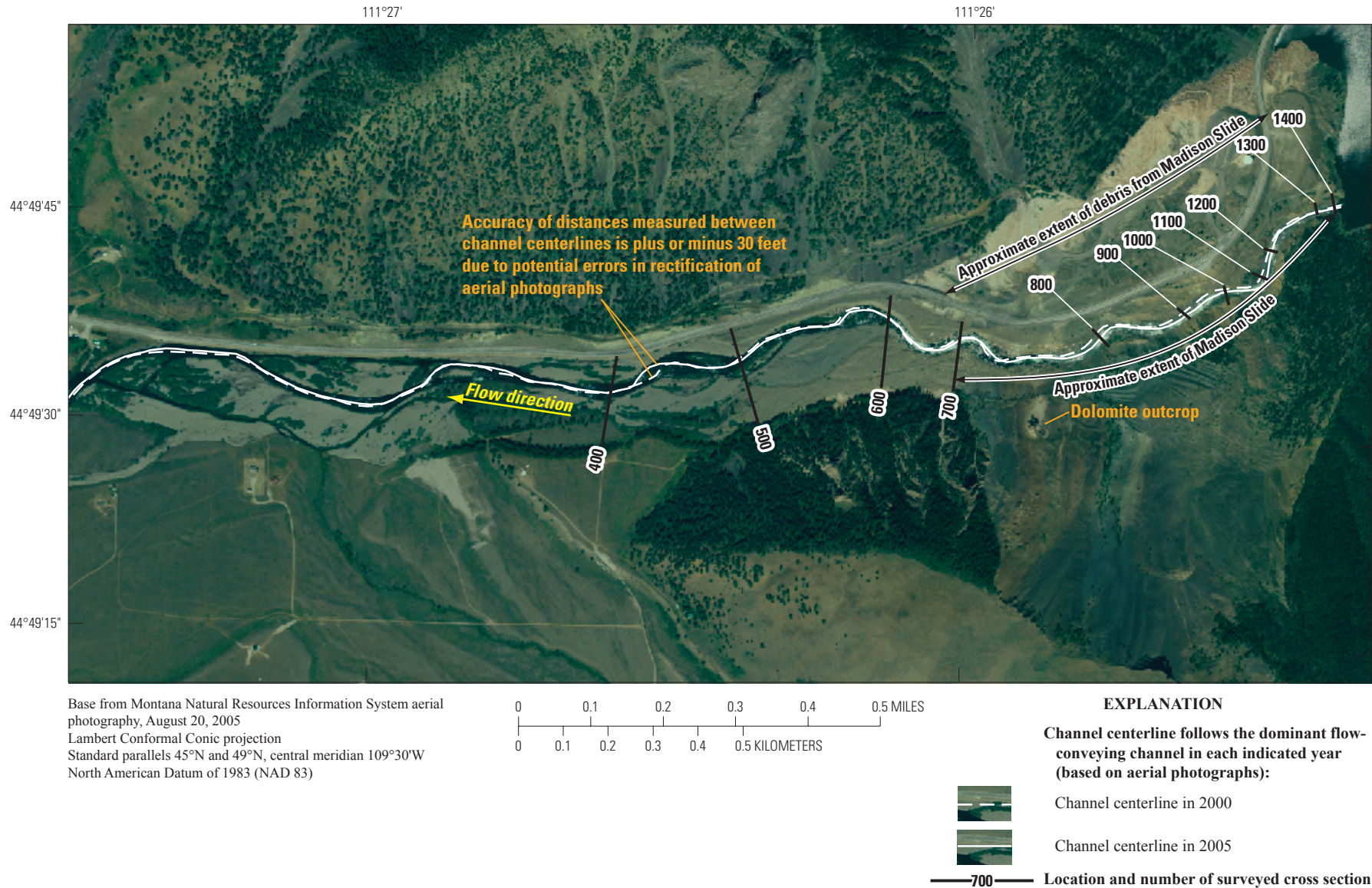


Figure A-8. Aerial photograph (2005), surveyed cross sections (2006), and centerlines of the Madison River downstream from Earthquake Lake, Montana. Daily mean streamflow on date of photograph was 1,110 cubic feet per second at Madison River at Kirby Ranch, near Cameron, Mont. (gaging station 06038800).

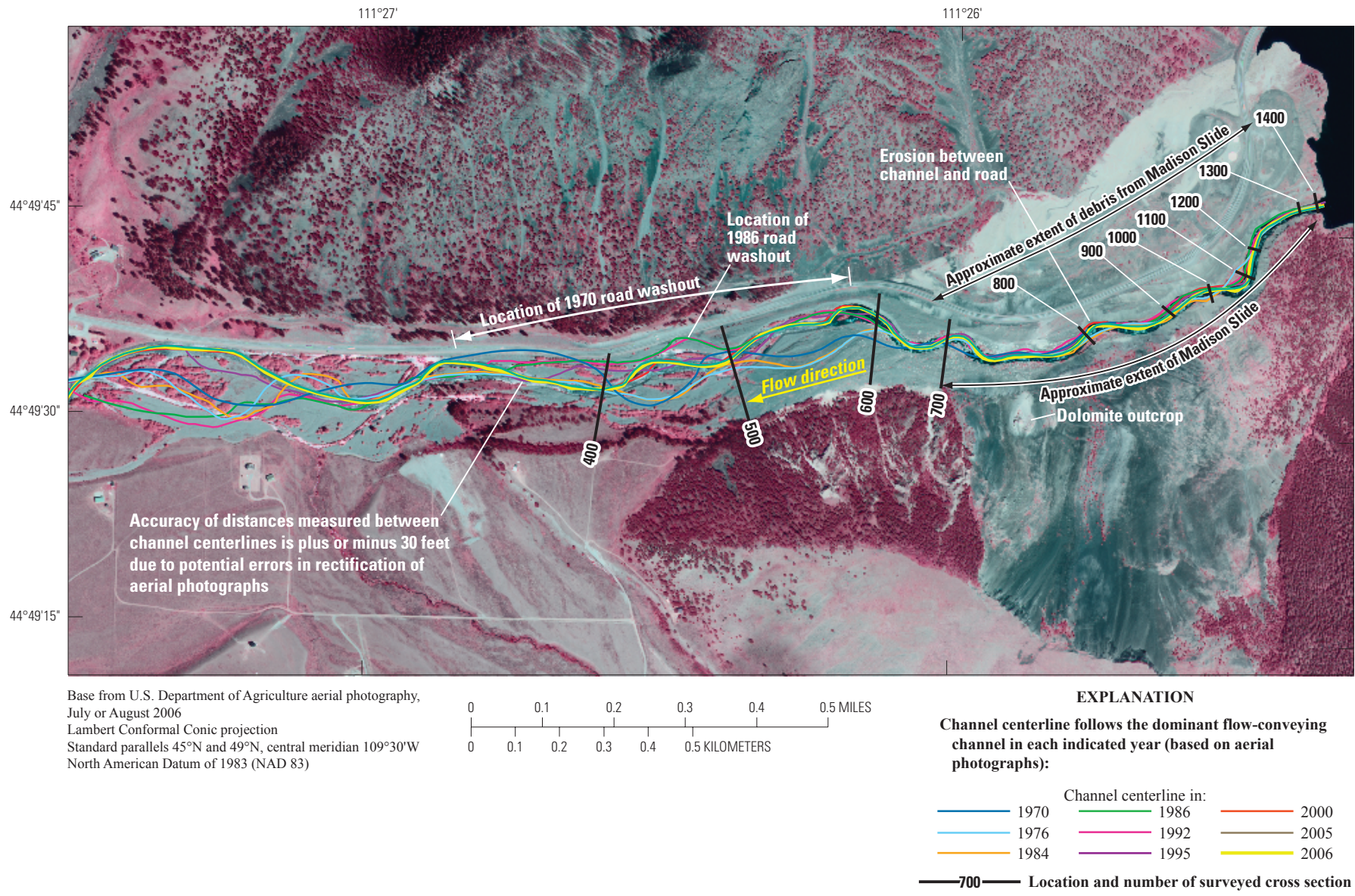


Figure A-9. Aerial photograph (2006), surveyed cross sections (2006), and centerlines of the Madison River downstream from Earthquake Lake, Montana. Photograph taken in July or August 2006. Streamflow on date of photograph was between 1,030 and 1,690 cubic feet per second at gaging station Madison River at Kirby Ranch, near Cameron, Mont. (gaging station 06038800).