Progress Report
Project number MT141
for the Period
July 1, 2001 to December 31,2001

PROJECT TITLE: Evaluation of Methods for Estimation of Bridge-Pier Scour for Streams With Coarse Bed Materials Based on Observed Pier Scour in Montana

ROJECT CHIEF: Charles Parrett, Supervisory Hydrologist, USGS

COOPERATING AGENCIES: Montana Department of Transportation

BEGIN DATE: July 2000

COMPLETION DATE: September 30, 2006

FUNDING: FY2000-- $7,200; FY2001-- $103,090; FY2002--$25,990; FY2003--$25,990

FY2004--$25,990; FY2005--$25,990; FY2006--$81,550

OBJECTIVES: The major objectives of this project are to (1) evaluate existing methods for estimation of pier scour based on currently available pier-scour measurements in Montana and other States having coarse-bed streams and (2) collect additional pier-scour data for coarse-bed streams in Montana over a 5-year period.

SCOPE: Several pier-scour equations that may provide more accurate and reliable estimates of pier scour for coarse bed streams will be evaluated by comparing measured scour with scour predicted from the equations for the same hydraulic conditions. Equations to be evaluated include (1) HEC-18 (current recommended equation), (2) HEC-18 with proposed revisions to account for size of bed material, (3) Froehlich Design equation, and (4) Simplified Chinese equation.

Pier-scour measurements will be made each year at 10-25 sites, depending upon hydrologic conditions. At the end of the 5-year data collection period, data will be compiled and described in a report.

PRODUCTS: Two USGS Water Resources Investigations Reports will be produced. The first will describe the comparisons between equations based on currently available data. The second will document collected pier-scour data at the end of the data-collection period.

PROGRESS: Pier-scour data collected at about 5 sites using new equipment. New employee has begun work on initial report.

PLANS FOR NEXT REPORTING PERIOD: Continue with first analysis and report and collect additional coarse-bed pier scour data as flow conditions permit.

PROBLEMS: First report has been delayed because Project Chief has been diverted to other pressing data-collection projects. USGS has hired a new engineer with considerable bridge-scour experience to catch up. First pier-scour data collection with new equipment was hampered by problems with equipment operation and stability. Some of the collected data will likely not be usable. Data-collection also was hampered by generally low-flow conditions throughout the State.