SAM

Stable Channel Design

Larry A. Arneson, Ph.D., P.E.
Federal Highway Administration

Mid-Western Hydraulics Engineers Conference

August 26 – 28, 2003

SAM

Cooperative Research and Development Agreement

- U.S. Army Corps of Engineers
  - WES (ERDC) – FORTRAN Software
- Ayres Associates
  - Windows Interface
- FHWA
  - Technology Applications Funds Coordinated Through Central Federal Lands Highway Division
- State DOTs and FHWA Site Licenses

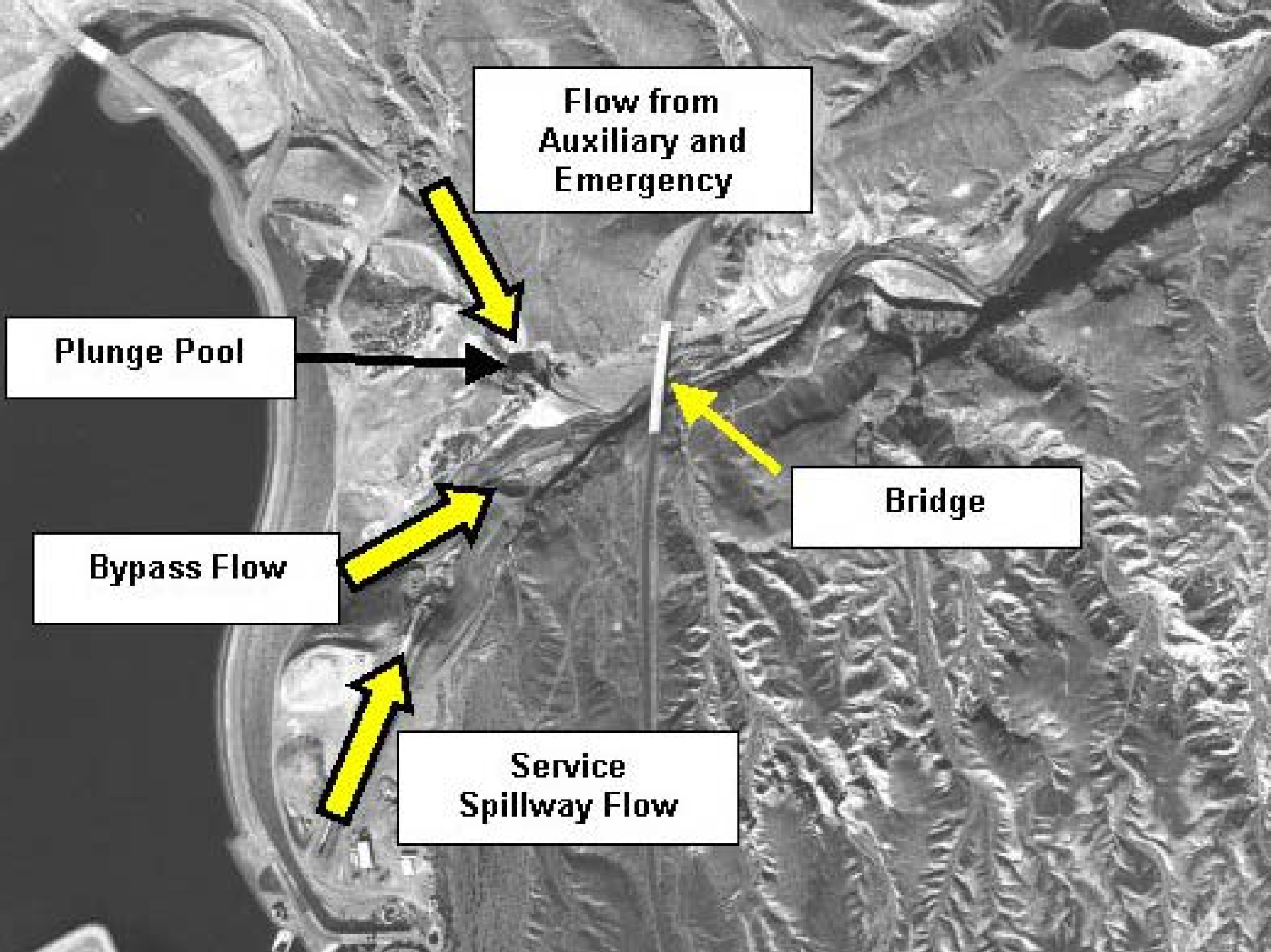
SAM – Main Components

- SAM.hyd – Hydraulics
- SAM.sed – Sediment Transport
- SAM.yld – Sediment Yield

SAM – Case Study

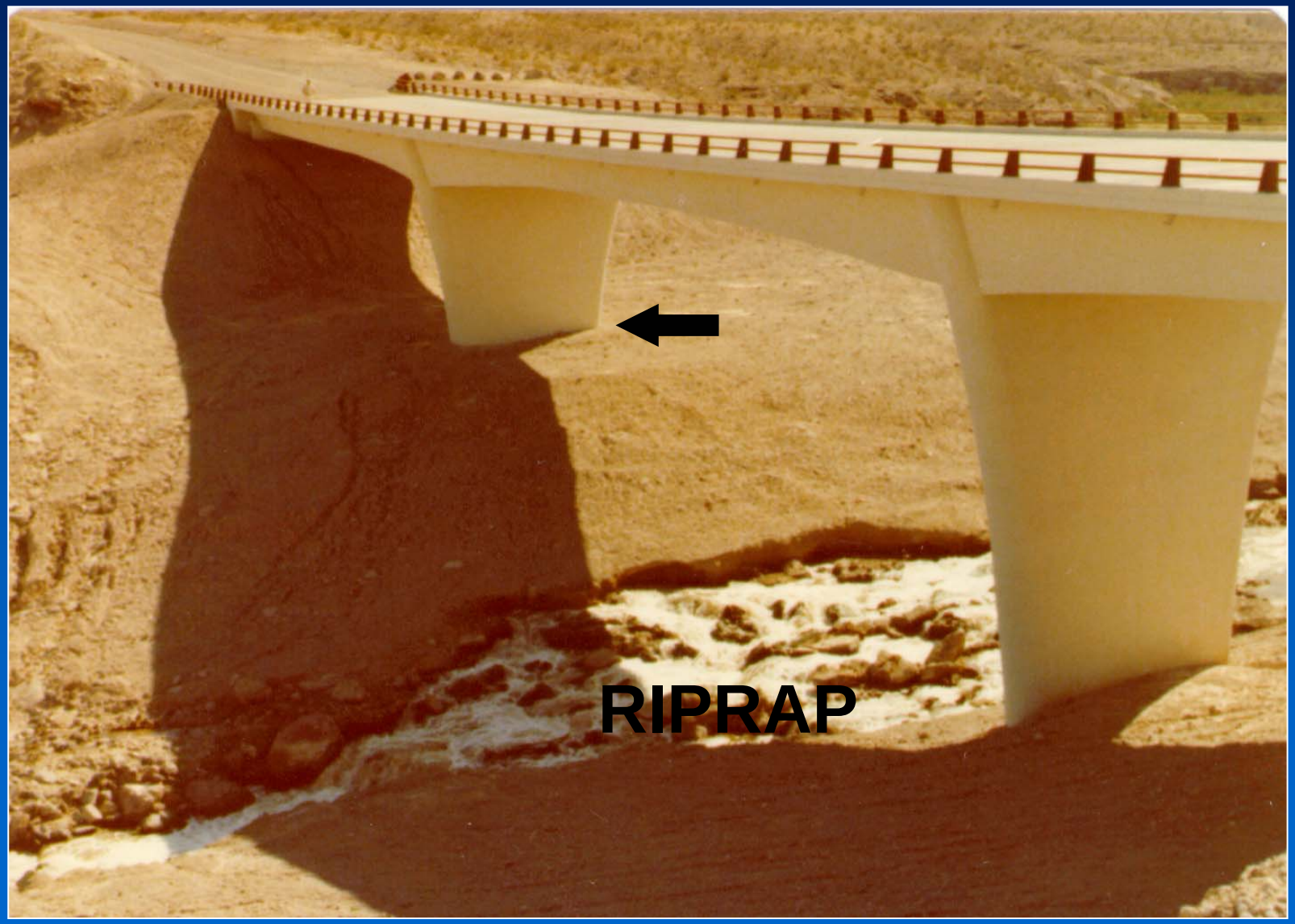
Las Vegas Wash, Las Vegas NV

- FHWA Central Federal Lands Project
- Nevada State Route 147
- Downstream of Lake Las Vegas
- Upstream of Lake Mead
- Severe Channel Degradation


Flow from
Auxiliary and
Emergency
Plunge Pool
Bypass Flow
Bridge
Service
Spillway Flow

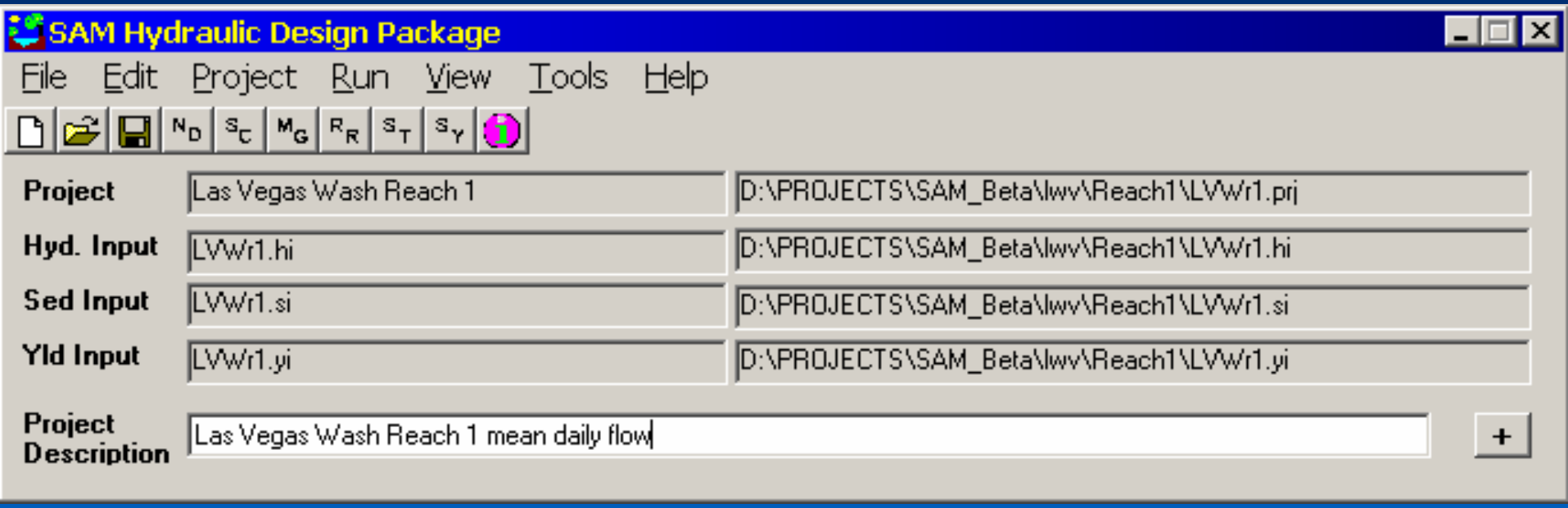
SR 147 CROSSING - 1976

BRIDGE CROSSING - 1978

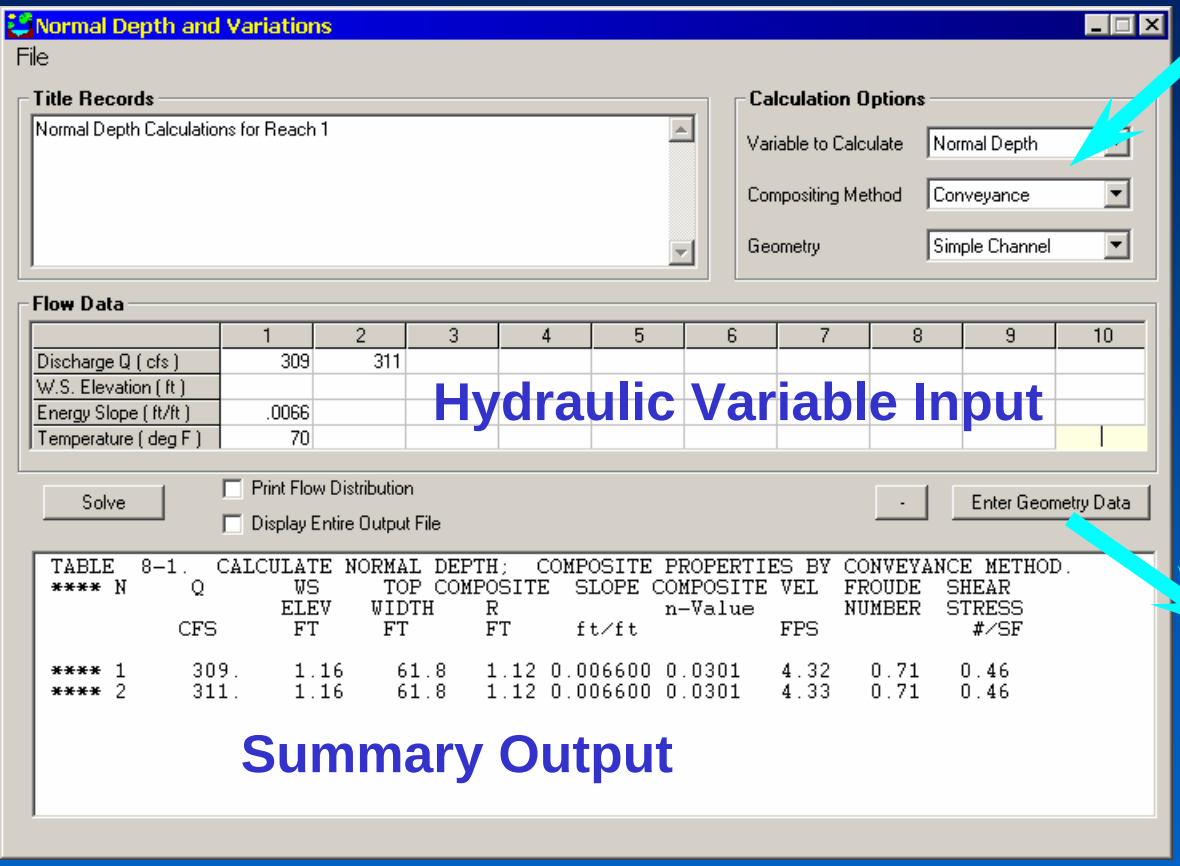


RIPRAP

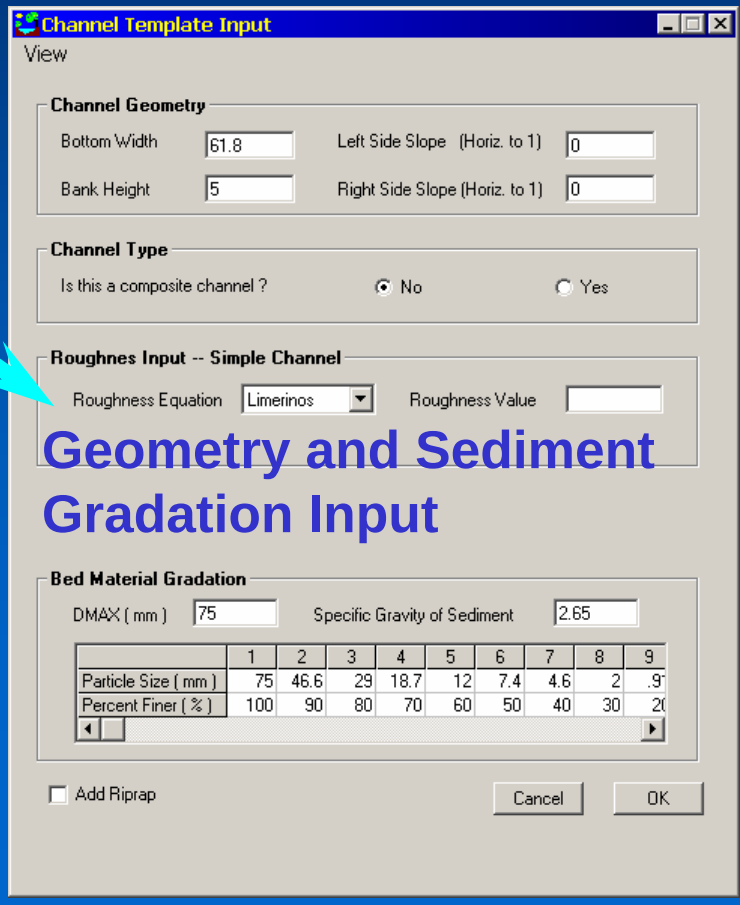
SAMWin – Main Menu



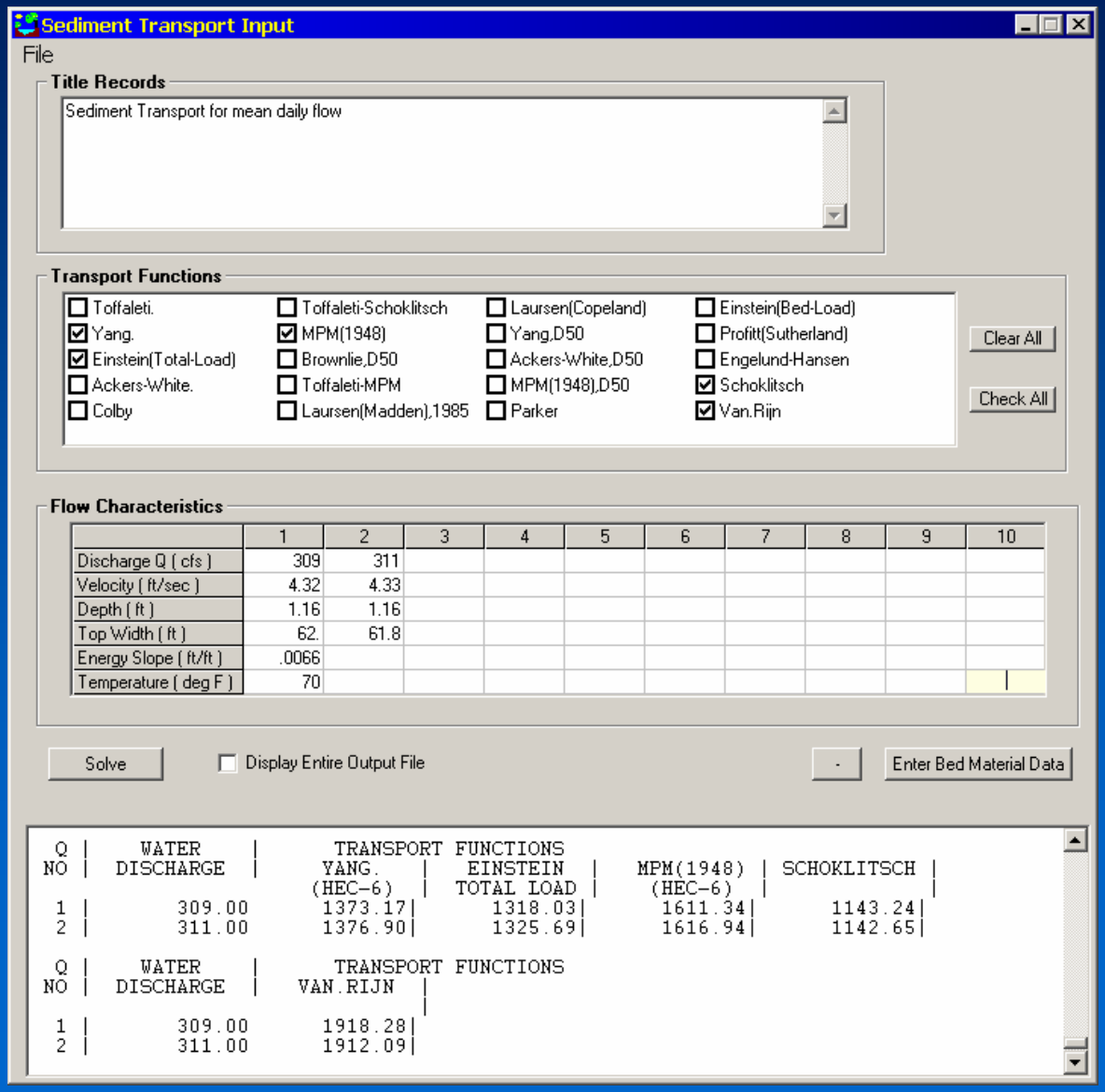
SAMWin – Hydraulics



Calculation Options



SAMWin – Sediment Transport

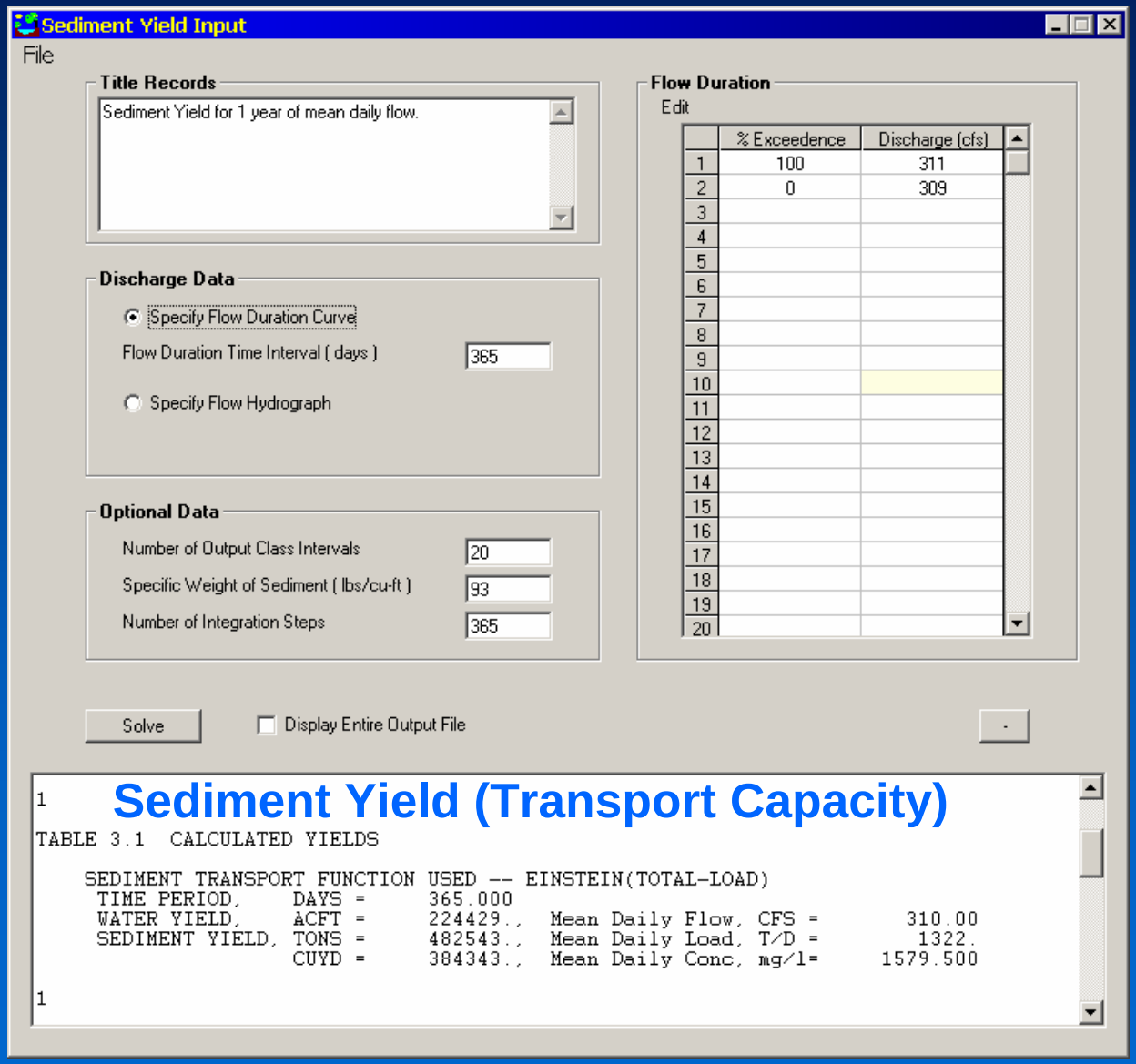


Select Sediment Transport Functions

Hydraulic Results Carried Forward from SAM.hyd

Summary Output

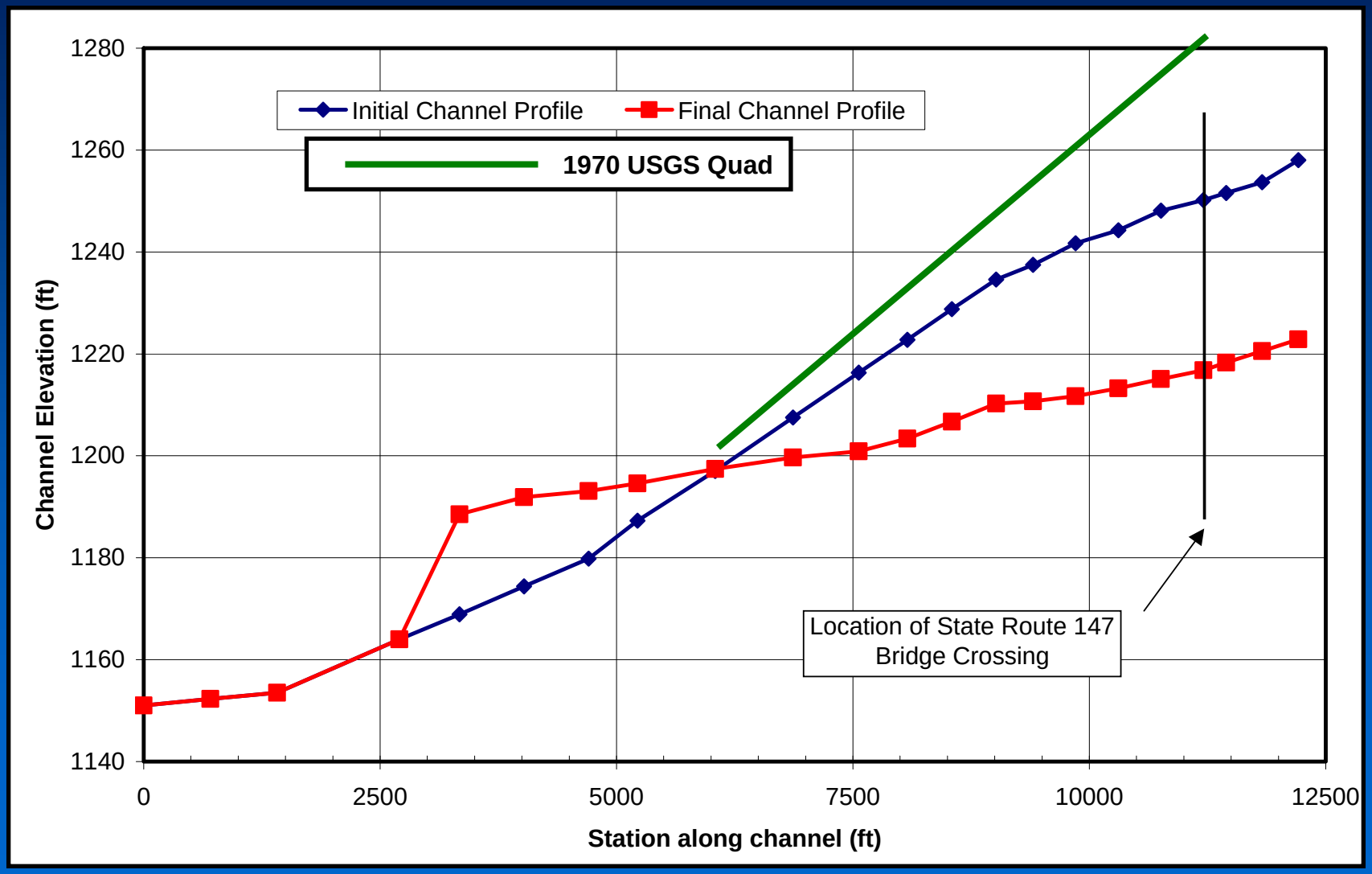
SAMWin – Sediment Yield



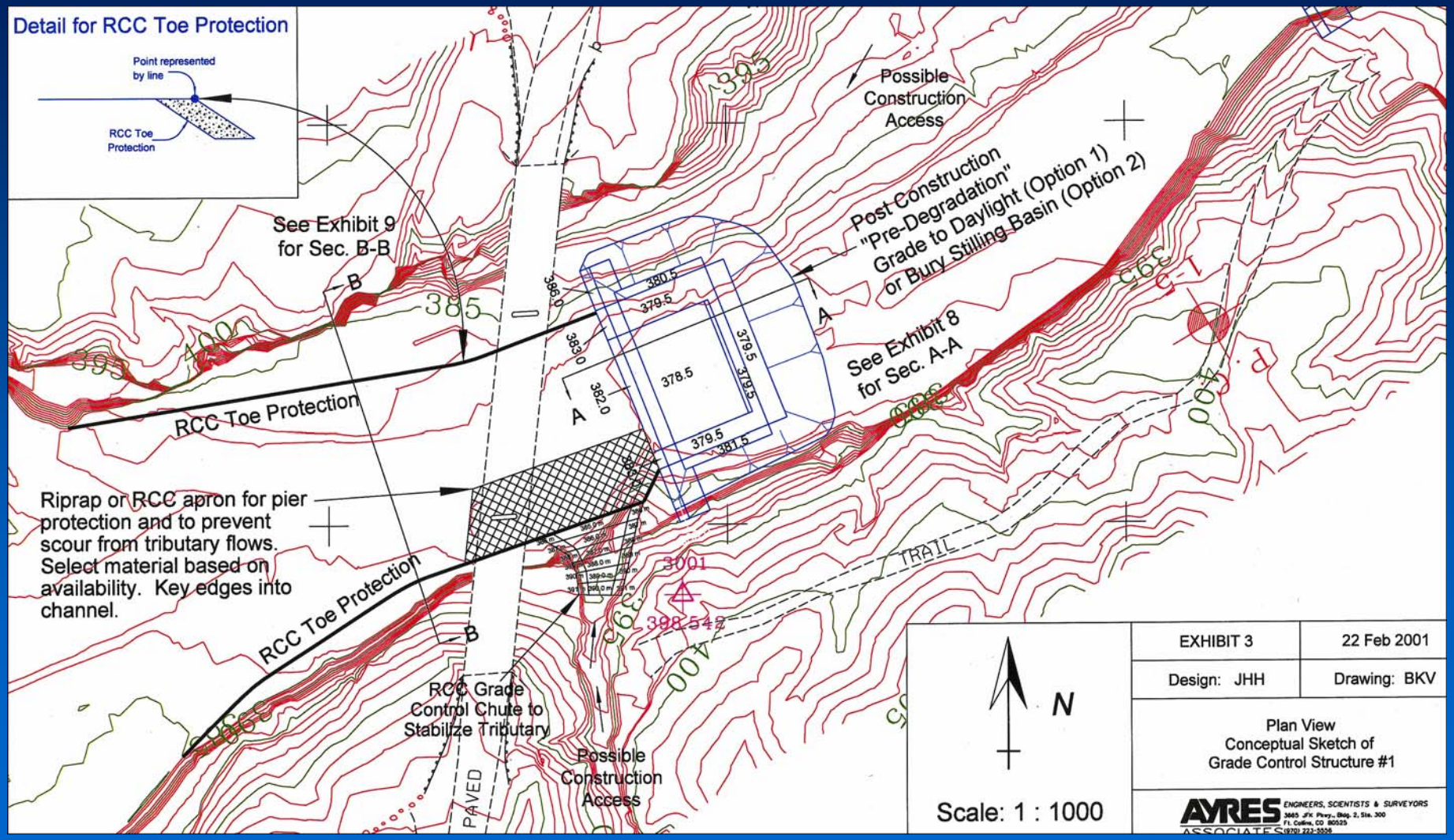
Enter
Flow Duration Curve
or
Storm Hydrograph

Summary Output for Each Selected Sediment Transport Function in SAM.sed

BRI-STARS PROFILE



GRADE CONTROL STRUCTURE



GRADE CONTROL STRUCTURE

SAM – Additional Components

- SAM.aid – Transport Function Guidance
- SAM.hyd – Stable Channel Dimensions
- Riprap Design
- Meander Planform Geometry

SAMWin Summary

- Aggradation And Degradation Studies
- Distributed in July, 2003
- CD-ROM With Software, Installation Instructions, and Transmittal Letter