

河槽水庫水理及輸砂分析研究—以濁水溪為例

許盈松^[1] 許裕雄^[2] 楊錦釗^[3] 廖培明^[4]

摘要 本文所探討河槽水庫水理輸砂現象極其複雜，應用具備能夠模擬水躍現象等漸變過程水理及輸砂現象之 NETSTARS 模式，以探討河槽水庫之水理輸砂現象。原河床模擬驗證以濁水溪民國 85 年至 87 年水位流量記錄、河道斷面資料作為驗證 NETSTARS 模式之用，驗證結果顯示與實測值相當符合。另以民國 90 年初斷面條件為河槽水庫開挖之沖淤模擬，以民國 87 年底斷面為起始條件，民國 90 年初斷面條件為終止做比較，且以民國 88 及 89 兩年記錄之較大實測流量共 1,005hr 之流量記錄為輸入條件，結果顯示模擬之河槽水庫沖淤趨勢與實測值相當一致。本研究同時進行河槽水庫之方案規劃及模擬評估，及不同方案在不同重現期洪峰流量、長期流量條件下之水理及輸砂分析，及其上下游河道沖淤平衡、防洪安全檢討。

關鍵詞：河槽水庫、水理特性、沖淤河道。

Hydraulics and Sediment Transport of a River Reservoir — Applications in Zhou-Hsui River

Yin-Sung Hsu^[1] Yu-Hsiung Hsu^[2] Jinn-Chuang Yang^[3] Pei-Ming Liao^[4]

ABSTRACT This paper discusses the complex phenomena of the hydraulics and sediment transport of a river reservoir. This study employed the NETSTARS model, which has the ability to simulate hydraulic jumps, the gradually varied flows, and sediment transport, to investigate the hydraulics and sediment transport of a river reservoir. Based on the measured stream flow records of the Zhou-Hsui river between 1996 and 1998, the NETSARTS model was established with the cross section data of 1995 as the initial condition, and the 1998 cross section as the terminal condition for calibration. The study results matched well with the field measurements. In addition, the data of 2001 cross section were measured before a dredging project. Therefore a supplemental study was conducted by taking the cross section of 1998 as the initial condition and 2001 cross section as the terminal condition for verification. The flow condition for this verification was based on the 1,005 hours of the high flow records taken from 1999 to 2000. The study results show the simulated trend of riverbed erosion and deposition consistent with field measurements. This research, at the same time, assesses the fea-

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- [1] 逢甲大學營建及防災研究中心研究副教授
Research Associate Professor, Construction and Disaster Prevention Research Center Fengchia University, Taichung 407, Taiwan, R.O.C.
- [2] 逢甲大學營建及防災研究中心研究工程師（通訊作者）
Research Engineer, Construction and Disaster Prevention Research Center Fengchia University, Taichung, 407 Taiwan, R.O.C. (Corresponding Author)
Email: yuhsiung@mail2000.com.tw
- [3] 交通大學土木工程學系及防災工程研究中心教授
Professor, Dept. of Civ. Engrg., National Chiao Tung University, Hsinchu, Taiwan.
- [4] 水利署水利規劃試驗所水源課課長
Section Chief, Water Resources Planning Institute, Water Resources Agency, MOEA.

sibility of various management plans of river reservoir by evaluating the hydraulics and sediment transport under various conditions such as cases with different peak discharges of various recurrence intervals and/or long-term flows with the model. Discussions include reviewing the equilibrium in erosion and sedimentation of upstream and downstream as well as flood protection.

Key Words: river reservoir, flow characteristics, fluvial channel.