1. **Optimal Lining and Seepage Analysis of Juan Canal**.

**ABSTRACT**

The optimal lining and seepage analysis of unlined irrigation Juan canal with its nine variable section have been done depending on equations derived for best hydraulic section of canals which have the minimum perimeter for lining and minimum area for excavation since its important. The optimum values of the section variables (side slope, bottom width, flow depth, and radius) for rectangular, trapezoidal, triangular, semicircular, curved bottom have been conducted in this study. Also, a comparison between the lining of existing lined canals and the design of optimum lining according to minimum areas and perimeters was done. A computer program using **(FORTRAN 90)** language depending on relevant equations were used for obtaining results and insuring the accuracy. The program was used to optimum lining for Juan canal and to compare between the optimum lining and existing lining for Jhash canals within Hurriya – Daghara project