



**Panama Canal reconnaissance study
- Identification, definition and
evaluation of water supply projects -
Lower Trinidad**

**Estudio de reconocimiento del Canal
de Panamá - Identificación, definición
y evaluación de proyectos de fuentes
de agua - Bajo Trinidad**

USACE

Contrato No. 65483

**Sinopsis
(No existe Resumen Ejecutivo)**

Synopsis

The development plan for the Lower Rio Trinidad Dam Project presented herein considers creating a dam and lake on the Trinidad basin, within the Panama Canal watershed at Gatun Lake, southwest of Gatun Locks. Under normal flow conditions water passes from Lower Rio Trinidad Lake to Gatun Lake through a gated spillway. Water may be pumped between Gatun Lake and Lower Rio Trinidad Lake by a pumping station installed near the east end of the Lower Rio Trinidad Dam. During the flood season, excess water can be pumped from Gatun Lake to Lower Rio Trinidad Lake. During the dry season, water stored in Lower Rio Trinidad Lake can be pumped from Lower Rio Trinidad Lake to Gatun Lake. Water impounded in Lower Rio Trinidad Lake adds storage to the Panama Canal system of lakes and reduces spilling at the Gatun spillway. The water may be used as needed to support canal operations.

The Rio Trinidad watershed is located on the western side of the Panama Canal watershed. The proposed dam site is located within Gatun Lake across the Lower Rio Trinidad Lake arm near the town of Escobal. The proposed dam extends from Punta Mala on the west shore of Gatun Lake to Guacha Island, and then straight across to the eastern shore of the Rio Trinidad Lake arm, just south of the South Range Point lighthouse. This alignment follows closely the proposed path found in the Study and Report on Increasing the Water Supply of the Panama Canal (referred to as the Tudor Report), prepared by Tudor Engineering Company, San Francisco, California 1962, for the Panama Canal Company. Plate 36 - 1 shows the location of the proposed Lower Rio Trinidad Dam project. The structures for the proposed Lower Rio Trinidad project should consist of a rock fill dam constructed by underwater deposition of fill materials, a gated spillway constructed in the dry on Guacha Island, and a large pumping plant constructed in the dry on Tern Island. The spillway should have 11 gate bays, each measuring 18.3 m wide. The pumping plant should contain 6 large diesel engine driven hydraulic pumps configured to allow pumping in either direction. The total project first costs of the proposed Lower Rio Trinidad Dam project are estimated to be \$811,400,000.

This project poses great construction difficulties because of the extremely large quantities of underwater fill required for construction of the dam. It requires extensive drilling and site investigation prior to construction and, because of the uncertainties inherent with this type of construction, extensive unforeseen costs may be encountered during construction. Also, the spillway and pumping plant must be constructed in island settings where the structures and appurtenances practically engulf the island areas. This poses extreme space limitations on the construction effort and is very costly.

The proposed Lower Rio Trinidad Dam project should contribute to the hydrologic reliability of the Panama Canal, enhancing its ability to serve its customers by reducing the need for imposing draft restrictions, and resulting light loading of vessels during periods of low water availability. The existing hydrologic reliability of the Panama Canal, based on the period of record from January 1948 through December 1999, and current demands (38.68 lockages) is approximately 99.6 percent. The hydrologic reliability, with the demand increasing to 120 percent of the current level (46.42 lockage), is 98.8 percent. With construction of the proposed Lower Rio Trinidad project under the scenarios presented, the existing high hydrologic reliability may be continued as demand for lockages increases by 6.7 percent (3.67 lockages) above current demand levels for Scenario 1 and 23 percent (8.99 lockages) for Scenario 2 above current demand levels.