The Florida Senate

PROFESSIONAL STAFF ANALYSIS AND ECONOMIC IMPACT STATEMENT

(This document is based on the provisions contained in the legislation as of the latest date listed below.)

Prepared By: Environmental Preservation and Conservation Committee

BILL: SM 1680

INTRODUCER: Senator Aronberg

SUBJECT: Herbert Hoover Dike

DATE: March 22, 2007 REVISED: _____ _____ _____ _____

	ANALYST	STAFF DIRECTOR	REFERENCE	ACTION
1.	Bascom	Kiger	EP	**Favorable**
2.			MS	
3.				
4.				
5.				
6.				

I. Summary:

Senate Memorial 1680 urges the United State Congress to authorize improvements to the Herbert Hoover Dike surrounding Lake Okeechobee that would bring the dike into compliance with current levee protection safety standards.

II. Present Situation:

Herbert Hoover Dike

The Herbert Hoover Dike, built in the 1930's, is a 140-mile long, 35-feet high earthen dike that surrounds Lake Okeechobee. The dike was built following a series of catastrophic tropical cyclones in the late 1920's, which killed more than 3,000 people and flooded lands around the lake, and was constructed in accordance with the accepted engineering standards of the day. Today's standards are more stringent than those of 70 years ago and our knowledge, of how materials used to construct the dike react to changing environmental conditions and water levels, has greatly increased.

In the 1986 *Reconnaissance Report for Herbert Hoover Dike* the United States Army Corps of Engineers (USACE or Corps) recognized the potential for dangerous changes in slope of and seepage from the dike as a result of increased lake levels. The report was one of the first to identify the catastrophic results to south Florida if the dike were to fail:

"*The levees around the edge of the lake protect a population of over 60,000 located in seven towns around the lake, and hundreds of thousands of acres of improved agricultural land, from flooding. Ultimately, a failure of any segment of the Herbert Hoover Dike System could affect hundreds of thousands of people throughout the south Florida area, including Miami…The*

major concern is not with the costs required to make minor repairs to levees…but with the consequences of a complete levee failure. The costs associated with such an occurrence would be astronomical.[1]*"*

Recently, a Corps analysis stated that if water levels in Lake Okeechobee fluctuate to very high and/or low levels, the integrity of the dike may be compromised from water seepage under the earthen sides of the dike. Their analysis indicates that the likelihood of dike failure increases at water levels of 18.5 feet and the likelihood of failure greatly increase as water levels reach a stage of 21 feet and complete failure at levels greater than 21 feet.

In 2006, a South Florida Water Management District (SFWMD) report indicated that performance of the dike diminished dramatically when lake levels exceeded 18 feet. The report cited one instance in 1995 when lake levels rose to a maximum of 18.8 feet:

"*Visual evidence of distress included excessive seepage, piping transport of dike material, and formation of sinkholes in the dike, which occurred under an unusually small head differential – the difference between toe ditch and lake water levels – of as little as five feet. Of particular concern were observed cloudy flows of concentrated seepage and formation of sand boils and deltas, both of which are commonly taken as signs that the internal erosion failure process has initiated.*[2]*"*

The report further indicates that the Herbert Hoover Dike may be "experiencing cumulative damage and progressive deterioration" with respect to the internal erosion and seepage process.

Proposed Rehabilitation and Repair of the Herbert Hoover Dike

In 1999, the Corps released its *Major Rehabilitation Evaluation Report* (MRR) documenting the condition of the dike, geotechnical investigations, and hydraulic and hydrologic analysis. The purpose of the report was to economically justify the repair of structural problems of the dike at the authorized protection levels. These included:

- Repairing only known structural deficiencies.
- Repairing only up to the authorized level of protection, corresponding to a lake level of 26 feet plus a 5-foot storm surge.

In 2004 – 2005, the Corps rehabilitation plan consisted of repairing sections of the dike to reduce known internal seepage occurring beneath the dike. Each section called "Reaches" will consist of an individual engineering plan designed to meet the specific goals of rehabilitation or repair to the Reach. In 2005 – 2006, the Corps received $16 million in general appropriations from Congress to begin design and construction for the rehabilitation of Reach 1A, a 4.6 mile stretch of the dike beginning at Port Mayaca running south to Sand Cut.

[1] USACE, 1986

[2] South Florida Water Management District Report of Expert Review Panel Technical Evaluation of Herbert Hoover Dike Lake Okeechobee, Florida, BCI Engineers and Scientists Inc., April 27,2006

The current budget plan submitted by the Corps requests $33 million to continue rehabilitation efforts for Reach 1 as well as Reaches 2, 3 and 7. Estimates from the SFWMD indicate that costs could be more than double to achieve rehabilitation of those Reaches.

III. Effect of Proposed Changes:

The Senate Memorial urges the United States Congress to authorize improvements to bring the Herbert Hoover Dike into compliance with current levee protection standards and to authorize funding to expedite the improvements. Specifically it states:

- Lake Okeechobee has been impacted by four major hurricanes during 2004 and 2005.
- At the request of local community leaders, the South Florida Water Management District Governing Board implemented an independent report on the Herbert Hoover Dike which found that the dike did not meet current levee protection safety standards which constitutes a failure of the structure.
- Failure of the dike poses a clear and imminent threat of catastrophic proportion to the communities surrounding the lake.
- The dike was not constructed to current levee engineering standards and is therefore not authorized by Congress to be brought into compliance to such standards.

Copies of the memorial are to be presented to the President of the United States, the President of the United States Senate, the Speaker of the United States House of Representatives, and to each member of the Florida delegation in the United States Congress.

IV. Constitutional Issues:

A. Municipality/County Mandates Restrictions:

None.

B. Public Records/Open Meetings Issues:

None.

C. Trust Funds Restrictions:

None.

V. Economic Impact and Fiscal Note:

A. Tax/Fee Issues:

None.

B. Private Sector Impact:

Authorization of funds by the United States Congress for the restoration of the Herbert Hoover Dike will protect the local communities, surrounding the lake, from harm or displacement due to a catastrophic failure of the dike.

C. Government Sector Impact:

Restoration of the Herbert Hoover Dike will require coordination between federal, local, and state agencies to complete the project as expeditiously as possible.

VI. Technical Deficiencies:

None.

VII. Related Issues:

None.

VIII. Summary of Amendments:

None.