Lake Okeechobee

Managing Water Levels in Lake Okeechobee

Facts & Information

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The U.S. Army Corps of Engineers manages water resources contained within Herbert Hoover Dike and develops regulations for the operation of Lake Okeechobee's outlet structures. Lake Okeechobee operations ensure that congressionally-authorized project purposes are met. The authorized project purposes for Lake Okeechobee include flood and storm damage reduction, navigation, water supply for Everglades National Park, salinity control, regional groundwater control, agricultural irrigation, municipalities, and industry, enhancement of fish and wildlife, and recreation.

Before south Florida was settled, Lake Okeechobee water levels were controlled by natural conditions and events: rainfall, runoff from the Kissimmee River Valley, evaporation and outflows, primarily south into the Everglades. As the population of south Florida grew and agricultural communities began to thrive on the southern banks of Lake Okeechobee, the State of Florida and the Army Corps of Engineers constructed an array of projects to control the lake's elevation. In the end, Lake Okeechobee was surrounded by a massive earthen berm – Herbert Hoover Dike.

The natural cycle of water levels in Lake Okeechobee corresponds closely to the wet and dry seasons. The wet season is typically from mid-May through November and the dry season is typically from December through mid-May. The lake's water level rises, not only from the precipitation that falls over the lake, but from the storm water runoff that comes from the Kissimmee River and surrounding areas. Water levels in the lake are managed through use of a regulation schedule, which is designed to balance multiple, and often competing, project purposes and objectives.

One of the most important considerations for safety of life is the stability of the 70+-year-old Herbert Hoover Dike (HHD). This water-retaining structure was not built at the same standards we use today. Simply speaking, the dike was built with natural materials from the lake bottom.

For decades, the HHD has served its purpose well by containing lake water, even occasionally unavoidable high water levels. Over time, however, as lake levels have risen, the strength of the earthen structure has declined. As water levels in the lake rise, so does the risk that naturally-occurring seepage will increase beyond what normally occurs, potentially causing erosion that could lead to catastrophic failure. Development of the current regulation schedule, called Water Supply and Environment (WSE), did not consider how higher lake levels might compromise the integrity of the HHD.

Your Questions Answered

What is a regulation schedule? What is its purpose?

The regulation schedule is a tool used by water managers to meet congressionally-authorized project purposes. It is designed to balance multiple, and often competing, project purposes and objectives. Managing for better performance of one objective often worsens performance of competing objectives. For example, higher elevations tend to benefit water supply, but may increase the risk to public health and safety, and can harm the ecology of the lake. Lower lake elevations may produce lake levels more desirable for the lake ecology and improve flood and storm damage reduction, but also reduce water supply potential and may harm the ecology of the lake and downstream estuaries. Therefore, the goal of the lake regulation schedule is to balance the performance of multiple project purposes.

Why did the Corps decide to conduct the Lake Okeechobee Regulation Schedule Study?

The Lake Okeechobee Regulation Schedule Study (LORSS) was initiated to address high lake levels, high estuarine discharges, estuary ecosystem conditions, and lake ecology conditions that occurred during the 2003 to 2005 time period. The LORSS considered the back-to-back historically significant 2004 and 2005 hurricane seasons' effects on the recognized structural integrity issues of Herbert Hoover Dike (HHD), along with effects to other project purposes.

How do high water levels increase the risk to the Herbert Hoover Dike?

The HHD is a structure composed of silt, sand, shell, rock and other naturally-occurring materials that existed on site at the time of construction. Water naturally seeps through all structures, especially earthen structures such as HHD. This is to be expected. The seepage becomes more dangerous when its rate increases and begins to erode soil particles from beneath the dike. If left unchecked, this continued erosion, or piping, can lead to catastrophic failure. The higher the water level is above ground surface, the higher the weight and pressure on the dike. This causes the naturally-occurring seepage to increase, thus, the likelihood of erosion increases.

Lake water levels are now extremely low. Do we still need a new schedule that will keep water levels lower?

Public safety is the Corps' primary concern. Weather in south Florida continually swings between extremes. Adopting a new regulation schedule now will provide greater flexibility for water level management when and if the need arises. Though the lake water level is now low, high water levels could rise again, threatening Herbert Hoover Dike. The potential for dike failure causes serious concerns for public safety, property damages, and environmental impact to the Everglades. To minimize the impacts to water supply, the Corps is expediting construction of the HHD rehabilitation and making steady progress on Comprehensive Everglades Restoration Plan (CERP) projects that will provide regional water storage.

If this new regulation schedule is adopted, how long will it remain in effect?

The new 2008 Lake Okeechobee Regulation Schedule will remain in effect until either the strength of the dike has been improved by the ongoing HHD rehabilitation project, or until the Corps approves a revised regulation schedule that factors in construction of initial CERP projects that will provide additional water storage capacity outside of Lake Okeechobee.

For Further Information

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