Dams Sector Consequence-Based Top Screen

Dams Sector assets, which include more than 90,000 dams and more than 100,000 miles of levees, provide critical water control services throughout the Nation. These benefits, however, cannot be separated from the potential consequences that stem from a failure to one of these facilities. Considering the large number of assets and the Sector's limited resources, the Dams Sector Coordinating Council (SCC) and the Dams Government Coordinating Council (GCC), under the Critical Infrastructure Partnership Advisory Council (CIPAC), jointly developed the Consequence-Based Top Screen (CTS) methodology, a clear and consistent strategy and framework to identify and prioritize facilities with the potential for the most signficant impact in the event of a failure.

Following heavy rains in 2010, a torrent of water from a breach in the Lake Delhi Dam in Iowa left little in its wake and damaged homes and businesses downstream. (Source: FEMA, Josh deBerge)

Benefits

The CTS methodology identifies the critical facilities within the Dams Sector that have the potential for the greatest impact to the surrounding area in the event of failure or disruption. These facilities are known as high-consequence facilities. By focusing on potential consequences and separating the analysis from the threat and vulnerability components of the risk process, the CTS approach allows the sector to prioritize these high-consequence facilities that need further assessments, additional analysis, and detailed studies, regardless of the hazard.

- This process can be especially helpful for an owner responsible for a large portfolio of dams because assessment resources can be focused on the higher priority facilities.
- In the case of an adversary looking for a target-rich environment, the CTS approach can reduce the scope of the problem by identifying those assets that could attract higher adversarial interest.
- For the emergency management community, the CTS results can inform them on which facilities within a specific area should receive particular attention because of their potential for significant effects at the local and regional levels.
- In the course of the scenario, the CTS process also assists in identifying the appropriate contact information to support effective and direct communication in the event of natural hazards, threat data, or other urgent notifications.

Implementation

Using different types of consequence elements, such as human health, economic, and mission disruption, the CTS methodology assumes a reasonable worse-case scenario to measure potential consequences from total destruction of or severe damage to the facility, regardless of whether the event triggering the incident is man-made or natural. These consequence estimates from the CTS methodology constitute an upper limit to the potential effects casued by severe damage or disruption to the facility and allow the sector to establish a baseline by which to compare different sector assets.

CTS Consequence Categories
Human Impact
• Total population at risk within flood scenario inundation zone • Population at risk within 0 and 3 miles from the toe of the dam • Population at risk within 3 and 7 miles from the toe of the dam • Population at risk within 7 and 15 miles from the toe of the dam • Population at risk within 15 and 60 miles from the toe of the dam
Economic Impact
• Assessment Replacement Value • Remediation Cost • Business Interruption
Impact on Critical Functions
• Water Supply • Flood Damage Reduction • Irrigation • Navigation • Hydropower Generation • Recreation

Because this methodology assumes a reasonable worst-case scenario, this scenario is not compounded or exacerbated by extreme events, acts of nature, or human error occuring at the same time. It is also important to note that the screening criteria do not consider the structural condition or vulnerability of the facility, nor do they address the likelihood of a natural hazard or man-made incident triggering the reasonable worse-case scenario. Additional assessments and study will be needed to ascertain vulnerability, structural integrity, and likelihood of an incident.

This collaborative effort to apply this methodology across the sector plays an essential role in supporting national and sector-wide initiatives aimed at improving the overall security and resilience of the Dams Sector.

Contact Information

For more information, please contact the Dams Sector-Specific Agency at dams@hq.dhs.gov.