



US Army Corps
of Engineers.

USACE Dam Safety Facts for Rough River Lake Dam

Project location and description: Rough River Lake Dam was designed and built by the U.S. Army Corps of Engineers (USACE) and completed in 1960. USACE operates Rough River Lake Dam for flood risk management, municipal water supply, and recreation.



The main components of the project are an earthen embankment section, which serves as the main water barrier composed of compacted earth; outlet works gates that allow controlled water flow out of the dam; and an ungated spillway, which is a segment of the structure used to provide additional release of water from the dam during major flood events. The earthen dam is 1,590 feet long and 132 feet high, and the top of the dam is 40 feet wide. The elevation of the top of the embankment is 558.5 feet¹. The foundation is made up of rock and soil. The ungated spillway is 65 feet wide with a crest elevation of 523.5 feet¹. The spillway can pass up to 286,000 gallons per second (38,200 cubic feet per second) or approximately half the volume of an Olympic size swimming pool each second.

During the fall and winter months, when excessive rainfall is likely, the lake is kept at a relatively low level (referred to as winter pool). Should heavy rains occur, surface water runoff is stored in the lake until the swollen streams and rivers below the dam recede and can handle the release of stored water without damage to lives, property or the environment. Sometimes water must be released to protect the dam's integrity even though streams and rivers may have already reached or exceeded their capacity.

Benefits associated with Rough River Lake Dam: This dam has provided \$4.4 million in average annual flood damage reduction since placed into service. During 2015, the dam prevented \$5.5 million in flood damages. The dam provides 380 acre-feet² of drinking water annually, this water supply benefit is about \$8 million. Annual recreational benefits to the area are about \$40 million.

Risks associated with dams in general: Dams reduce but do not eliminate the risk of economic and environmental damages and loss of life from flood events. When a flood exceeds the reservoir's storage capacity, large amounts of water may have to be released that could cause damaging flooding downstream. A fully-functioning dam could be overtopped when a rare, large flood occurs, or a dam could breach because of a deficiency, both of which pose risk of property damage and life loss. This means there will always be flood risk that has to be managed. To manage these risks, USACE has a routine program that inspects and monitors its dams regularly. USACE implements short- and long-term actions, on a prioritized basis, when unacceptable risks are found at any of its dams.

Risk associated with Rough River Lake Dam: Based upon the most recent risk assessment in 2012, USACE considers this dam to be a high risk dam among its more than 700 dams. This is primarily due to the potential for internal erosion due to solutioned fractures in the dam's bedrock foundation. USACE has implemented interim risk-reduction measures to reduce the risk in the short term and is remediating the dam with foundation grouting and installation of a deep seepage barrier wall in the dam's foundation and

¹ North American Vertical Datum 1988 (or NAVD 88)

² One acre-foot is equal to 1/2 Olympic-sized swimming pool.

embankment. The grouting was completed in April 2017 and the final repair element is scheduled to begin in 2018 and be completed by 2022.

What residents should know: Dams do not eliminate all flood risk, so it is important that residents downstream from the dam are aware of the potential consequences should the dam breach, not perform as intended, or experience major spillway or outlet works flows. The high risk in Falls of Rough, Narrows, Dundee, and Hartford and the related consequences further downstream warrant increased efforts on the part of USACE, local emergency management officials, and residents to heighten awareness of the potential flood risk associated with the dam.



Areas impacted by rare flood event and dam failure are displayed on the map by blue line. Map Disclaimer: Actual areas flooded will depend on specific flooding and failure conditions and may differ from the areas shown on the map.

The primary areas impacted should the dam breach with a full reservoir during a rare flood event or experience major spillway or outlet works flows are shown on the map. The potential for loss of life is highest within 60 miles of the dam with the loss of life concerns decreasing substantially beyond 60 miles downstream of the dam. Advanced warning of problems and events plays a major role in protecting life and property. See the map for a general indication of flooding with a rare flood event and breach.

Public awareness: Dams are designed to pass large amounts of water on a regular basis, and this means there will always be flood risk that has to be managed (see facts below).

Recommendations for Residents	Rough River Dam Facts
<ul style="list-style-type: none"> • Living with flood risk-reduction infrastructure comes with risk – know your risk. • Living with flood risk-reduction infrastructure is a shared responsibility – know your role. • Know your risk, know your role, and take action to reduce your risk. • Listen to and follow instructions from local emergency management officials. • Strongly consider purchasing flood insurance. • Contact your elected local, county, and state officials to make sound flood risk management decisions in your area. 	<p>Estimated consequences with rare flood event and breach:</p> <ul style="list-style-type: none"> • Population at risk: ~2700 • Structures at risk: 1,300 • Land and property at risk: \$186 million <p>Estimated consequences with rare flood event and no breach:</p> <ul style="list-style-type: none"> • Population at risk: ~1200 • Structures at risk: 630 • Land and Property at risk: \$90 million <p>Damages prevented: \$230 million (1960-2016) National Inventory of Dams (NID) No.: KY03012</p>

Residents should listen to and follow instructions from local authorities. For more information, please contact the USACE Louisville District office using the information on this fact sheet.

For additional information about dam safety and living with dams, please visit <http://www.usace.army.mil/Missions/CivilWorks/DamSafetyProgram.aspx> and http://www.damsafety.org/media/Documents/DownloadableDocuments/LivingWithDams_ASDSO2012.pdf