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# Introduction

## Pyramid Dam Public Information Tool Kit

The California Department of Water Resources invites local agencies and non-government organizations to use this public information tool kit to help keep residents informed about the Pyramid Dam modernization program and dam safety.

These information materials are suitable to use throughout the year, and National Dam Safety Awareness Day is a particularly good time to create local media and public interest in the issue.

## About the Dam

The California Department of Water Resources owns and operates the State Water Project, which includes Pyramid Lake and Dam.

The State Water Project is a multi-purpose water storage and delivery system that extends two-thirds the length of California. This collection of canals, pipelines, reservoirs, and hydroelectric power facilities delivers clean water to millions of Californians; thousands of acres of farmland; and businesses throughout our state.

Construction on Pyramid Dam was completed in 1973. The California Department of Water Resources is modernizing this dam, which includes identifying and proactively addressing any issues that could impact the delivery of water or the safety of surrounding communities.

## Why this is Important

“Intersecting almost all dam safety issues is the need for public education about dams. The ordinary citizen is unaware that the beautiful lakes on which they boat, ski, or fish are only there because of manmade dams. Developers build in dam-break flood inundation areas knowing nothing about the potential devastation an upstream dam could cause should it ever fail.

In fact, some developers and zoning officials are completely unaware of dams within their community. Even if citizens understand and are aware of dams, they still can be overly confident in the infallibility of these manmade structures. Living in dam-break flood-prone areas is a risk.”

- Association of State Dam Safety Officials

## May 31st is National Dam Safety Awareness Day

National Dam Safety Awareness Day was established in memoriam of the 2,220 people who lost their lives in the 1889 South Fork Dam failure near Johnston, Pennsylvania.

National Dam Safety Awareness Day was created to encourage individual and community responsibility and best practices for dam safety, and what steps people can take to either prevent dam failures or lessen the impact if a failure was to occur.

Another goal of National Dam Safety Awareness Day is to promote the benefits that dams offer.

<https://damsafety.org/NDSAD>

# Question & Answer

## What work is being done at Pyramid Dam?

As part of the California Department of Water Resources' (DWR) statewide efforts to make State Water Project facilities more resilient, DWR is modernizing Pyramid Dam in Los Angeles County.

The construction activity you may see or learn about includes identifying and proactively addressing any issues that could impact the delivery of water or the safety of surrounding communities. DWR launched the Pyramid Dam modernization program in 2018 and the modernization efforts will take about 10 years to complete. Activities include assessing the dam and its associated structures and managing construction activities to ensure the dam and structures allow for continued safe operations.

Work at the dam includes:

- Assessing the spillway for reliability and resiliency.
- Making improvements or repairs to spillways, outlet structures, release valves, and instrumentation.
- Conducting seismic analyses to understand how the dam and its features will be impacted by potential earthquakes.
- Continually assessing the dam to identify potential performance issues and proactively implementing solutions to reduce potential risks.

## Is Pyramid Dam safe?

Pyramid Dam is safe as currently operated. However, improvements are being made to prevent possible impacts due to a major earthquake or hydrologic event.

The dam and its related structures are regularly assessed by the Division of Safety of Dams (DSOD), California's dam safety regulatory agency, and by the California Department of Water Resources (DWR), the dam's owner. During previous assessments, DWR identified potential issues at structures adjacent to the dam and launched the modernization program to address those issues. The embankment portion of the dam has been evaluated and determined safe.

Based on the current conditions, DSOD determined that there is no need for DWR to change how it operates the dam. DWR takes risk reduction measures throughout the course of the modernization program, such as lowering reservoir levels during the winter months to prevent spillway use. In future assessments, if DSOD determines a change in operations is necessary due to increased potential risks, DWR will notify local emergency management agencies about those changes.

## Why am I receiving this public safety information?

The DWR and local emergency management agencies would like the residents who live near or below dams to be aware of the inherent flood risk associated with the dam(s). The intent of sharing this information is to help residents to better understand their risks and to take

seriously any public notification about dam safety and/or public safety.

### **How will I know if something is wrong at the dam that I should be aware of?**

Local public safety officials will notify residents if there is a risk to public safety due to a concern with the dam or its adjacent structures. Local officials will issue alerts to make their residents aware of a developing situation and alerts when action needs to be taken by residents to protect themselves.

### **Where should I go to get out of harm's way if there is a problem at the dam?**

Local public safety officials will alert local media about preferred evacuation routes and help to direct traffic, based on the specific situation.

### **How can I protect my family and property from flooding?**

Residents who live near or below dams are encouraged to make a plan about how to evacuate if they are told to do so by local safety officials. Always listen to public officials!

If you live in Ventura County, visit the READY Ventura website for information about preparing, responding, and recovering from dam related incidents at <https://www.readyventuracounty.org/stay-informed/dam-failure/>

If you live in Los Angeles County, visit the flood information website at <https://dpw.lacounty.gov/wrd/flood/>

### **More information is available here:**

[https://www.redcross.org/content/dam/redcross/atg/PDF\\_s/Preparedness\\_Disaster\\_Recovery/Disaster\\_Preparedness/Flood/Flood.pdf](https://www.redcross.org/content/dam/redcross/atg/PDF_s/Preparedness_Disaster_Recovery/Disaster_Preparedness/Flood/Flood.pdf)

<https://water.ca.gov/What-We-Do/Flood-Preparedness/Flood-Preparedness-Week>



# PYRAMID DAM MODERNIZATION PROGRAM

**PYRAMID DAM AND LAKE** are located about 60 miles northwest of Los Angeles and provide water storage for the greater LA area. The dam was built between 1969 and 1973 as part of the California Department of Water Resources (DWR) State Water Project (SWP).

DWR is modernizing its SWP portfolio across the state. This includes identifying and proactively addressing any issues that could impact the delivery of water or the safety of surrounding communities. As part of these efforts, DWR in 2019 launched the Pyramid Dam Modernization Program (PYDMP) to address improvements that could be made to mitigate impacts due to an extreme weather event or large earthquake.

## STATUS OF PYRAMID DAM

Based on prior Division of Safety of Dams (DSOD) findings as well as other DWR inspection and assessment activities, the initial focus of the Pyramid Dam



Moderization (PYDMP) will be to assess the impacts of an extreme weather event and to conduct earthquake analyses to identify improvements for the gated spillway, emergency spillway, and inlet structure. The primary objective of the PYDMP is to ensure that these appurtenances continue to function, and work appropriately during use, and establish a path forward to completely modernize the facility.

## EXTREME WEATHER

- The gated spillway at Pyramid Dam is used approximately once per year to release natural inflows and whenever inflows exceed stream release capacity.
- The emergency spillway at Pyramid Dam has never been used.
- Climate models show different precipitation patterns, which

## PYRAMID DAM

### Location:

Los Angeles County

### Construction Completion:

1973

### Type of dam:

Earth and Rock Embankment

### Height:

400 feet

### Length:

1,090 feet

### Operating Storage Capacity:

169,900 acre feet

### Outlet Works:

- Angeles Tunnel – 7.15-mile long, 30-foot diameter tunnel connected to Castaic Powerplant
- Stream Release – 15-foot diameter under right abutment

### Spillway Types:

Concrete flood gate-control spillway and unlined emergency spillway

### Function of Storage:

- Regulatory storage and forebay/afterbay for Castaic Powerplant
- Afterbay for William E. Warne Powerplant
- Water deliveries
- Recreation
- Fishery enhancement

### State Water Project:

Storage for water deliveries from the West Branch of the SWP



# PYRAMID DAM MODERNIZATION PROGRAM



This aerial view looks north toward Pyramid Dam and Pyramid Lake located on Piru Creek in Los Angeles County. Source: Florence Low – California Department of Water Resources

may change river flows in the State and could impact how DWR operates SWP facilities, including Pyramid Dam, to manage extreme weather scenarios.

## EARTHQUAKE RESILIENCY

■ In 2019, DWR initiated an in-depth analysis of the expected performance of the outlet works inlet structure (the structure that is used to release water from the reservoir through the stream release) in the event of an earthquake. Damage to the inlet structure during an earthquake would not cause

the dam to fail; however it may significantly reduce DWR's ability to release water.

■ DWR is also conducting seismic evaluations of the gated and emergency spillways to determine if any retrofits are necessary to ensure they will work appropriately in the event of an earthquake. DWR expects the evaluations to be completed in 2023.

## WHAT TO EXPECT?

During the modernization process, DWR will be operating construction equipment which

will result in some localized noise and increased activity may be expected.

DWR anticipates that the modernization of the dam will take a decade or more to complete.

## HOW TO CONTACT US

For more information, on the Pyramid Lake Moderization Program, contact

[SWPdamsafety@water.ca.gov](mailto:SWPdamsafety@water.ca.gov)



# Dam Components

## Pyramid Dam



# Region Map

## Pyramid Dam and Surrounding Facilities





# Sample Article

## What's going on at our local dam?

You may have seen or heard about construction at Pyramid Dam and wondered what is going on. Here's a quick overview about the activity.

Pyramid Dam and Pyramid Lake are located about 60 miles northwest of downtown Los Angeles and provide water storage for the greater Los Angeles area. The dam was built between 1969 and 1973 as part of the State Water Project that is operated and maintained by DWR.

The construction activity you may see or learn about includes identifying and proactively addressing any issues that could impact the delivery of water or the safety of surrounding communities. DWR launched the Castaic Dam and Pyramid Dam modernization programs in 2018 and it will continue for several more years. Activities include assessing the dam and associated structures and managing construction activities to ensure the dam and its structures continue to function safely.

Pyramid Dam is safe as currently operated. However, a major event such as an earthquake or massive storm that rapidly fills the reservoir could impact how the dam functions.

Pyramid Dam, and its related structures are regularly assessed by the California Division of Safety of Dams (the dam safety regulatory agency) and by DWR (the dams' owner).

Should the California Division of Safety of Dams determine that the dam is unsafe, DWR will change operations of the dam to reduce flood risk, and local emergency agencies will be notified.

## For more information:

<https://water.ca.gov/Programs/State-Water-Project/SWP-Facilities/Southern/Pyramid-Dam-Modernization>

# Inundation Graphics

Graphics that show a sunny day dam failure inundation area day filed on the California Division of Safety of Dams website. This information is used by emergency management agencies to plan and prepare for emergencies.

<https://fmds.water.ca.gov/maps/damim/>

# Dam & Flood Safety Tips

## About Dams

### ***Did you know that a dam does not always prevent downstream flooding?***

While dams may reduce the risk or frequency of flooding, no dam structure can eliminate all flood risk. Dams are designed to retain water and are built to release water in a controlled manner. However, a significant storm (or series of storms) could cause the reservoir fill above capacity, causing water to flow down the dam's spillway or over the dam embankment. This release of water can result in downstream flooding. Even when the dam performs as designed, flooding is possible. This may happen when nature causes a storm to overtop the dam or when a dam operator releases excess water downstream to relieve pressure on the dam.

Alternatively, a major earthquake could impact a dam and create flood risks. For example, an earthquake may damage the structures used to release water and/or otherwise operate the dam.

It is important to know where you live in relation to a dam. This includes distance but also the geographic context of the watershed, where water may flow, and the elevation of your home or work in relation to the dam. (Elevation is the distance above sea level.)

## Protect Yourself with Flood Insurance

### ***Did you know that homeowner's insurance does not cover flood damage?***

Just a few inches of water from a flood can cause tens of thousands of dollars in damage to a structure. Flood insurance is

the best way to protect yourself from devastating financial loss. Flood insurance is available to homeowners, renters, condo owners/renters, and commercial owners/renters. Costs vary depending on how much insurance is purchased, what it covers, and the property's flood risk. Learn more here: [FloodSmart.gov](https://www.floodsmart.gov).

## Floods happen throughout California!

### ***Did you know that flooding happens in every California county?***

Every county in California has been declared a federal flood disaster area at least once in the last 30 years. Without proper preparedness - when flooding happens - lives, homes, infrastructure, and agriculture are lost, and significant damage to the environment and the economy are likely.

## Californians are encouraged to prepare for floods by following these basic steps:

- **Be aware!** Know whether your home is in a flood zone. Consider purchasing flood insurance.
- **Be prepared!** Create an emergency evacuation kit and keep it ready. Make a plan to connect with your family, where you will go, and how to manage your pets. Keep a list of your home and/or business contents and a copy of important papers in a place where you can get to them later if needed. (Such as stored with a family member or on the Cloud.)
- **Take action!** Pay attention to weather forecasts and listen to local authorities. Always evacuate when advised to do so by public safety officials.

*Information provided by the California Department of Water Resources*

# Additional Resources

## More Public Information Resources

(Note to designer: we will work with our team to open and paste the links in full format. These are in the simple format that pop up when we copy them.

The Edelman team)

- [National Dam Safety Awareness Day - Suggested Key Messages](#)-Federal Emergency Management Agency (FEMA) This document contains suggested key messages for National Dam Safety Awareness Day, including messages on the importance of dam safety, knowing your risk, and how to take action.
- [National Dam Safety Awareness Day - Outreach Ideas for Children](#) (FEMA) This document contains National Dam Safety Awareness Day outreach ideas and activities for children to educate them on dam safety. Teaching children about dam safety will not only increase awareness among the next generation, but help to spread information to their families.
- [Flood Preparedness Activity Book for Children](#) (United States Army Corps of Engineers). This fun activity book will help teach youth and their families about the best ways to be prepared for floods.
- [National Dam Safety Awareness Day - Media Coverage Tips](#) (FEMA). This document contains tips for media outreach to increase local awareness and share educational information about National Dam Safety Awareness Day.
- [Living with Dams - Know Your Risks](#) (FEMA). This brochure provides information or those whose life and property could be affected by a nearby dam, including: why communities should care about dams, facts about dams, the risks associated with dams, and what to do if you live in a dam breach inundation zone.
- [Understanding Dam Risks](#) (Association of State Dam Safety Officials). This webpage provides information about the dams, the risks they pose, risk management for dam owners, and ways locals can keep themselves safe.
- [Stay Informed: Dam Failure](#) (READY Ventura County). This site shares dam failure inundation maps, background on the dams in Ventura County, and information for locals on what to do before, during, and after a dam failure.
- [Flood Information](#) (Los Angeles County Public Works). This webpage provides information on the alert networks maps in the Los Angeles region, as well as links to resources on weather forecasting, what to do in a flood, and the National Flood Insurance Program.

# Linked Resources

## **Understanding Dam Risks**

<https://www.damsafety.org/public-safety#Understanding%20the%20Risks>

## **READY Ventura**

<https://www.readyventuracounty.org/stay-informed/dam-failure/>

## **LA County Public Works**

<https://dpw.lacounty.gov/wrd/flood/>