



Dam Removal Guidelines

Dam Safety Program
Texas Commission on Environmental Quality



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This document provides guidance to dam owners who are considering the removal of a dam. If you are an owner of a dam, or the engineer in charge, you should go through these guidelines carefully before taking any action. This will potentially save you a great deal of time and expense.

As an owner of a dam, you may want to remove the dam due to factors such as deterioration and risk of failure, or to return a waterway to its original condition. The question of whether to remove a dam is primarily up to the owners and stakeholders of the structure. The Dam Safety Program of the Texas Commission on Environmental Quality (TCEQ) is not opposed to the removal of dams; however, the Dam Safety Program does want to ensure that the process is conducted safely and in accordance with all the applicable state and federal rules.

The guidelines presented here cover the major items that you should consider before beginning the removal process. For the purposes of this document, we have organized these items into six general categories:

- Safety Issues
- Erosion Prevention and Sediment Control
- Ecological Issues
- Floodplain Management
- Stakeholder Issues
- Ownership Issues

However, this list should not be considered exhaustive or conclusive: unanticipated circumstances may arise that would require consideration and involvement of parties not mentioned in this document.

Further, not all of the items listed may be applicable to a particular dam. Factors such as environmental condition, size, usage, and ownership will vary on a case-by-case basis. It is up to the owner or the owner's engineer to evaluate each item and take the necessary actions.

Questions and comments regarding this document should be directed to:

Jack R. Kayser, P.E., Ph.D.
 Dam Safety Program, MC 174
 Texas Commission on Environmental Quality
 P.O. Box 13087
 Austin, TX 78711-3087
 Ph.: 512-239-4763
 Fax: 512-239-0404
 jkayser@tceq.state.tx.us

Safety Issues

The safety of downstream residents and the personnel working on the dam are of primary importance. You should submit a dam removal plan to the TCEQ Dam Safety Program, and get approval for it, prior to starting the removal. This plan should contain the following items:

- A schedule and plan for conducting the phases of the work.
- A description of the method to be used to dewater the reservoir.
- Drawings that illustrate the location and size of the breach.
- A rationale for the sizing and placement of the breach.
- A plan for preventing erosion and sediment loss from the work site, lake bottom, and breach during and after removal.
- An Emergency Action Plan that addresses the risks associated with the removal process.
- Plans for addressing any relevant items that are noted in these guidelines.

There are several important safety issues that you need to consider in developing a dam removal plan.

- Construction activity will occur in the vicinity of water.
- Staging and operations will take place on steep inclined slopes.
- Water can flow uncontrollably through a breach, quickly eroding the side walls.
- Removal of material on the downstream slope can cause an increase in the hydraulic gradient within the embankment, which may lead to quickening of the soil.
- Rapid drawdown (lowering of the water level) of the reservoir can create slope instabilities upstream.
- Severe or extreme rainfall events can occur during the removal process.
- Outlet valves may be corroded or inoperable.
- Outlet conduits may be corroded, damaged, or incapable of containing hydraulic pressures or flows associated with drawdown operations.
- You should inform the downstream county sheriff before draining, so that emergency management personnel know why a change in stream level is taking place.

Contact Information

Dam Safety Program, MC 174
 Texas Commission on Environmental Quality
 P.O. Box 13087
 Austin, TX 78711-3087
 Ph.: 512-239-4763

Erosion Prevention and Sediment Control

Regardless of the size of the project, you must implement measures for erosion prevention and sediment control. However, these measures vary according to the size of the project.

Any excavation and construction that takes place on a dam embankment in the process of dam removal directly disturbs an area of ground, which can lead to erosion. Emptying a reservoir will expose unprotected soil to rainfall and surface runoff, which can also lead to erosion. In order to determine the total area of land that will be disturbed, you need to take into account both the work area and the exposed lake bottom.

Sediment that has accumulated in the reservoir basin may be contaminated, especially if industrial or agricultural operations have taken place in the upstream watershed. If there is reason to believe that this may be the case, then you should perform an analysis of the sediment and—depending on the results of the analysis—draw up an appropriate remediation design.

The Texas Department of Transportation has a design manual for preventing erosion and controlling sediment, entitled “Storm Water Management Guidelines for Construction Activities.” This manual is recommended as a source of ideas for developing a set of control measures that are suitable for a dam removal project. It can be found at www.dot.state.tx.us/env/nrmstormwatermanual.htm.

Projects Disturbing Less Than One Acre

Projects that will disturb less than one acre of land (this includes the exposed reservoir bottom) do not need a formal Storm Water Pollution Prevention Plan (SWPPP), nor a Construction General Permit. However, they must include some means of preventing pollution due to soil erosion.

Projects Disturbing More Than One Acre

If the area of land disturbed will be between one and five acres, you must develop and implement a Storm Water Pollution Prevention Plan (SWPPP).

If the project will disturb an area greater than five acres or is part of a larger common plan of development, then you must also—in addition to developing and implementing a SWPPP—secure a Construction General Permit.

Contact Information

Water Quality Program, MC 148
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087
Ph.: 512-239-4671

Web Address

www.tceq.state.tx.us/goto/wq-construction/

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Ecological Issues

The removal of a dam will undoubtedly have an effect on the ecosystem of the area. The potential effects of the project must be considered before making a decision.

Projects Affecting Wetlands or Waters of the U.S.

If the dam removal project will affect wetlands or waters of the United States, or will involve the use of federal funds, you may need to secure two U.S. Army Corps of Engineers (USACE) permits: a Section 10 permit (Rivers and Harbors Act of 1899) and a Section 404 permit (Clean Water Act). The appropriate USACE district office should be consulted to determine what, if any, federal permits will be required (see www.usace.army.mil). Most of Texas falls under the jurisdiction of the Galveston District (409-766-3930) or the Fort Worth District (817-886-1731).

For some Corps 404 permits, the TCEQ carries out a review of the permit application. This review, called a 401 Certification Review, assesses the proposed activities in terms of compliance with the Texas Surface Water Quality Standards (Texas Administrative Code, Title 30, Chapter 307).

Contact Information

401 Coordinator, MC 150
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3807
Ph.: 512-239-5366

Web Address

<http://www.tceq.state.tx.us/goto/401/>

Wildlife Habitats and Endangered Species

A number of consequences of removing a dam (such as loss of a reservoir, changes to a stream flow, or release of sediment) may affect the habitat of threatened or endangered species.

Before deciding to remove a dam, you should inform the Texas Parks and Wildlife agency. Their Wildlife Habitat Assessment Program will evaluate the project to determine if the removal of the dam would have any adverse effects on endangered species. In addition, their Ecosystems/Habitat Assessment Program will also evaluate the proposed project, to determine if there would be any adverse effects on wetlands, or

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whether the project will require a Marl, Sand, Gravel, Shell, or Mudshell Permit. They may also determine that an environmental study, plan, and inspection is required.

Contact Information

Wildlife Habitat Assessment
Texas Parks and Wildlife
4200 Smith School Road
Austin, TX 78744
Ph.: 512-912-7011

Web Address

www.tpwd.state.tx.us/huntwild/wild/species/endang/index.phtml
> "Rare Resources Review Requests"

OR

www.tpwd.state.tx.us/landwater/water/enviroconcerns/water_issues/

Floodplain Management

Dam removal may increase the downstream depth and the frequency of flooding. This may enlarge the base (100-year) floodplain, creating adverse impacts. Dam removal may also alter the course of the downstream channel. Therefore, removing a dam may require a subsequent change to the applicable Flood Insurance Rate Maps.

When removing a dam, you should notify the local Floodplain Administrator. A Letter of Map Amendment (LOMA) or a Letter of Map Revision (LOMR) may be required. TCEQ administers the National Flood Insurance Program for the State of Texas, and maintains a list of local floodplain administrators. The local administrators have the responsibility of reviewing floodplain modifications within their jurisdiction.

Contact Information

Floodplain Management Program, MC 160
Water Supply Division
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3807
Ph.: 512-239-4691

Web Address

<http://www.tceq.state.tx.us/goto/NFIP/>
> "Community Status and Floodplain Administrator List"

Stakeholder Issues

There are a number of people or organizations that will be affected by the removal of a dam. Although they may not be "owners," they nevertheless have a stake in the dam, and certain interests that should be taken into account.

Historical and Archeological Preservation

The dam and its reservoir may be considered historic if they are more than 50 years old, or if archeological deposits or associated historic structures are located on the site. If there are historical or archeological items associated with the site, if the dam is on public land, or if federal funding or permits are required for the project, you should contact the Texas Historical Commission, which will then conduct a review of the project.

Contact Information

Texas Historical Commission
P.O. Box 12276
Austin, TX 78711-2276
Ph.: 512-463-6100

Web Address

www.thc.state.tx.us/crm/crmreview.html

Transportation, Access, and Utilities

The dam may serve as an embankment or corridor for a road, railroad, path, pipeline, or utility. If this is the case, you need to make provisions to manage and accommodate usage before, during, and after removal of the dam. You should coordinate implementation with the appropriate parties.

Public and Private Interests

Lake users and shoreline owners may not want the dam or lake removed. Before you decide to remove the dam, you should follow established processes to get input from the community. Consult your local municipal or county authority.

Federal Energy Regulatory Commission Approval

If the dam is licensed by the Federal Energy Regulatory Commission (FERC), you may need to provide FERC with an Environmental Impact Statement and receive a review and approval from FERC before removal can proceed. There are only a few dams in Texas that fall under this category.

Web Address

www.ferc.gov/industries/hydropower.asp

Ownership Issues

As an owner of a dam, there are several issues that you should take into account when considering removal of a dam.

Ownership and Responsibility

Several individuals or organizations may own the dam or parts of the dam, have an easement to the property, or legal commitments to maintaining the dam or its reservoir. These various parties must establish agreement among them as to the disposition of the dam. In cases where owners deny or avoid responsibility, the TCEQ may order the modification or removal of a dam.

Water Right Permit

The existing reservoir may have a water right permit assigned to it. Parties other than the dam owner may also have water rights associated with the reservoir. Before removing a dam, you should have the water right permit amended or cancelled, depending on the proposed design of the remaining structure. If there are other parties with water rights, you may

need to address those rights. If you have any questions regarding water right ownership, you should discuss them with the TCEQ's Water Rights Program.

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Contact Information

Water Rights Program, MC 160
Water Supply Division
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087
Ph.: 512-239-4691

Web Address

<http://www.tceq.state.tx.us/goto/w-rights/>

Liability

The liability associated with the dam remains with the owner throughout the removal process. As the owner, you should exercise due diligence to ensure the safety of personnel, local residents, and any other affected persons.



Texas Commission on Environmental Quality

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