



**INSPECTION AND  
MAINTENANCE MANUAL  
FOR  
ARKANSAS DAM OWNERS**

**Published by the  
ARKANSAS SOIL AND WATER CONSERVATION  
COMMISSION**

**2002**

**INSPECTION AND  
MAINTENANCE MANUAL  
FOR  
ARKANSAS DAM OWNERS**

**Published by the**

**ARKANSAS SOIL AND WATER CONSERVATION  
COMMISSION**

**2002**

**STATE OF ARKANSAS**

**ARKANSAS SOIL AND WATER CONSERVATION COMMISSION  
101 EAST CAPITOL, SUITE 350**

**LITTLE ROCK, AR 72201  
(501) 682-1611**

**MIKE HUCKABEE, GOVERNOR**

**COMMISSIONERS**

**James Neal Anderson, Chair  
Lonoke**

**Lynch Butler  
Siloam Springs**

**Dewey Hatcher, Vice Chair  
Waldron**

**Joyce Phillips  
Little Rock**

**David Feilke  
Stuttgart**

**Alec Farmer  
Jonesboro**

**Robert W. Newell  
Newport**

**Ann Cash  
McGehee**

**Corbet Lamkin  
Chidester**

**COMMISSION ADMINISTRATION**

**J. Randy Young, P.E., Executive Director  
Jon R. Sweeney, P.E., Deputy Director/Chief Engineer  
Earl Smith, P.E., Chief, Water Management Division**

**DAM SAFETY AND FLOODPLAIN MANAGEMENT**

<b>Ralph W. Ezelle, P.E. ....</b>	<b>Supervisor, Dam Safety/Floodplain Management</b>
<b>Michael J. Borengasser, CFM</b>	<b>Hydrologist</b>
<b>Alvin Simmons, E.I. ....</b>	<b>Water Resources Engineer</b>
<b>Jason Donham, CFM.....</b>	<b>Floodplain Manager/NFIP Coordinator</b>
<b>Debby Davis.....</b>	<b>Administrative Assistant</b>

**March 2002**

## TABLE OF CONTENTS

<b>ACKNOWLEDGEMENTS</b>	<b>ii</b>
<b>FOREWARD</b>	<b>iii</b>
<b>INTRODUCTION</b>	<b>iv</b>
<b>CHAPTER 1: TYPES OF DAMS</b>	<b>1-1</b>
<b>CHAPTER 2: A TYPICAL DAM AND ITS PRINCIPAL PARTS</b>	<b>2-1</b>
<b>CHAPTER 3: IS YOUR DAM REALLY A HAZARD?</b>	<b>3-1</b>
<b>CHAPTER 4: LIABILITY AND RESPONSIBILITY OF DAM OWNERS</b>	<b>4-1</b>
<b>CHAPTER 5: YOUR CONSULTANT'S ROLE IN DAM SAFETY</b>	<b>5-1</b>
<b>CHAPTER 6: EMERGENCY PREPAREDNESS</b>	<b>6-1</b>
<b>CHAPTER 7: OVERVIEW OF INSPECTING YOUR DAM</b>	<b>7-1</b>
<b>CHAPTER 8: SEEPAGE</b>	<b>8-1</b>
<b>CHAPTER 9: CRACKING</b>	<b>9-1</b>
<b>CHAPTER 10: INSTABILITY</b>	<b>10-1</b>
<b>CHAPTER 11: DEPRESSIONS</b>	<b>11-1</b>
<b>CHAPTER 12: MAINTENANCE CONCERNS</b>	<b>12-1</b>
<b>CHAPTER 13: CONCRETE DAMS AND STRUCTURES</b>	<b>13-1</b>
<b>CHAPTER 14: INLET, OUTLETS AND DRAINS</b>	<b>14-1</b>
<b>CHAPTER 15: EMERGENCY SPILLWAYS</b>	<b>15-1</b>
<b>CHAPTER 16: DAM INSPECTION AND MAINTENANCE CHECKLIST</b>	<b>16-1</b>
<b>CHAPTER 17: REPAIR, ALTERATION AND REMOVAL OF A DAM</b>	<b>17-1</b>

## APPENDICES

Appendix 1: DESCRIPTION OF DAM

Appendix 2: INSPECTION AND INCIDENT REPORTING FORMS

Appendix 3: STATE DAM SAFETY RULES AND REGULATIONS

Appendix 4: DAM PERMIT AND TRANSFER OF OWNERSHIP FORMS

Appendix 5: SOURCES OF INFORMATION AND ASSISTANCE

## REFERENCES

Guide to Developing Emergency Action Plans (EAPS) in Arkansas, Arkansas Soil and Water Conservation Commission, Little Rock, Arkansas, 1993.

Dam Safety: An Owner's Guidance Manual, Federal Emergency Management Agency, Washington, D.C., FEMA 145, August, 1987.

Dam Safety Guidebook, STS Consultants, Ltd., Lansing, Michigan, 1985.

Glossary of Terms for Dam Safety, Federal Emergency Management Agency, Washington, D.C., FEMA 148, August, 1988.

Inspection of Embankment Dams, Training Aids for Dam Safety (TADS), Bureau of Reclamation, Denver, Colorado, 1988.

Safety Evaluation of Small Earth Dams, Arkansas Soil and Water Conservation Commission, Little Rock, Arkansas, 1984.

Wahlstrom, Ernest F. Dams, Dam Foundations, and Reservoir Sites, Elsevier Scientific Publishing Company, New York, 1974.

---

## ACKNOWLEDGEMENTS

The subject of dam safety has attracted a great deal of attention in recent years, and in preparing this manual, information from a number of sources was used. The National Dam Safety Program, instituted in response to several major dam failures in the early 1970's, focused on the problem nationwide. Under this program the U.S. Army Corps of Engineers and the Arkansas Soil and Water Conservation Commission worked together to inspect many dams throughout the State. In recent years, the Federal Emergency Management Agency (FEMA) has taken the lead in providing assistance to states in promoting dam safety. The National Dam Safety Program Act of 1996 continues to reinforce the commitment by the Federal Government to dam safety.

The assistance and training provided by FEMA, the Association of State Dam Safety Officials (ASDSO) and other states is reflected extensively in this publication. Manuals and guidebooks published by these organizations were extremely helpful, especially the Training and Aids for Dam Safety (TADS) modules coordinated by the Bureau of Reclamation and Dam Safety: An Owner's Guidance Manual published by FEMA.

The cooperation of the owners of dams within the State is of course essential to the success of the State's dam safety effort. The agreeable and helpful response of most of the owners, both public and private, with which this agency has come in contact in the course of its dam safety activities, has been most gratifying. The ultimate purpose of such a program is the protection of the lives and property of citizens of the State, and the ready acceptance of this goal by the majority of the wide range of individuals and groups bearing the responsibility for the safety of dams is very much appreciated.

**This publication was funded by a grant from the Federal Emergency Management Agency, National Dam Safety Program.**

---

## FOREWORD

This manual presents a basic discussion of how to evaluate the safety of a small earthen dam. Its intent is to inform the dam owner or operator of general aspects of inspections and preventive maintenance so that he should be able to recognize certain unsafe conditions that may be associated with such structures. Once unsafe conditions are recognized, professional services may be obtained to assess the problem and to take appropriate remedial action. The Arkansas Soil and Water Conservation Commission cannot provide consulting engineering services, but it does maintain a list of private firms that have performed this work in the State. This manual provides general guidance on some of the more common problems, but it is not intended to cover every type of condition, situation, or emergency that could possibly cause a dam to become unsafe or fail.

It should be noted that the condition of a dam depends on many internal and external conditions that may be constantly changing, thereby causing the overall health of the dam to evolve over time. It is incorrect and unwise to assume that the conditions of a dam at any given time will continue to represent its conditions at some time in the future. Only through continued care and evaluation can there be a reasonable chance that unsafe conditions will be detected.

The design of an earth dam is the task of an experienced professional engineer. Likewise the implementation of major remedial measures for a dam generally requires a consultant. The application of trial-and-error "home remedies" to dam problems is not recommended, and such an approach will, in the long run, likely prove to be far more costly than obtaining and acting on professional guidance. The text and illustrations of this manual are not intended to serve as a design guide either for the construction of new dams or for extensive remedial measures for existing dams. Rather they are intended to serve as a source of information which the owner can use in his regular maintenance and inspection activities and as a general guide as to when professional services are needed to insure the safety of a dam.

---

## INTRODUCTION

This manual was written to assist you, the dam owner, in inspecting your dam and maintaining it in a safe and stable condition. The focus of any dam safety effort is, of course, safety: the protection of lives and property in the area downstream from the impoundment. Every owner should be aware of the potential hazard that his dam might pose to the downstream area and of the need to properly maintain the dam in such a way as to reduce this hazard as much as possible. The liability for damages resulting from a dam failure rests with the owner of the dam (Act 339 of 1983).

A good inspection and maintenance program is important. Your dam represents a considerable investment. Replacement costs would be high. Loss of the dam would probably mean the loss of a water source, recreational facility, flood protection, or other assets.

Dams are products of our technology and, like automobiles, provide us with many benefits. Like autos, however, they may not be thoroughly understood by persons who own them. Consequently, their maintenance is often neglected, and their potential for doing great harm and damage - and costing large amounts of money as a result - is often not appreciated until an accident occurs.

As in the case with buildings, highways, and other works that we construct, dams require an on-going maintenance program to insure their continued useful life. This fact has not always been fully appreciated. Often there is a tendency to neglect them once construction is completed.

There are many ways an earth dam can fail. These include, but are not limited to sliding, piping (internal erosion of soil particles from the embankment), overtopping during periods of high water, erosion, liquefaction of earth materials (which may occur when embankment material is poorly drained and loosely compacted), structural failures resulting from excessive seepage or other causes, and failures of the foundation upon which the structure rests. Problems associated with outlets and spillways can also be contributing factors.

Like most works of man, dams should not be considered to have an unlimited useful life. Ernest F. Wahlstrom, Professor of Geological Sciences at the University of Colorado, states in Dams, Dam Foundations, and Reservoir Sites: "The ultimate fate of all dams and reservoirs, unless they are carefully constructed and maintained, is deterioration and failure or filling by sedimentation. Every reservoir that impounds water behind a dam is a real or potential threat to those who live and work in flow channels below it and, in some locations where earthquake shocks, movements along bedrock faults beneath dams, or collapse of large volumes of earth materials into reservoirs are distinct possibilities, even the most skilled design and continued maintenance may not preclude failures that are disastrous to life and property." So, many events and circumstances can threaten the safety of a dam, including floods, landslides, earthquakes, and - less dramatically but just as surely - neglect and the deterioration which inevitably occurs through neglect.



---

## CHAPTER 1: TYPES OF DAMS

Before discussing some of the procedures for inspecting a dam, it is appropriate to make a few general comments about such structures. In simplistic terms, a dam is a barrier constructed across a watercourse for the purpose of storing water. Perhaps the most common type is the earthfill or earthen dam, and this manual deals with small dams of this mode of construction. There are also concrete dams (gravity, arch, multi-arch, and buttress types) and dams constructed of masonry, timber, rockfill, steel, and combinations of these materials (Figure 1.1).

**FIGURE 1.1** Types of Dams



**a. Rock-filled gravity dam**



**b. Concrete arch dam**



**c. Small earthen dam**

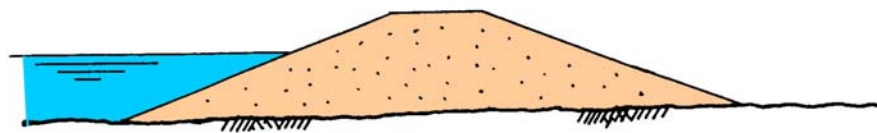


**d. Concrete dam**

---

Earth dams may be further classified as simple, core, and diaphragm (Figure 1.2). The simple embankment type consists of reasonably uniform material throughout, sometimes with a blanket of highly impervious material placed on its upstream face. This type of dam is also referred to as a homogeneous embankment dam. Core embankments employ a central zone or core of carefully chosen material, which is less pervious than the rest of the dam. Clay soils are often used for the core, as this type of material is particularly suitable. This dam is also referred to as a zoned embankment dam. Diaphragm type dams incorporate a relatively thin section of concrete, steel, or wood - sometimes referred to as a cut-off wall - in the central portion of the embankment, which forms a barrier to the flow of water percolating through the dam. Occasionally an earth dam is constructed with both a central core and a diaphragm.

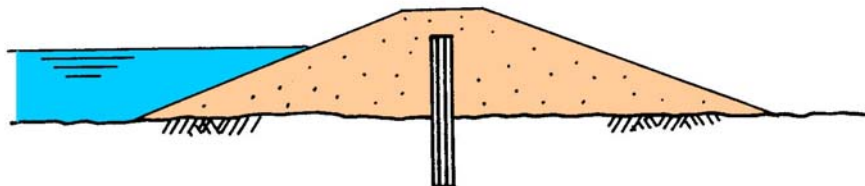
**FIGURE 1.2**  
**TYPES OF EARTH DAMS**



**(a) simple**



**(b) core**



**(c) diaphragm**

---

## CHAPTER 2: A TYPICAL DAM AND ITS PRINCIPAL PARTS

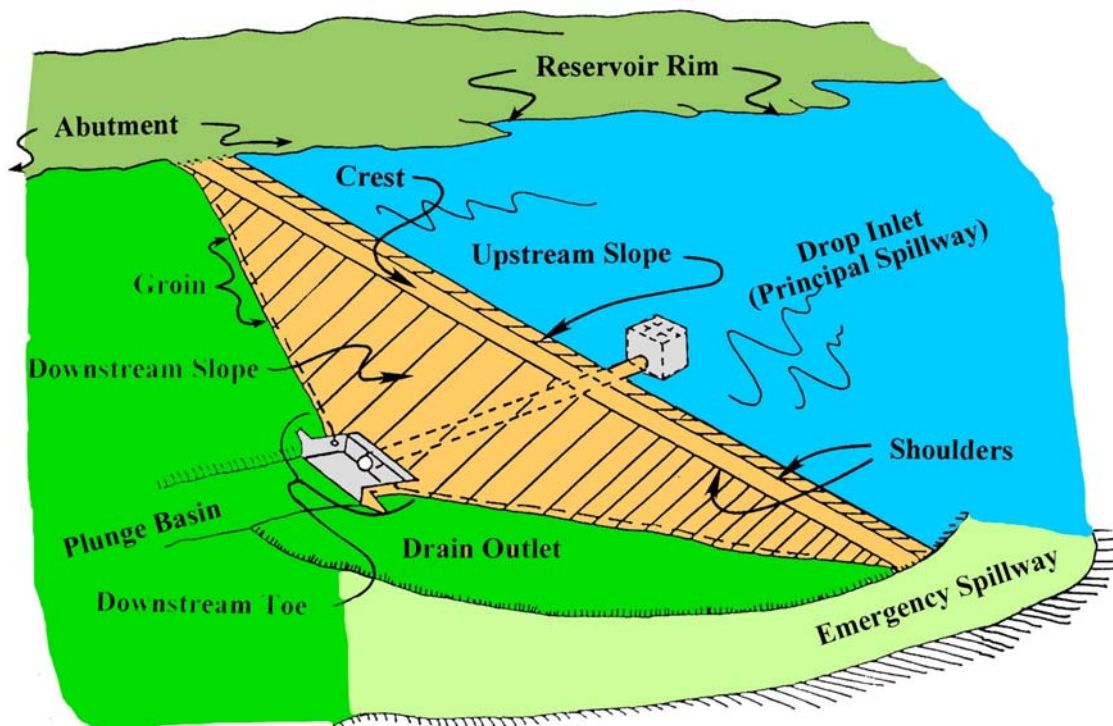
As stated earlier, a dam is essentially a barrier constructed across a watercourse for the purpose of storing water. There are certain features of such structures, such as the principal spillway, which perform vital functions and are common to practically all small earth dams.

### DEFINITIONS

Figure 2.1 illustrates many of the principal parts of an earthfill dam. Understanding the purpose of these is essential to any evaluation of a dam's condition.

**Abutment**: The abutment is that part of the valley side against which the dam is constructed. The contact between the abutment and the embankment slope is called the slope-abutment-interface or **groin**. The abutments and groins are designated as left or right when facing downstream while standing on the crest of the dam.

**FIGURE 2.1  
PRIMARY COMPONENTS OF A DAM**



---

**Appurtenant structures:** Appurtenant structures refer to ancillary features of a dam such as outlet works, spillways, powerhouse, tunnels, etc.

**Core:** The core is the central portion of a zoned earth dam, composed of impervious material.

**Crest:** The crest is the top surface of the dam. Often a roadway is established across the crest for traffic or to facilitate dam operation, inspection and maintenance. The shoulders are the upstream and downstream edges of the crest.

**Cutoff trench:** The cutoff trench is an excavation in the foundation of a dam for the purpose of construction of a vertical barrier (such as a core or diaphragm) to seepage.

**Downstream Slope:** The downstream slope is the inclined surface of the dam away from the reservoir. This slope also requires protection from erosive effects of rain. Grass is often used for erosion protection on the downstream slope.

**Emergency Spillway:** The emergency spillway is designed to safely pass the discharge of large storms or flood flows, thereby preventing the dam from being overtopped and possibly breached.

**Foundation drains:** Foundation drains are various types of systems employing pipe, gravel, etc., within an embankment which serve to collect seepage water and move it to a point where it can be safely discharged without deterioration of the dam.

**Intake structure:** The intake structure is the part of a drop inlet spillway through which water enters.

**Outlet Works:** The outlet works are structures (pipes or culverts) through which normal reservoir releases are made. Outlet works can also be used to drain the reservoir.

**Principal Spillway:** The principal spillway is the initial spillway to carry the storm or flood discharge. It may be either a drop inlet or an overflow structure. Usually, the principal spillway is designed to maintain the water in the reservoir at a constant level.

**Reservoir:** The reservoir is the body of water impounded by the dam.

**Riprap:** Riprap is a layer of stones, broken rock, or precast blocks placed in random fashion on the upstream slope of an embankment dam, on reservoir shores, or on the sides of channels to protect against wave erosion and ice action. Very large riprap is referred to as armoring.

---

**Spillway:** The spillway is a structure over or through which storm or flood flows are discharged from the reservoir. If the rate of flow is controlled by mechanical means, such as gates, the structure is considered a controlled spillway. Otherwise, the spillway is considered uncontrolled. See Emergency Spillway and Principal Spillway.

**Stilling basin or plunge basin:** The stilling basin or plunge basin is a basin or pool area at the toe of the dam into which the outlet works discharge. This area is designed to dissipate the energy of the flow so as to prevent downstream scour or erosion.

**Toe:** The toe (or downstream toe) is the junction of the downstream slope of the dam with the ground surface.

**Toe Drain:** The toe drain carries internal seepage water away from the dam. The toe drain is a collector pipe surrounded by a filter material and placed in the toe of the dam or laid in a trench beneath the toe. A toe drain collects seepage water from the embankment and foundation and carries it to an outfall pipe that discharges the seepage water into the spillway or outlet-works basins or otherwise safely away from the dam. The outfall is the discharge point from the toe drain. The outfall is a convenient point for measuring seepage quantities.

**Trash rack:** The trash rack is a screening device located at an intake structure to prevent the entry of debris.

**Upstream Slope:** The upstream slope is the inclined surface of the dam that is in contact with the reservoir. This slope must be protected from the erosion due to waves. Erosion protection may include grass, or the placement of riprap or some other durable material.



---

## CHAPTER 3: IS YOUR DAM REALLY A HAZARD?

Every dam represents a potential hazard to the area downstream from it, simply because of the inherent amount of destructive energy that would be unleashed if the stored water behind it was suddenly released. Thus a dam is generally classified as to the degree of hazard it poses simply on the basis of its location, without regard to the type of structure or the physical condition. **High Hazard** dams are those whose location is such that in the event of a failure there would be probable loss of life and/or excessive damage. **Significant Hazard** dams are those where loss of life is unlikely and damage would be appreciable. For **Low Hazard** dams no loss of life is expected, and damage would be minimal. (See Figure 3.2)



**FIGURE 3.1**  
**House immediately below earthen dam**

In view of the fact that a dam owner is legally liable for damages resulting from the failure of his dam, it is a good idea for every owner of a dam to pause and consider what lies below it. Several questions need to be asked.

What is the nature of the land use downstream: wooded or agricultural land, scattered homes, roads, villages, urban areas? How many structures are located within a half mile, a mile or several miles of the dam?

How are downstream structures located with regard to the watercourse or floodplain, with respect to both distances from the watercourse or river and elevation above it? Think about the first-floor elevation of the homes located downstream. Are they only a few feet above the level of the water surface, or are they on bluffs high above it and out of danger?

Is the valley below the dam characterized by steep hills forming a narrow gorge, or is there a broad floodplain? This is an important consideration, as it determines whether water released in a dam failure would soon spread out and lose its force or whether a destructive wall of water would travel a long distance downstream.

---

An awareness of the state of development of the downstream area should be a continuing concern, as conditions below a dam often change appreciably over the years. Thus a dam which posed little hazard when constructed may represent a formidable hazard later as the downstream area develops. When this is the case, it is imperative that an **emergency action plan** be prepared for the structure, with adequate provision for alerting those in the affected area in the event the dam's safety is threatened. The Arkansas Soil and Water Conservation Commission, in conjunction with the Arkansas Department of Emergency Management (ADEM), can provide guidance on the establishment of such plans. **See Chapter 6: Emergency Preparedness.**

The Dam Safety Program of the State of Arkansas defines dam safety hazards as follows:

**FIGURE 3.2  
HAZARD CLASSIFICATION FOR DAMS IN ARKANSAS**

<b>CATEGORY</b>	<b>LOSS OF HUMAN LIFE</b>	<b>ECONOMIC LOSS</b>
<b>HIGH</b>	YES	Excessive (Extensive public, industrial, commercial, or agricultural development); over \$500,000.
<b>SIGNIFICANT</b>	NO	Appreciable (Significant structures, industrial, or commercial development, or cropland); \$100,000 to \$500,000.
<b>LOW</b>	NO	Minimal (No significant structures; pastures, woodland, or largely undeveloped land); less than \$100,000.

---

## CHAPTER 4: LIABILITY AND RESPONSIBILITY OF DAM OWNERS

Dam ownership carries with it significant legal responsibilities. The dam owner should be aware of the potential liabilities and how to conscientiously deal with these liabilities.

This chapter will deal with general legal and insurance matters to help you minimize exposure to liability due to dam ownership or operation. You will become familiar with the responsibilities imposed by dam ownership. Since this guidebook is intended to provide general guidance to dam owners, it cannot answer specific legal issues. Dam owners and operators should obtain competent legal counsel when dealing with specific issues.



### 1. Potential Liability Problems for Dam Owners

A dam owner should first be familiar with the legal obligation to maintain a dam in a safe and reasonable condition. The general rule is that a dam owner is responsible for its safety. Liability can be imposed upon a dam owner if he or she fails to maintain, repair or operate the dam in a safe and proper manner. This liability can apply not only to the dam owner, but also to any company that possesses that dam, or any person who operates or maintains the dam. If an unsafe condition existed prior to ownership of the dam, the new dam owner could not be absolved of liability should the dam fail during his term of ownership. Thus, the owner must carefully inspect the structural integrity of any dam prior to purchase and then provide inspection, maintenance and repair thereafter.

Since the dam owner is responsible for dam safety, it is important to note what you must do to comply with that legal duty. The dam owner must do what is necessary to avoid injuring persons or property. This usually applies to circumstances and situations which can be anticipated. A dam owner would generally not be responsible for those circumstances that a reasonable person could not anticipate. One key action is almost universally recognized: In order to meet your responsibility to maintain your dam in a reasonable and safe condition, virtually every jurisdiction will require a dam owner to conduct regular inspections of the dam and maintain and/or repair deficient items. Regular inspections by qualified professionals are virtually mandated if a dam owner is to identify all problems and correct them.



---

## **2. Potential Personal Injury Liability**

Dams and impoundments are popular places, even if located in remote areas. A dam may be visited by employees, contractors, invited visitors or trespassers. The presence of these persons is a potential liability to the dam owner. Liability or worker's compensation insurance should cover employees, contractors or invited guests. However, the trespasser presents a unique problem.

The majority of trespassers at a dam site are probably members of the public who wish to use the site for fishing, boating or swimming. While they may mean no harm, their unauthorized use of the site is a serious liability problem for the dam owner.

The dam owner is responsible for making and keeping his premises safe. The general rule is that the dam owner must avoid conduct or conditions which could injure any person, even one who trespasses. If the dam owner knows that an unsafe condition exists he is responsible to correct it and/or post warnings. Typical dangers at a dam site include fast moving water, open spillway (pipes) and thin ice. A particularly dangerous area is the spillway which not only has fast moving water but undertow at the spillway bottom.

Owners of dams are charged with greater responsibility when the trespassers are children. By reason of children's inability to understand the danger which a condition may pose, a dam owner is expected to protect children from the dangers of a dam site. In effect, this rule requires you to anticipate what parts of the facility would be particularly attractive to children. Since signs may not adequately warn children, security fencing is necessary. Dam sites located near state or county roads, campgrounds or picnic areas, or near populated areas will attract many more people. These popular dam sites require frequent visits by the dam owner to inspect and assure safety.

## **3. Potential Liability Due to Operation of the Dam**

In addition to liability problems arising out of dam ownership, operation of the dam is also a significant legal issue. First and foremost is the simple right to operate. State law requires a permit to construct, repair and/or operate a dam. The Arkansas Soil and Water Conservation Commission should be consulted for particular matters regarding this issue. In addition, a dam on a navigable stream may involve federal government regulations, such as a Corps of Engineers permit, which may govern operation.

---

Beyond the basic permitting question, all dam owners must consider the effect of dam operation on the rights of other water users, whether they are upstream or downstream from the facility. For both upstream and downstream users, this responsibility includes a duty to avoid negligent flooding of their property.

A general rule in all states is that the dam owner must protect downstream landowners from additional flooding, if those downstream owners have come to rely on the existence and operation of the dam to reduce flooding. The extent of this duty will vary from state to state, so the dam owner is advised to consider dam operations in the light of the downstream landowners' expectations and dependency on the dam to prevent flooding.

In situations where there is no specific duty to protect downstream owners from flooding, the dam owner must still operate the dam conscientiously. As the dam owner, you must be in a position to clearly show that your dam did not increase flooding.

Upstream users may also have the right to be protected from damage caused by operation of the dam. Therefore, the dam owner is advised to assess the legal as well as the physical impact of any change in the level of the impoundment, including dam removal.

#### **4. Environmental Concerns**

While there are an infinite number of potential environmental issues, a few basic areas of concern should be addressed before a dam is purchased or its method of operation altered. Since this guidebook cannot address all environmental issues, you should seek professional evaluation of potential environmental problems. However, we can give you some general guidance.

Dams with gates for regulating the impoundment and downstream flow can cause water levels to fluctuate. These fluctuations can cause gain or loss of wetland habitat affecting fish spawning, waterfowl, and shorebird nesting. Fluctuations of water levels can also increase shore erosion, cause unsafe ice conditions and the like. At this time, virtually all states have laws concerning wetlands.

Variations in the impoundment and downstream elevations can also impact fish in the impoundment or the river. Evaluation of existing fisheries and the impact of changes will require consultation with the Arkansas Game and Fish Commission.

---

Within a dam impoundment, it is likely that sediments have accumulated over the years. Release of these sediments downstream by operation of the dam, changing the impoundment level, or removing the dam could result in significant damage and liability to the dam owner. In addition, release of sediments downstream could adversely impact plant and wildlife for significant time periods. It is also quite common that the sediments contain pollutants. Thus, the dam owner should carefully consider the possible impacts of dam operation and how it affects the environment.

## **5. A Final Word About Liability**

The dam owner is liable. This section on liability is only a general introduction to the many issues regarding dam owner liability. The discussion is only intended to provide a basis for you to consider liability potentials and to encourage you, the dam owner, to seek competent legal counsel and/or technical experts to help resolve your problems. Where the ownership and operation of dams and impoundments are concerned, the old saying, “an ounce of prevention . . .” is appropriate. Following it will truly save you the “pound of cure.”

## **6. Insurance**

The purpose of this section is to provide dam owners with general information about dam insurance. The primary goal of dam insurance is to share the risk and protect the assets and financial well being of the dam owner. Insurance cannot make a dam safe, or make an inherently faulty construction or renovation project into a good one. Inadequate coverages or insufficient limits on those coverages, coupled with a major loss, can mean the financial ruin of a dam owner. In order to obtain insurance and get a reasonable rate, the dam owner will have to show that the dam meets all state standards with regard to design, construction and operation.

When insuring a dam, the owner should select and involve a competent insurance agent or broker as early as possible. Whenever a dam project requires new construction, reconstruction or renovation, any lender involved will be very interested in the adequacy of the dam owner’s insurance program.

---

The primary job of the agent is to serve as a contact point between the client and the insurance companies, and to place the insurance coverage with appropriate companies. The agent, depending on his skill, dedication and relationship with insurance markets, can greatly affect both the premiums quoted by the companies and the availability of certain coverages. Although most types of insurance have standard contract forms, many of the details of the coverage are open to negotiation and can be tailored to meet the needs of the dam owner, except in those areas mandated by law. It is important to work with your agent to define conditions of the policy that are of real importance and those that need modification.

Although the size of an agency is not an indication of its quality or experience, large national firms will frequently have more extensive consulting services available. Also, dams are an unusual risk to most insurance companies and large agencies often have personnel who have worked with other dam owners and industries with dam experience.

Contact your insurance agency or state insurance commissioner to get a list of insurance agencies who may assist you with dam insurance.

There are various types of insurance the dam owner should consider, in consultation with his agent. These include the standard "All Risk" property damage policy with a flood coverage amendment, business interruption insurance, boiler machinery coverage, general liability, automobile liability, workers compensation, and umbrella liability policy coverage.

Because of the many types of insurance protection required and available, the development of an effective insurance program requires care and planning. If you involve a qualified insurance agent in the early planning and work diligently to define your insurance needs, then an effective and economic program can be developed.