



Locks & the River

A boater's guide to safe travel on the Upper Mississippi River & the Illinois Waterway.



watersafety.usace.army.mil

Brochure created by CEMVR IM-I



US Army Corps
of Engineers®

INTRODUCTION

We hope you find this information useful for boating on the Upper Mississippi River and Illinois Waterway. The purpose of this booklet is to provide you with information on locking through the locks and dams. It will also alert you to some special hazards found on the waterways. This brochure is not intended to give you the basics needed for safe boating. If you are a new boater in need of basic instruction or an experienced boater desiring an update, call the Boat U.S. Course Line Mon. - Fri. 9 am to 6 pm EST at 1-800-336-BOAT (2628) for the location of the nearest boating class. You may also explore the Boat U.S. website at www.boatus.com, the US Power Squadron at www.usps.org or the US Coast Guard Auxiliary site at www.cgaux.org. They provide extensive safe boating and water safety classes, which may even be available online.

To put it more simply,
"KNOW BEFORE YOU GO!"

We wish you a safe and enjoyable experience
on our nation's waterways.



YOU can make a DIFFERENCE!



LOCATION MAP

Upper Mississippi River & Illinois Waterway

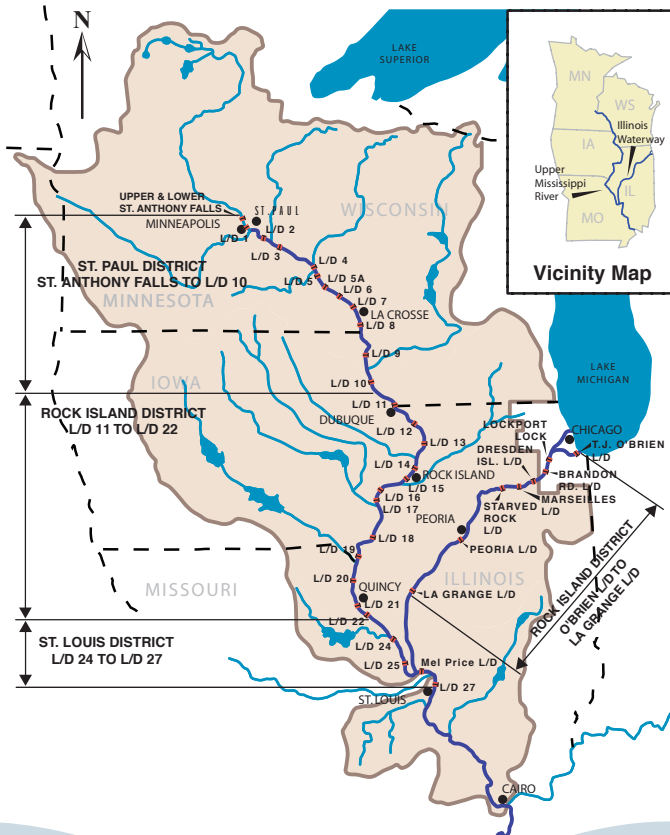


TABLE OF CONTENTS

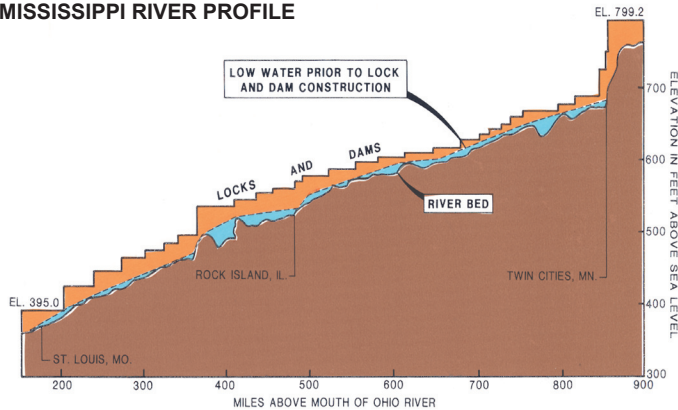
Introduction	1
Stairway for Boats	3-4
How to Lock Through	5-8
Special Considerations	9
Special River Hazards	10-14
Wingdams	10
Towboats	11-12
Other Hazards	13
The Drowning Machine	14
Restricted Areas	
Mississippi River	15
Illinois Waterway	16
Getting Around	17-20
Buoys	17
Radio Communications	18
More Information	19
Navigation Charts	20
Location Map	21

STAIRWAY FOR BOATS

On the Upper Mississippi River, 29 locks and dams hold back water to form pools very similar to long narrow lakes. These 29 locks and dams begin at Upper St. Anthony Falls above Minneapolis/St. Paul, MN. and end near St. Louis, MO, with a drop of 420 feet in elevation.

These dams pool the water behind them making the river deep enough for large towboats to navigate. Towboats need a consistent nine-foot deep channel of water in order to navigate up and down the river. The locks then form a “stairway for boats,” raising or lowering them from one pool to the next as they go up or down the river.

MISSISSIPPI RIVER PROFILE



GETTING AROUND

Navigation Charts

Navigation charts are your road maps of the waterway. The Upper Mississippi River charts cover the river from Upper St. Anthony Falls above St. Paul, MN., to Cairo, IL. The Illinois Waterway charts cover the entire length of that waterway.

To order navigation charts of the Upper Mississippi River or the Illinois Waterway, please call, write, or e-mail for current price and ordering information.

U.S. Army Corps of Engineers Mississippi River Visitor Center

Locks and Dam 15

Clock Tower Building, Box 2004

Rock Island, IL 61201-2004

Phone (309)794-5338 or 1-800-645-0248

Fax (309)794-5741

E-mail MVRODMN15@usace.army.mil

U.S. Army Corps of Engineers Illinois Waterway Visitor Center

950 North 27th Road

Ottawa, IL 61350

Phone (815)667-4054

Fax (815)667-4954

E-mail MVRODIAVC@usace.army.mil

U.S. Army Corps of Engineers National Great Rivers Museum

P.O. Box 337

Alton, IL 62002

Phone (877)462-6979

E-mail riversproject@usace.army.mil

U.S. Army Corps of Engineers St. Paul District Library

Phone (651)290-5680

Fax (651)290-5256

(No credit cards accepted.)



Note: Both visitor centers and museum accept credit card orders by telephone and mail.

For other river system charts visit the Corps Navigation Data Center at:

www.iwr.usace.army.mil/ndc

GETTING AROUND

More Information...

Upper St. Anthony Falls (1) through Lock and Dam 10

U.S. Army Corps of Engineers
St. Paul District
190 Fifth Street East
St. Paul, MN 55101-1638
(651) 290-5200 (Upper Mississippi River)
<http://www.mvp.usace.army.mil/>

Locks and Dams 24 through 27

U.S. Army Corps of Engineers
St. Louis District
1222 Spruce Street
St. Louis, MO 63103-2833
(314) 331-8068 or (314) 331-8002
(Upper Mississippi River)
<http://www.mvs.usace.army.mil/>

Locks and Dams 11 through 22 Illinois Waterway

U.S. Army Corps of Engineers
Rock Island District
Clock Tower Building
P.O. Box 2004
Rock Island, IL 61204-2004
(309) 794-5338 (Upper Mississippi River)
(815) 667-4054 (Illinois Waterway)
<http://www.mvr.usace.army.mil/>
or www.missriver.org



Boating Classes Near You

1-800-336-BOAT

Online Classes

www.boatsafe.com

or

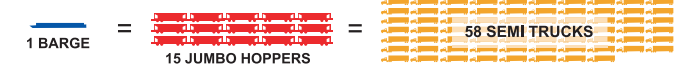
State DNR Sites

(Look Under Boating Safety Education)

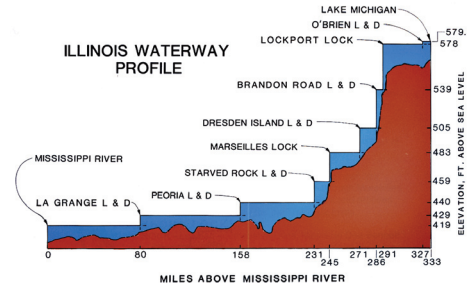
STAIRWAY FOR BOATS

A towboat can push a maximum of 15 loaded barges on the Upper Mississippi River and the Illinois Waterway. That is the equivalent to a convoy of 870 semi-trucks rolling down the highway, or a train pulling 225 jumbo hopper-cars. The commercial towboats that navigate our nation's waterways transport bulk goods such as grain, coal, oil, chemicals, salt, cement, scrap metals, and building materials.

Equivalent Units



Once below St. Louis, the Mississippi River is naturally deep enough, so there is no need for locks and dams. Here, a towboat typically pushes up to 40 - 60 barges per tow!



The Illinois Waterway operates in a similar fashion with eight locks and dams that drop 163 feet from Lake Michigan to the Mississippi River.

HOW TO LOCK THROUGH

- Approach the lock away from the posted restricted areas. These areas may vary from lock to lock. See pages 15 and 16 of this brochure.
- Let the lock personnel know you wish to pass through the lock. Pull the small boat signal chain usually found in a ladder recess on the lock wall or use the marine radio channels found on page 18 of this brochure.



- Red** - Lock is not available, stay clear.
- Amber** - Lock is being made ready, standby.
- Green** - Lock is ready. Lock staff will sound a long blast of the whistle. If you are at a twin lock, two long blasts will be sounded for the riverside lock, one long blast for the landside lock.

GETTING AROUND

Radio Communications

All rules and regulations pertaining to VHF-FM marine radios apply on inland waterways. While a radio is not required equipment, it is a valuable safety and convenience item.

Here are some of the channels that you may use on the river:

- **Channel 16** - For calling and distress only, keep use to absolute minimum. (All locks and Chicago Harbor lock.)
- **Channel 14** - Used to contact locks between Upper St. Anthony Falls to Lock 24 and Mel Price Lock. All Illinois Waterway Locks.
- **Channel 12** - Used to contact locks 25 and 27.
- **Channel 13** - Used by towboats for navigation. Recreation boaters can monitor this channel to determine the intentions of the approaching tows.
- **Channel 22A** - Used by the Coast Guard to broadcast notices to mariners.
- **Local weather** - Monitors local National Weather Service broadcast to keep abreast of weather conditions.
- **Public service channels** are available for recreational use. Check local custom to see which channels are used within that area.

For more information on marine-radio use contact:

Federal Communication Commission
445 12th Street SW
Washington, DC 20554
<http://www.fcc.gov>

GETTING AROUND

Buoys

Just as our highways are marked and signed, our waterways use a buoy system to mark and sign them. The two most common buoys seen on our waterways are the green can buoy and the red nun buoy these are known as navigation aids. The red and green buoys are used to mark the nine-foot channel.

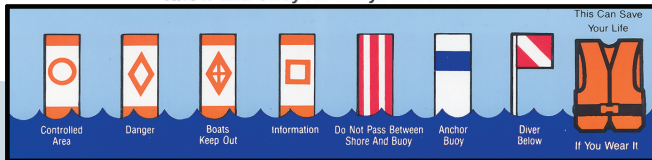


When traveling upstream, the green buoy is on the port (left) side of the channel, and the red buoy is on the starboard (right) side.

When heading downstream, they will be opposite. Also, use caution because not all areas are marked and the buoys may drift off location. The river is “ever-changing.”

There are many other buoys and aids to navigation you will encounter on our nations waterways. You will learn more about them if you take a boating class.

Know and Obey All Buoys and Markers



HOW TO LOCK THROUGH



- Enter the lock chamber at no wake speed and pull forward to allow other boats to fall in behind you.
- Use your bumpers.

- Secure your boat by holding onto the lines provided. Bring an adequate amount of your own line because not all locks provide lines. **Do not tie off!** Simply take in or pay out line as the water level changes.



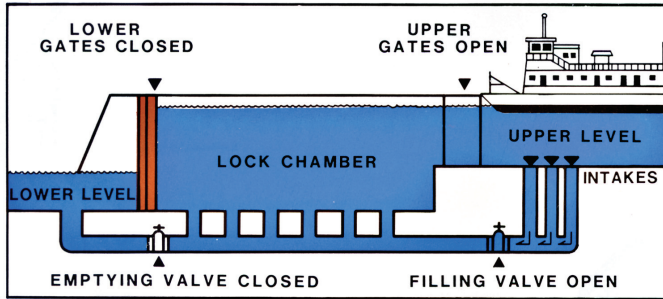
- When the lockage is complete, lock staff will signal permission to leave with one short blast. If you are in twin locks, two short blasts will be sounded for the riverside lock, one short blast for the landside lock during departure.
- Leave at no-wake speed.
- There is no fee for using a lock.



HOW TO LOCK THROUGH

Going Up or Down the Steps

To go from one pool level or “step” to another, a navigation lock is used as a “water elevator.” Based on the principle that water always seeks its own level, water levels are changed using underground tunnels and filling and emptying valves. No pumping is required in the process.

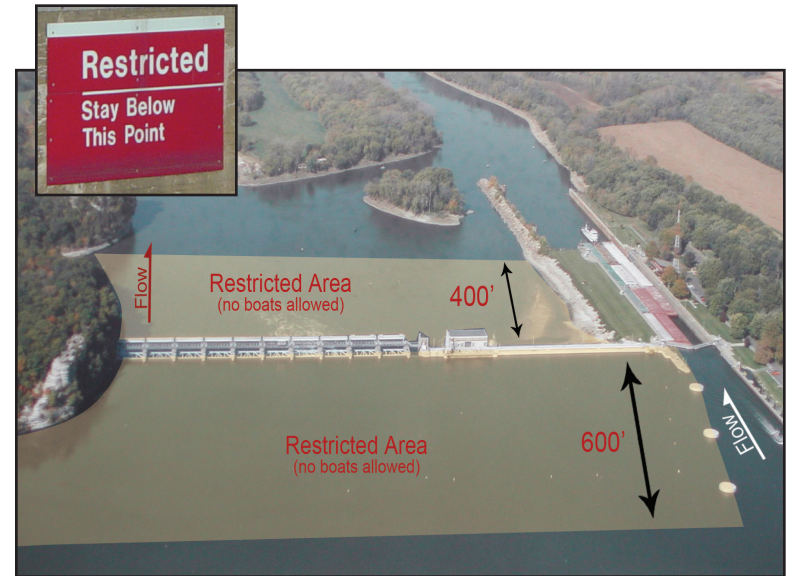


For a boat going downstream, the lock is first filled by opening the filling valve. The upper and lower gates are closed, so the level of the chamber rises to the upstream level. The upper gate then opens and the boat moves into the lock.



RESTRICTED AREAS

Illinois Waterway



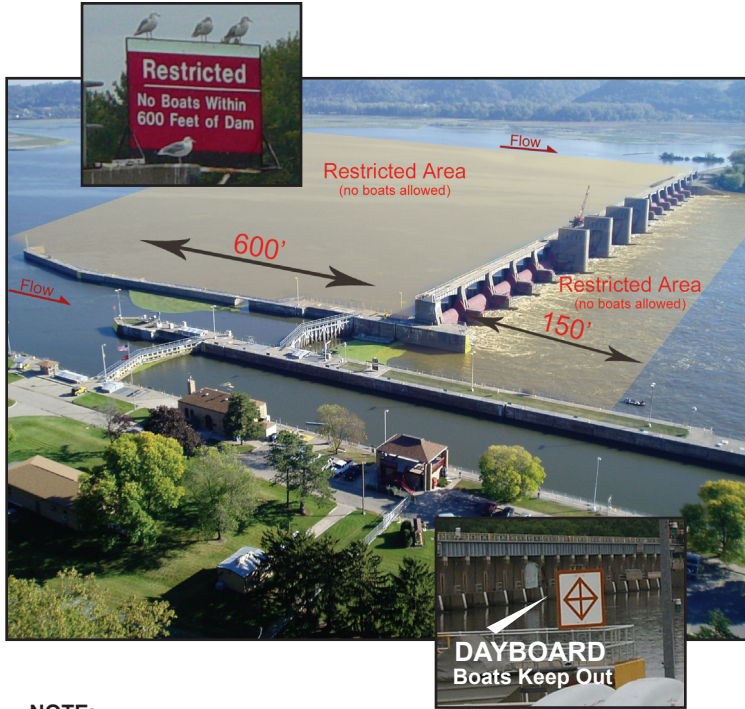
The above picture represents the restricted zones at O'Brien Lock, Lockport Lock, Brandon Road Lock, Dresden Lock, Marseilles Lock, and Starved Rock Lock.

NOTE:

The Peoria and LaGrange Locks have wicket dams and when the wicket dam is up, the restricted area is 150 feet below and 600 feet above. The distance of the restricted areas varies from lock to lock so please watch for the restricted area signs.

RESTRICTED AREAS

Upper Mississippi River



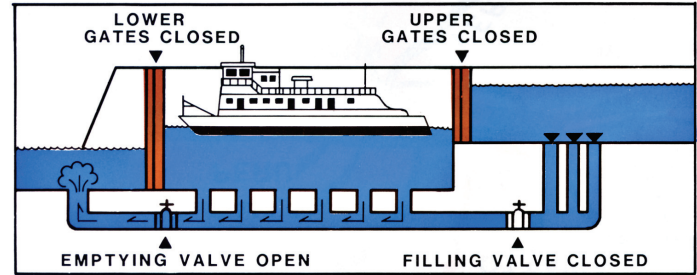
NOTE:

The marking of the restricted zones may consist of signs, buoys, aids to navigation, and lights. Be familiar with the markings in the areas in which you are boating.

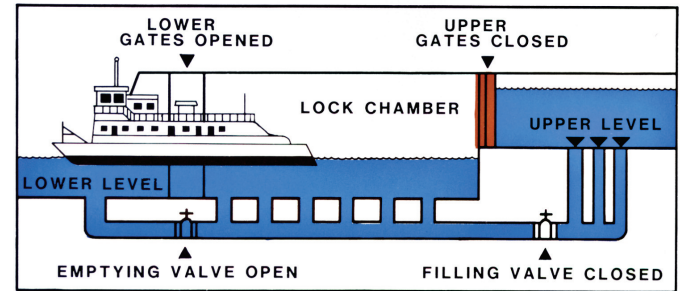
Mel Price Lock and Dam restricted area is 1000 feet above and 500 feet below the dam.

HOW TO LOCK THROUGH

Going Up or Down the Steps



To lower the boat, the gates are closed behind it, the filling valve is closed, and the emptying valve is opened. The pressure of the higher water in the lock drains to the downstream level in minutes.



The lower gates are then opened and the boat moves out on the lower water level. For a boat going upstream the process is reversed.

SPECIAL CONSIDERATIONS

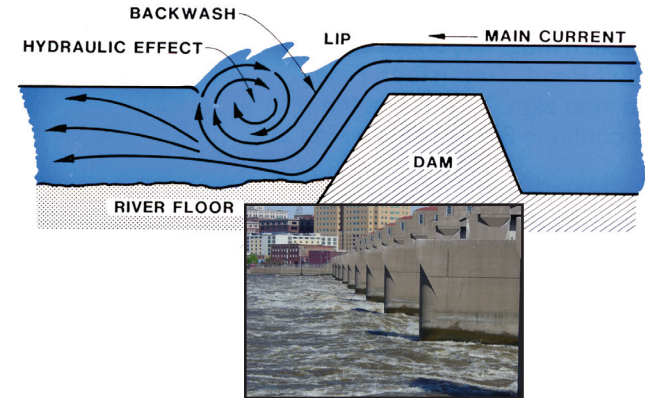
- Engines should be shut down during the lockage.
- It is strongly recommended that you wear your life jacket at all times and stay in your boat.
- If the lock is in use, find a safe place to wait that is well out of the path of the exiting boats. Do not anchor in the channel or tie off to a navigation buoy. Never allow your boat to drift into the restricted area.
- In a crowded lock, you may have to tie up to another boat.
- Under certain conditions and under the direction of the lockmaster, you may occupy the lock with a towboat.
- Do not cut in front of towboats to be first to the lock. Even though you may appear to have arrived first, a tow has the right-of-way and the lockmaster will decide who has priority.
- If you get in trouble and your boat is drawn into the dam, some locations have safety blocks on the upstream side. Grab the attached line as you go by and wait for rescue.



SPECIAL RIVER HAZARDS

The Drowning Machine

All dams have restricted areas! All types of dams create dangerous currents known to some as the “drowning machine.” Most people understand that a boat can be easily swept over a dam, but few boaters realize that the downstream portion of a dam is equally as dangerous. Here is why:



- Recirculating currents can actually draw a boat upstream into danger.
- Recirculating currents contain enough air bubbles to make propellers useless and escape impossible. Even large boats are not safe.
- Rescue is extremely difficult and the chances of survival are very slim.

SPECIAL RIVER HAZARDS

Other Hazards

You can always be assured of at least nine-feet of depth in the main river channel. However, any travel outside the marked channel requires particular attention to the water depth and underwater obstructions. A good depth finder, slow speed, and local knowledge will go a long way in assuring a safe trip. Here are a few things to watch out for:

- **Stump fields.** Many trees were logged from low-lying areas that were permanently flooded with the creation of the lock and dam system. Often stumps still remain just below the water line.
- **Sandbars.** Changing currents and submerged structures can create sandbars just below the water's surface.
- **High water.** High water can bring floating debris and unpredictable currents whether in the main channel or in the backwaters of the river.



- **Low water.** Low water can bring hazards right to the bottom of your boat. For example, a wing dam that you passed safely over earlier in the season may now be inches under the surface.

SPECIAL RIVER HAZARDS

Wingdams

Wingdams are unmarked navigation structures (rock piles) in use on the Upper Mississippi River and the Illinois Waterway to direct water flow to the main channel. They may be just below the water line.



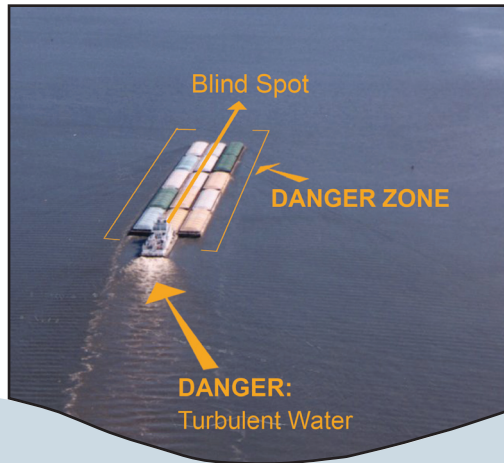
- Check current navigation charts, but be advised that locations are only approximate.
- On calm days and with a trained eye, wing dams can sometimes be recognized by tell tale ripples on the surface of the water.
- If possible, approach unfamiliar areas from downstream or follow experienced boaters.
- Safe boating classes are generally taught by local experienced boaters who will share safe boating tips regarding the waters in your area.

SPECIAL RIVER HAZARDS

Towboats

Tows require significant distances to stop and maneuver. Caution should be used when operating around tows.

- Give tows lots of room; they cannot get out of the channel to steer around you and can take up to one-and-a-half miles to stop. Fact: A water-skier falling 1,000 feet in front of a tow has less than one minute to get out of the way.
- If you cannot see the pilot house, the captain cannot see you and you are in danger.
- Beware of the blind spot that can extend for several hundred feet in front and to the sides of the barges.
- Stay away from the turbulent water created by the propellers behind the towboat.



SPECIAL RIVER HAZARDS

Towboats Continued...



- Beware of boating at night, the navigation lights on the front and rear of the tow can be as much as a quarter of a mile apart.
- Stay away from parked barges (especially upstream of them). The river current can be strong enough to pull swimmers and boats into and under them.
- Know the danger signals. Five short whistle-blasts indicate immediate danger. Make sure the whistle blasts are not directed at you.
- Sail boaters and windsurfers beware, large tows can “steal” your wind.
- Do not anchor in the channel and never tie off to a navigation buoy.