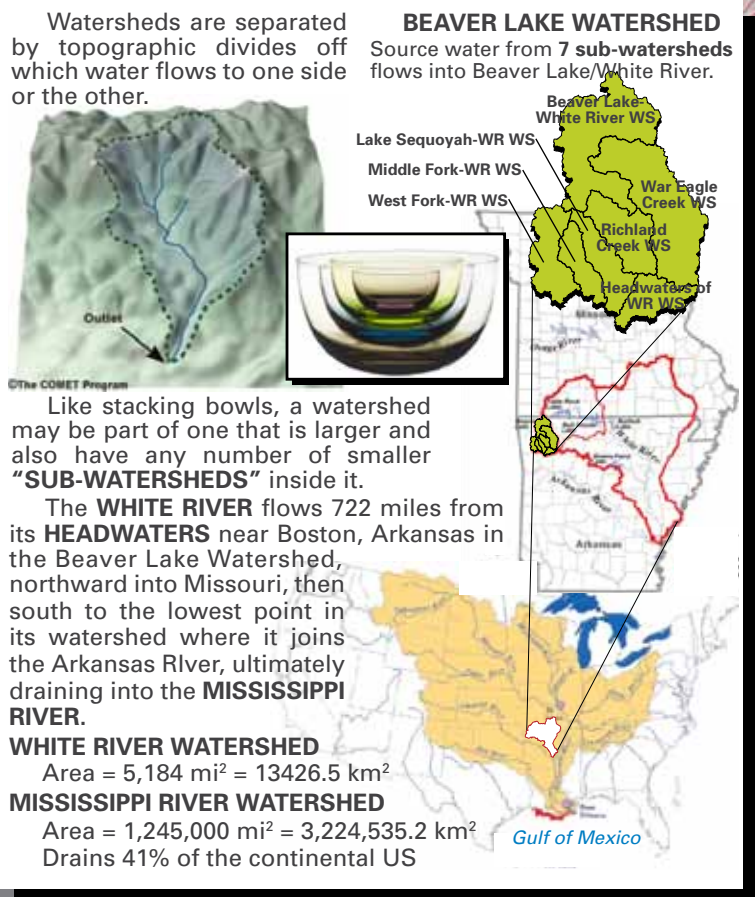
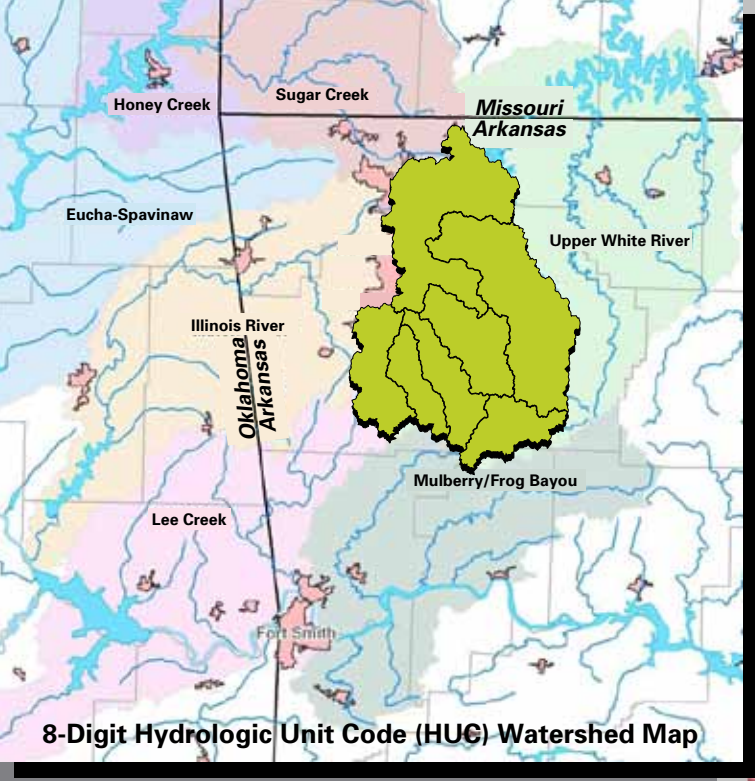


BEAVER LAKE

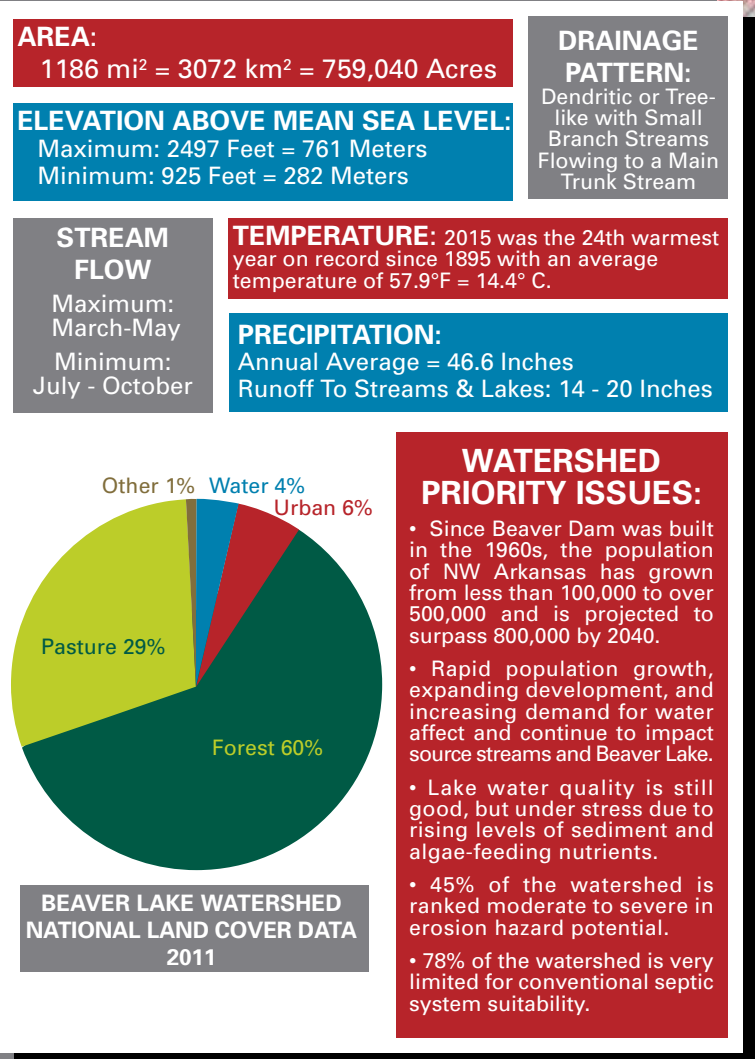
WATERSHEDS



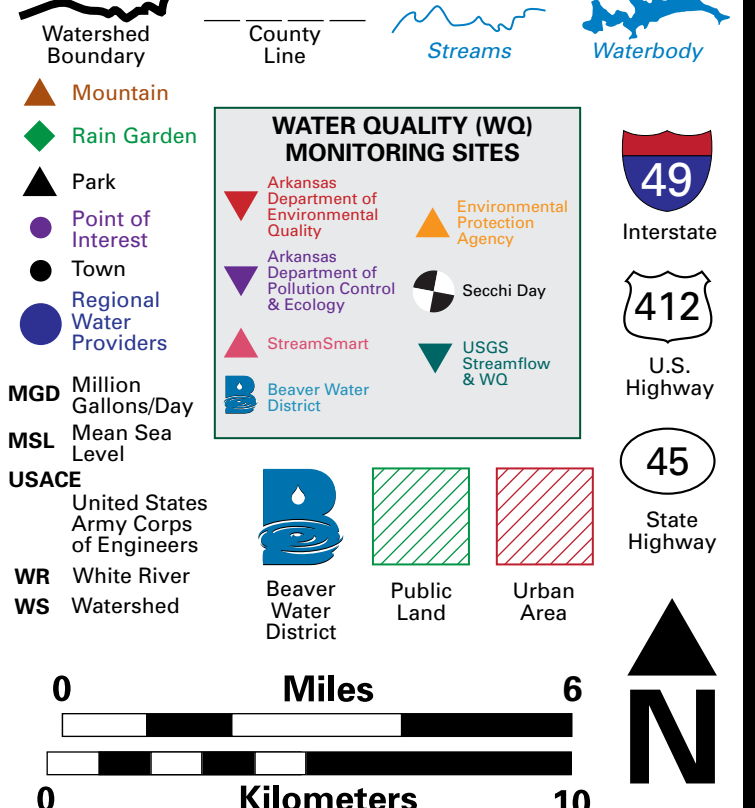
NW ARKANSAS WATERSHED NEIGHBORS



BEAVER LAKE WATERSHED FACTS

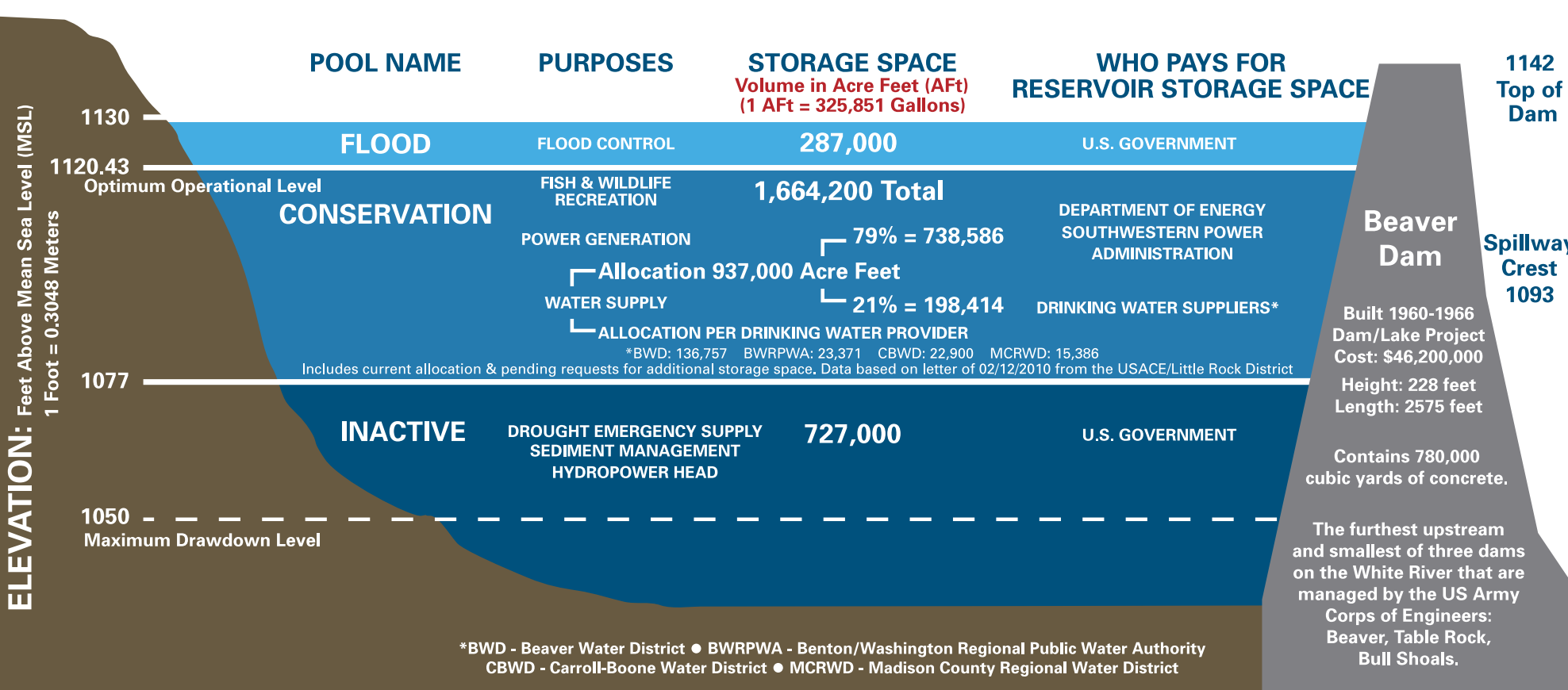


LEGEND



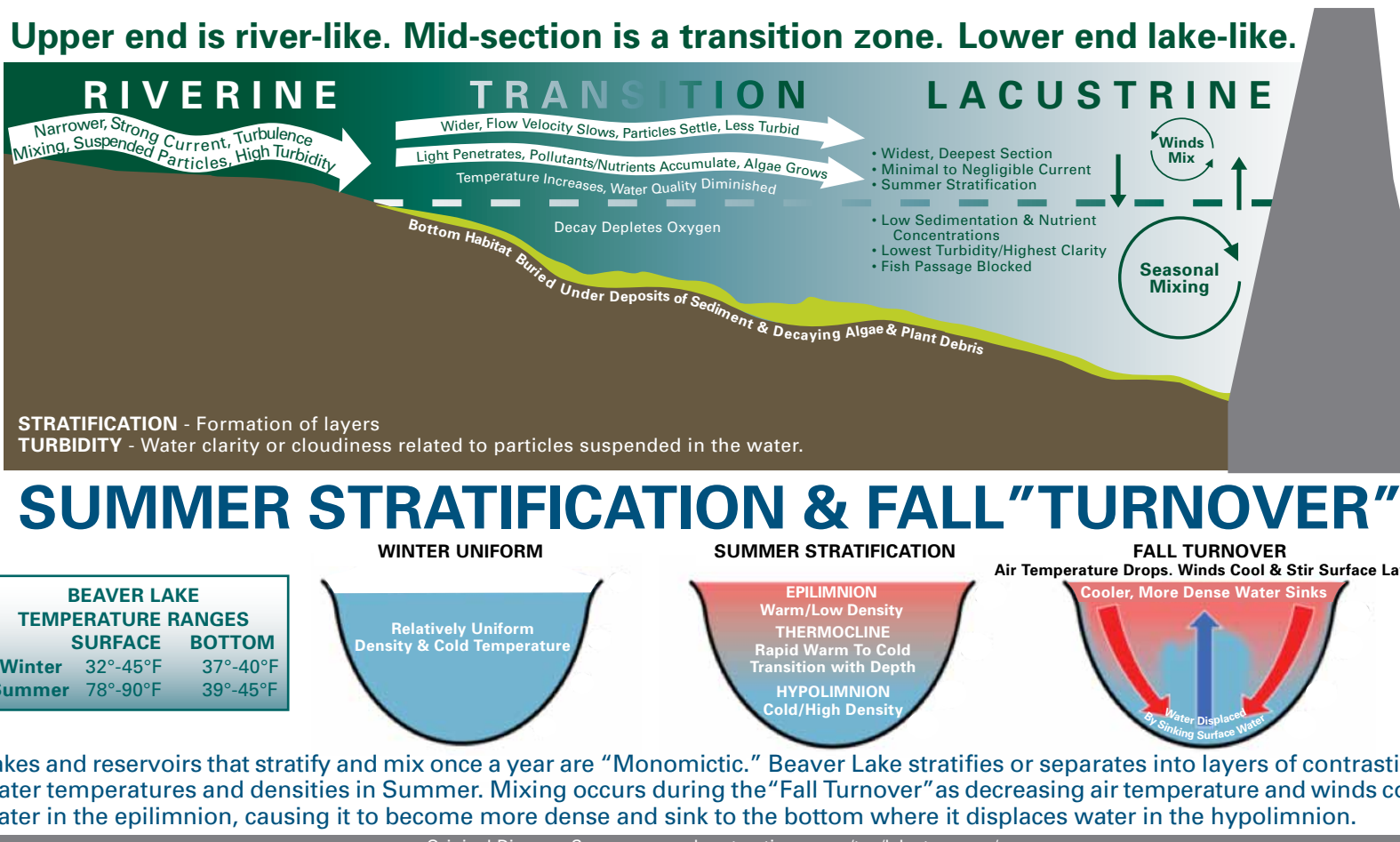
THE U.S. ARMY CORPS OF ENGINEERS CONSTRUCTED BEAVER DAM ON THE WHITE RIVER TO CREATE BEAVER LAKE

BEAVER LAKE IS A MULTIPURPOSE WATER STORAGE RESERVOIR

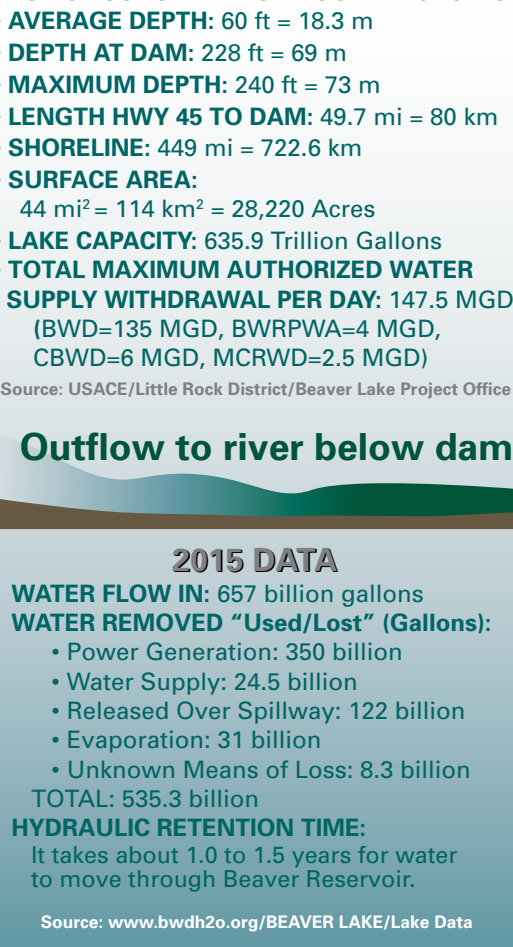


INFORMATION SOURCES: BEAVER WATER DISTRICT (www.bwdh2o.org) • U.S. ARMY CORPS OF ENGINEERS/BEAVER LAKE (www.svl.usace.army.mil/Missions/Recreation/Lakes/Beaver-Lake/)

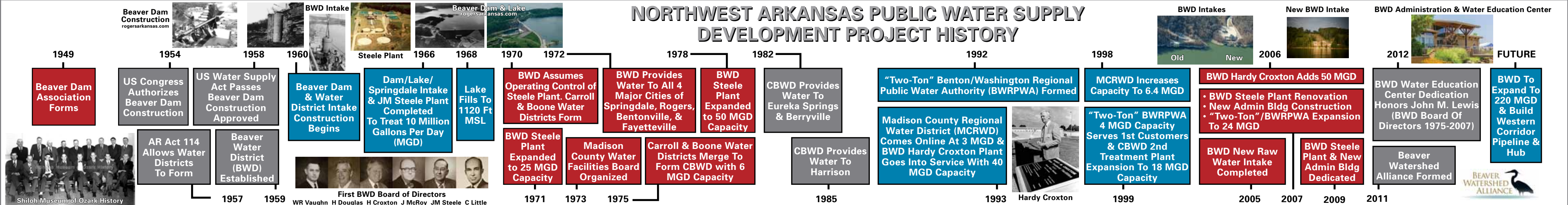
RESERVOIR CHARACTERISTICS



BEAVER LAKE FACTS

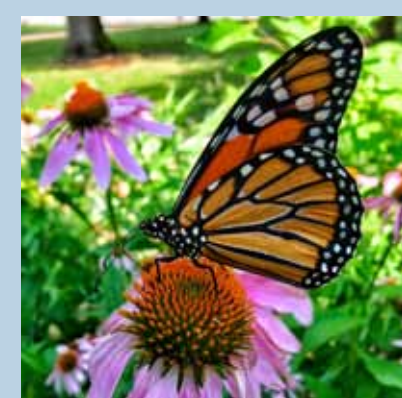


NORTHWEST ARKANSAS PUBLIC WATER SUPPLY DEVELOPMENT PROJECT HISTORY



STEPS YOU CAN TAKE TO PROTECT BEAVER LAKE

At Home and In the Yard



- Build a **RAIN GARDEN** to capture, absorb, and slowly drain runoff.
- Landscape with **NATIVE PLANTS** that require less water and keep the ecosystem healthy.
- Set a **RAIN BARREL** under a gutter downspout to collect rainwater for your lawn and garden or point downspouts toward flower beds or areas covered with vegetation.
- Cover exposed soil with **MULCH** or tarps to reduce erosion.
- Put **PET WASTE** in trash or pet waste digesters to keep bacteria out of our drinking water.
- Have your **SEPTIC SYSTEM** inspected and pumped regularly.
- Wash your car at a **CAR WASH** or on the lawn to keep contaminants out of the water.
- Dispose of motor oils, household chemicals, and paint at your local **HAZARDOUS WASTE** center.



BEST MANAGEMENT PRACTICES



MANAGE RUNOFF

Runoff occurs when rain flows across land. Flow off of hard surface areas (like roads, parking lots, and rooftops) increases in volume, speed, and strength, causing greater frequency of flash floods and more erosion damage to natural ground surfaces, ditches, gullies, and streambanks. Properly managing stormwater runoff prevents land loss, need for costly repair, and harm to homes and property of neighbors who live downstream.



ELIMINATE POLLUTION

Contaminated runoff negatively impacts our source waters. Rural, urban, and suburban runoff from construction sites, lawns, gardens, croplands, pastures, and golf courses may transport excessive amounts of sediment, nutrients, pathogens, and toxins to surface waterbodies and groundwater. Sediment and contaminant buildup degrades water quality and harms the environment, human health, and tourism of Northwest Arkansas.

- Contact **NW ARKANSAS LAND TRUST** (nwalandtrust.org) for information on economic, environmental, and public benefits of **CONSERVING LAND** and including **GREEN INFRASTRUCTURE** in development, as described in the **NW ARKANSAS OPEN SPACE PLAN** (nwaopenspace.com).
- Promote **LOW IMPACT DEVELOPMENT** practices designed to slow, spread, and soak up runoff, reduce erosion, and recharge groundwater.
- Establish **GREENWAY CORES, HUBS AND CORRIDORS** to allow safe passage for wildlife and help keep pollution, litter, and sediment-laden stormwater from entering surface waterbodies.
- Keep grass clippings, leaves, yard and pet waste, and all hazardous materials out of **STORM DRAINS**.



- TEST YOUR SOIL FOR FREE!** Find out what your soil needs and save money by using just enough fertilizer. Contact your county extension office (www.uaex.edu).
- Use a **PASTURE AERATOR** to increase forage production and reduce runoff.
- Maintain unpaved roads with **WING DITCHES** or water bars to decrease soil loss.
- Establish **BUFFERS** vegetated with native plants around pastures and water bodies to support wildlife and stabilize banks.
- Provide livestock with **ALTERNATIVE WATERING SOURCES** like ponds or water tanks and minimize herd access to creeks to prevent stream bank erosion.
- Collect and store **LIVESTOCK WASTE** in a stacking shed.
- Adopt a **PRESCRIBED GRAZING PLAN** from the USDA NRCS to manage vegetation (nrcs.usda.gov).



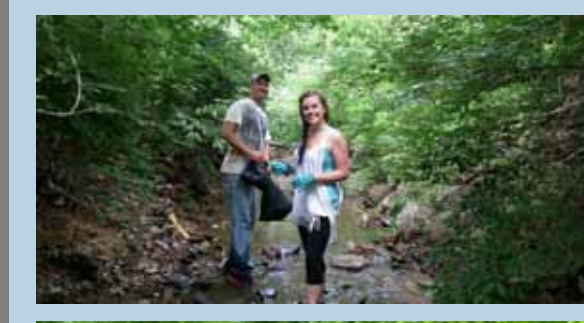
PREVENT EROSION

Erosion processes include soil removal and transport to another location. Stormwater flow increases and moves faster off hard surface areas causing flash flooding and accelerated streambank erosion leading to loss of land, a growing problem in the watershed. Sediment in waterways degrades wildlife habitat and drinking water quality, making it the number one pollutant in Beaver Lake. Request best management programs and land stewardship assistance from **Beaver Watershed Alliance** (beaverwatershedalliance.org).

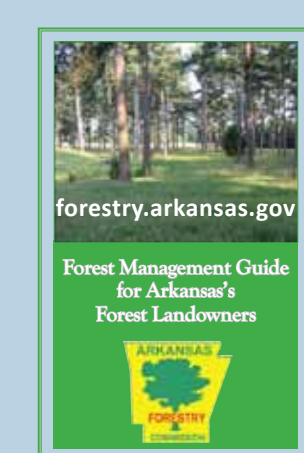


CONSERVE LAND

As NW Arkansas continues to grow and prosper, conservation of our natural land areas helps curb the harmful effects of erosion and runoff to White River and Beaver Lake waterways. **Northwest Arkansas Land Trust** (nwalandtrust.org) provides accredited, local, voluntary, permanent land protection services to landowners and municipalities with interest in forever conserving our unique regional sense of place, natural heritage, local food sources, and holistic community quality of life for current and future generations.



- MANAGE FORESTS** with ecological thinning or prescribed fire to reduce stand density and remove invasive understory, promote native species diversity, provide wildlife habitat, hold soil in place, and protect water quality.
- Monitor and maintain **EROSION PRONE AREAS** such as steep slopes, drainages, unpaved roads, trails, stream corridors and crossings.
- Avoid **STREAM CROSSINGS** when designing roads. Where unavoidable, plan roads to cross streams at right angles.
- STABILIZE** shores and streambanks with buffers of native plants and trees.



On Farm and Field



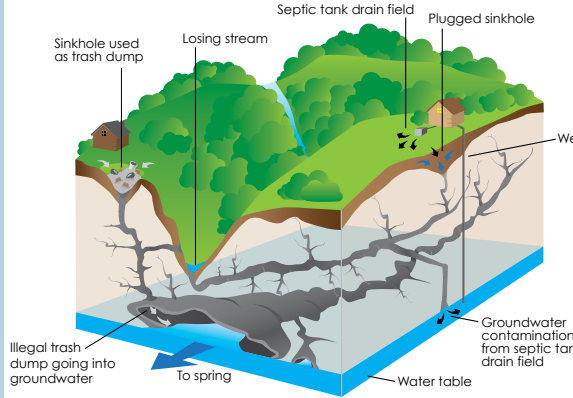
WATERSHED CHARACTERISTICS



"WATERSHEDS" are land areas bounded by topographic divides off which water flows to one side or the other. Precipitation falling within a watershed carries sediment, and dissolved materials as it flows along a system of gullies and creeks to the lowest lying body of water such as a stream, lake, or ocean.

WATER moves through the watershed across and below the land surface, picking up dirt (sediment) and other pollutants on its way to Beaver Lake. **FLASH FLOODING** frequency and intensity increases as more natural ground surface is covered with impervious or impermeable rooftops and materials, like asphalt or concrete.

SEDIMENT is the number one pollutant to the lake. It degrades aquatic wildlife habitat by clouding the water and carries other pollutants that can disrupt the balance of the ecosystem. Also, cleaning dirtier water to make it safe to drink is more difficult and costs more money.



GROUNDWATER moving through karst can cover hundreds of feet in one day, making unique cave ecosystems, wells, springs, streams, and Beaver Lake particularly susceptible to contamination. What takes place in one part of the watershed may affect the quality of water upstream, downstream, and underground.

BIOINDICATORS OF ENVIRONMENTAL HEALTH

The Beaver Lake Watershed is home to a variety of animal and plant species, many of which are "bioindicators" of the overall health of their surroundings. Variation in abundance, behavior, and wellbeing of bioindicator species can be a sign of changing environmental conditions. An understanding of how an organism functions in different environmental conditions, from clean to polluted, can help us learn more about the health of the habitat in which the animal, plant, or insect lives.



BENTHIC MACROINVERTEBRATE WATER QUALITY BIOINDICATORS			
SENSITIVE: Good WQ	SOMEWHAT SENSITIVE: Fair WQ	TOLERANT: Poor WQ	
CADDISFLY 9-23 mm 0.35-0.9 inch	ALDERFLY LARVA 10-25 mm 0.39-0.98 inch	BLACKFLY LARVA 5-8 mm 0.2-0.31 inch	LEECHES 2-450 mm 0.16-17.7 inches
MAYFLY 3-18 mm 0.12-0.71 inch	CRANEFLY LARVA 10-25 mm 0.39-0.98 inch	MIDGE LARVA 3-25 mm 0.12-0.98 inch	POUCH SNAIL 5-20 mm 0.2-0.79 inch
STONEFLY 5-50mm 0.2-1.97 inch	DRAGONFLY NYMPH 10-40 mm 0.39-1.57 inch		
WATER PENNY 3-10 mm 0.12-0.39 inch	WATER SNIPER FLY LARVA 5-50mm 0.2-1.97 inches		

"BENTHIC" MACROINVERTEBRATES may spend all or only the immature (larval or nymph) stages of their life cycle attached to gravel, rocks, or plants at the bottom of water bodies. These bottom-dwelling organisms are grouped according to the different ways they feed and how they attach to surfaces. Feeding behaviors include collecting by filtering food out of water or gathering, grazing on algae by scraping it off surfaces, and shredding grass, leaves, or other plant material in the water making nutrients available for other aquatic organisms. Some anchor to rocks by building nets or webs, while others attach to fallen leaves or twigs, or cling on sandy to muddy substrates.

BEAVER LAKE WATERSHED EDUCATION & EVENTS PARTNERS

BEAVER WATERSHED ALLIANCE

The Beaver Watershed Alliance is a community supported non-profit watershed protection organization that focuses on keeping the Beaver Lake Watershed healthy. The Alliance was formed in 2011 to lead the implementation of the **"BEAVER LAKE WATERSHED PROTECTION STRATEGY"**, which was prepared for the Northwest Arkansas Council in 2009. Major recommendations from the Protection Strategy are to address: 1) urban stormwater runoff and quality; 2) runoff from construction sites; 3) conservation of land; 4) stream buffer, bank, and channel restoration; 5) cropland, natural area, and pasture management; 6) watershed protection volunteer and steward recruitment.

The Alliance's major goal is to work constructively with diverse stakeholders, landowners, and communities to **IMPROVE AND MAINTAIN WATER QUALITY THROUGH VOLUNTARY USE OF BEST MANAGEMENT PRACTICES**. Working with everyone who depends on or benefits from the lake and its watershed to maintain a long-term, high quality drinking water supply is **CRITICAL TO MEET PRESENT NEEDS AND SUPPORT FUTURE GROWTH OF THE REGION**. Representatives from stakeholder groups, including agriculture, business, conservation, construction, technical, government, recreation, and drinking water suppliers, all serve on The Alliance's Board of Directors. For more about programs offered and ways you can support this effort, please visit www.beaverwatershedalliance.org, email info@beaverwatershedalliance.org, or call (479)750-8007.

OZARKS WATER WATCH

Ozarks Water Watch is a regional non-profit organization whose mission is to promote water quality in the Upper White River Watershed through bi-state collaboration on research, education, public policy, and action projects.

The focus of the organization is on the four major impoundments on the Upper White River in Arkansas and Missouri: Beaver, Table Rock, Taneycomo, and Bull Shoals Lakes and the rivers and streams which drain into them. The organization works with agencies, stakeholders, and interested citizen groups as an **ADVOCATE FOR CLEAN WATER** by serving as a community educator and leading projects to protect water quality. Learn more at www.ozarkswaterwatch.org.

StreamSmart is a citizen science program directed by Ozarks Water Watch Northwest Arkansas Field Office Staff. Its purpose is to organize volunteer monitoring teams for collection of long-term, baseline water quality data and increase awareness of conditions in the White River/Beaver Lake tributaries.

Coordination, networking, and sharing of existing volunteer citizen science and student groups watershed monitoring and protection efforts and resources is facilitated by StreamSmart. The project was developed and is maintained through a partnership with Arkansas Game and Fish Stream Team, Arkansas Water Resources Center, Beaver Water District, Beaver Watershed Alliance, Northwest Arkansas Master Naturalists, and Ozarks Water Watch. Volunteer at www.owwbeaverlake.org or call (479)295-7717.



VOLUNTEER TO HELP KEEP BEAVER LAKE & WATERSHED CLEAN



ANNUAL EVENTS, MONTHLY MONITORING, & YEAR-ROUND CLEANUPS

The Beaver Lake Watershed Partners invite you to help protect Northwest Arkansas' drinking water source by volunteering for any number of Beaver Lake Watershed Clean-Ups, Rain Garden Installations, or Stream Water Quality Monitoring Programs. Get to know the watershed, make a difference, learn new skills, and improve your health by becoming part of an active, enthusiastic, and ever expanding community of water quality caretakers and citizen scientists.

Join in fun, lend a hand, meet new friends, and serve the greater good at upcoming Beaver Lake Watershed events.

