Hill Country Oasis
Barton Springs • Barton Creek • Edwards Aquifer
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Introduction

When William Barton — better known as "Uncle Billy" Barton — settled along the banks of Spring Creek in 1837, he settled in a wilderness. Deer and bison abounded. The limestone hills supported thick stands of cedar, oak and other trees. And the water flowing from natural springs was pure and cold. These springs cut a deep, narrow channel to the Colorado River, which linked Barton to the small town of Waterloo and the rest of the infant Republic of Texas.

More than a century and a half later, the springs (which now bear Barton's name) are a link not only to the contemporary world, but to the past. Barton Springs and Barton Creek, which meanders through portions of Travis and Hays counties, form an island of nature in an ocean of urban development.

Inside this natural area, you can still spot a white-tailed deer bounding through the dense undergrowth. You can hear songbirds, and rest in the shade of oaks that were here before Barton himself. For awhile, at least, you can escape the hectic present and retreat to the past. Few major cities can boast of such a natural refuge so close to the heart of downtown.

This natural area is a potent symbol of Austin's environmental well-being, and an important contribution to its quality of life. Vocal and informed residents are quick to take a stand against any perceived threat to the Springs and the surrounding greenbelt.

This publication describes the natural resources of the Barton Creek watershed and the recreational opportunities the watershed provides. It also explains the threats to this special place and how it should be protected — and how you can help maintain the watershed for future generations.

Use this book as a starting point. We can tell you, we can show you, but to appreciate fully the land and life of the Barton Creek watershed, you must experience it yourself. So go ahead. Maroon yourself on an island of nature and explore this Hill Country oasis.

Winter brings a rare beauty of its own to Barton Creek (left).
Barton Springs

“I learned how to swim at Barton Springs . . . and I learned a few other things there, too.”

Robert Redford
Actor/Environmentalist

Barton Springs . . .

to many Austin citizens — and quite a few visitors, too — the name says it all. Barton Springs is an icy retreat from the furnace of a summer’s afternoon. It is a gathering place — a place for parents to take their children, for college students to bake in the Texas sunshine, for the health-conscious to swim a few laps. Most important, Barton Springs is the most visible symbol of Austin’s much-discussed quality of life. The beautiful water, lush greenery, grassy slopes and Art Deco bathhouse combine to create what has traditionally been called Austin’s “crown jewel.”

Like diamonds and sapphires and rubies, this gem begins far below the surface, in the porous limestone beds that form the Edwards Aquifer. The Aquifer is a vast subterranean reservoir stocked with billions of gallons of water. The portion of the Edwards that feeds Barton Springs begins in southern Travis County and northern Hays County and flows north toward the Springs. Waters in the Edwards Aquifer rise to the surface through underground channels at Barton Springs, then flow into Town Lake, where they contribute to Austin’s drinking water.

Humans have inhabited the area near Barton Springs for at least 11,000 years. Lipan Apache, Comanche, Jumano, and Tonkawa Indians used the Springs for generations. Franciscan friars built a mission near the Springs in 1730, and Anglo colonists first settled here in 1835. The City of Austin acquired the Springs and adjacent property in the early 1900’s from Andrew Jackson Zilker.

Barton Springs Pool was formed by damming a section of Barton Creek about one-half mile upstream of Town Lake.

A few interesting odds and ends about Barton Springs:
♦ It is the fourth largest natural spring in Texas.
♦ Water temperature averages 68 degrees year-round.
♦ The pool is 997 feet from dam to dam, 145 feet across at its widest point and has a surface area of 3 acres.
♦ An average of 32 million gallons of water flows from the Springs each day. Since recordkeeping began in 1894, the flow rate has ranged from 6 million gallons a day in 1956 to 166 million gallons a day in 1961.
"...The residents of Austin and of Texas should be encouraged to recognize the social, cultural, and environmental significance of Barton Creek and Barton Springs, and to take an active part in protecting these vital resources and other resources which are similarly threatened..."

Ann Richards,
Governor of Texas
June 7, 1991
The Barton Creek Greenbelt is an urban oasis. Bordered by the Central Business District, where Barton Creek empties into Town Lake, it winds 7.8 miles upstream into the open countryside of southwestern Travis County. The Greenbelt begins at Zilker Park, just above Barton Springs Pool, and passes through Gus Fruh District Park near Loop 360.

While Barton Springs flows year round, Barton Creek flows primarily during the rainy spring and fall seasons. The clear-running creek rushes over rocks and boulders and is punctuated occasionally by small waterfalls. During dry seasons, the creek disappears underground into the Edwards Aquifer, leaving a few spring-fed waterholes separated by miles of parched white limestone.

Barton Creek carves its way through the Edwards Plateau, the southern extension of the Great Plains. The Edwards Plateau consists of thick limestone beds deposited by a shallow sea about 100 million years ago. Water easily dissolves this limestone, creating caves and giant pure reservoirs underground and sculpting networks of canyons and valleys at the surface.

Barton Creek is flanked by soaring canyon walls and overhanging rock bluffs carved over hundreds of thousands of years. The canyon’s dense vegetation and steep canyon walls make visitors feel isolated and far from a major city.

Inside this oasis, you can find many species of native plants, birds, mammals, reptiles and insects. There are more types of butterflies here than at any other spot in Central Texas. There are grasslands and woodlands, and colorful varieties of birds whose songs reverberate against the canyon walls. But the Greenbelt isn’t a zoo, so a bit of caution is called for: rattlesnakes, scorpions, and fire ants live here, too.

Look carefully, and you can see traces of Austin’s past. Wagon ruts, carved when the creekbed served as a major route into town, are still visible. You might even find an artifact, or a section of old fenceline. Look, but don’t touch; leave them for others to enjoy and study as well.

There are plenty of things you can do along the Barton Creek Greenbelt: hike, bike, climb, canoe, swim or kayak. You can picnic by the creek, look for butterflies and birds, or just enjoy the scenery. Major access points include Zilker Park, Gus Fruh District Park, Barton Skyway, Capital of Texas Highway (Loop 360) and Camp Craft Road.

Much of the greenbelt is rugged, but the rewards of this urban oasis can make the effort worthwhile.
“It is the most beautiful and at the same time the most sublime scene I ever saw... The atmosphere was charged with the most delightful perfume and every shrub and every hill and every flower seemed to extend a welcome to the weary traveller.”

A Republic of Texas Officer, describing Waterloo (now Austin) to President Mirabeau Lamar, 1838.

A softshell turtle floats in the quiet waters of upper Barton Creek (above, top). A few miles downstream, a kayaker negotiates a tricky whitewater passage while friendly spectators look on (above).
The serenity of the Hill Country is reflected in the waters of Barton Creek (left). Here the wooded hills, springs and creeks provide a natural classroom for teachers and students to enjoy (below).

About a quarter of a million people visit Barton Springs Pool each year (above). Just upstream, the Barton Creek Greenbelt provides many opportunities for hiking and biking (right).
Bubbling with a life of its own, the cold and crystal-clear waters of Barton Springs give us only a hint of the vast subterranean world no mortal may hope to see. These pristine waters flow to the Springs from the caverns of the Edwards Aquifer, an underground reservoir of billions of gallons of water.

The Edwards Aquifer — lifeblood of Barton Springs and the subject of decades-long debates — curves from Bell County in the north to Kinney County in the southwest, and is divided into three sections. The Southern Edwards includes much of south central Texas, and provides drinking water for San Antonio and other cities. The Northern Edwards extends from Austin, through Georgetown, to Salado and supplies drinking water to Round Rock and Georgetown. The Barton Springs section, which encompasses 155 square miles of Travis and Hays counties, delivers water to Barton Springs. In addition, this federally designated Sole Source Aquifer supplies drinking water to over 30,000 rural residents.

Surface boundaries of the Barton Springs section are well defined: Town Lake on the north, the Mount Bonnell Fault on the west, a line paralleling Highway 150 in Hays County on the south and a line roughly paralleling IH 35 on the east. Barton Springs is near the northeast corner of the Aquifer at 435 feet above sea level.

The Aquifer is the legacy of a shallow sea that covered much of Texas during the Cretaceous period, about 100 million years ago. Austin was part of a reef system then, littered with shelled sea creatures whose names often were longer than the animals themselves.

Over millions of years, thick beds of limestone formed from the decomposing shells of these creatures. The Aquifer takes its name from these limestone beds, called the Edwards Formation. The Georgetown Formation also forms part of the Aquifer. Water has dissolved millions of holes in the limestone, from large caves to tiny pockets that give the rock a honeycomb appearance.

Other layers capped the Edwards, until powerful earthquakes sheared the rock, exposing sections of the formation in the hills south and west of town. Through cracks in these exposed layers, water filtered to the bottom of the Edwards, cutting a lattice-work of caverns that form today’s Edwards Aquifer.

About 300,000 acre-feet of water are stored in this maze of underground chambers — enough to fill the world’s largest building (a Boeing 747 construction facility) 60 times with plenty to spare.

The Aquifer is recharged from the watersheds of six creeks. A watershed is a drainage basin; rain falling in a given watershed is carried by a network of tributaries to the parent creek.

As these creeks — Barton, Williamson, Slaughter, Bear, Little Bear and Onion — flow above the Aquifer, water percolates through cracks in the creekbeds to the Aquifer itself.

Once underground, the water follows the topography, flowing from the higher southwest corner of the Aquifer (about 850 feet above sea level), to the lowest level at Barton Springs.
Of the total recharge water, about 85 percent flows out at Barton Springs and 15 percent is pumped from wells. Most of the well-water is so pure that many people drink it without any chemical treatment.

The Aquifer contributes to the drinking water for the City of Austin. During the relatively dry winter months, Barton Springs supplies significant water flow into Town Lake, which in turn supplies the City’s Green Water Treatment Plant.

Barton Creek, because it is the closest creek to Barton Springs, has the greatest impact on the Springs. Some of the water entering Barton Creek takes only a few hours to enter the Aquifer and emerge from the Springs. Barton Creek provides about 28 percent of the flow from Barton Springs each day. Onion Creek provides another 34 percent, although the recharge water from that creek takes much longer – perhaps several years – to reach the Springs.

Water quality at Barton Springs is directly affected by water quality in these creeks. It’s like the old computer programmer’s saying: garbage in, garbage out. Fecal coliform bacteria (found in the digestive tracts of humans and animals), pesticides, nitrogens (found in fertilizers), and other pollutants that wash into creeks in the recharge zone – particularly Barton Creek – quickly find their way into the Barton Springs Pool. This is particularly true after heavy rains, when layers of pollutants that might have accumulated for weeks pour into the Aquifer in large doses. This frequently results in closings of the Pool after a rainfall because bacteria levels are too high, or visibility is too low.

Increased urban development damages the quality of water in the Aquifer. Paved areas reduce the amount of soil and vegetation, which filter some pollutants from runoff water before it enters the Aquifer. Additional houses, apartment complexes and businesses generate more pollutants – from spilled motor oil, antifreeze and gasoline to pesticides, herbicides and fertilizers. Rains wash these compounds into the recharge zone, and hence into the Aquifer – and Barton Springs.
Surface water — groundwater, "Now you see it — now you don't."

Hill Country creeks change dramatically with weather. Heavy rains quickly flood the rocky creek beds (above). Stream flow is usually short-lived, since any water present is quickly recharged to the Aquifer. A period with little or no rainfall soon results in dry creeks (right).

Whether you call it a windmill, papalote, or high lonesome, it has provided rural areas with water for domestic, agricultural and livestock needs since the 1800's.

Erosion and sedimentation controls at construction sites are important to Aquifer protection.
Throughout the watershed, livestock waste, soil erosion, pesticides and fertilizers contaminate rainfall runoff. These examples of nonpoint source pollution in turn pollute local creeks and eventually the Aquifer and Barton Springs.

The water we see flowing in area creeks may become the unseen water of the Aquifer. We can only expect the groundwater to be as clean as the water going into it.

The highly porous and fractured karst features of the Edwards limestone provide easy pathways for rapid groundwater flow.
The first human to plunge into the chilly waters of Barton Springs probably did so more than 11,000 years ago — as the last great Ice Age was drawing to a close. Abundant animal life, sheltering limestone cliffs and the precious water of Barton Springs made the Barton Creek area a haven for native peoples. They probably hunted mammoth, bison, horses and other animals. They left behind bones and the implements of their survival — flint spearpoints and knives.

In fact, the 120 square miles of the Barton Creek watershed are dotted with the cultural remains of many who settled here, or just passed through. These bits of debris, from arrow points and burned rocks to log cabins, tell vivid tales of the past. When studied properly, they tell us who lived here, and when. They tell us what they ate, how they prepared their meals and how they escaped the bite of the elements.

Perhaps most importantly, relics from the past tell us that this small piece of Central Texas has played a central role in the lives of thousands of humans since before the dawn of civilization. Scientists have identified at least 274 archeological sites in the creek valley, including 188 that contain relics from prehistoric times.

By about 5000 B.C., people became less nomadic. Instead of following and hunting large game, they began to hunt local small game and live off local plant life by gathering fruits, plant stalks, nuts and other edible flora. By about A.D. 1000, the native peoples began to use the bow and arrow, make their own pottery and engage in gardening.

A few hundred years later, nomadic tribes of Comanche, Lipan Apache, Tonkawa and Jumano Indians visited the area. Archeologists have discovered the remains of their campsites near Barton Creek, and the records of early European settlers prove that there was frequent contact between the two cultures in the area.

After Texas won its independence from Mexico, Anglo settlers also discovered the beauty of the Springs. In 1837, William Barton — "Uncle Billy" — settled on the land around the Springs. He named two springs for his daughters, Parthenia and Eliza.

After Austin became the capital of the young Republic of Texas, the trickle of settlers became a torrent. They farmed the land along Barton Creek, built homesteads and raised families. Many of their early log cabins, fences and other structures still exist — and some probably remain hidden in the dense undergrowth that flourished when people stopped farming the land.

The end of the 19th century brought about a new era. Barton Springs became a popular swimming hole; steamboats carried visitors upstream from Austin's small downtown; and the springwater powered an ice-making plant and a mill. The Springs no longer sustained the lives of those who inhabited the land, rather, they enriched them.
The Barton Creek watershed is alive. Walk along Barton Creek and you’ll hear the calls of mourning doves and the rhythmic tapping of woodpeckers. You might see a blaze of crimson as a cardinal glides among the live oaks and cedar, spot a red-tailed hawk hunting its next meal, or chuckle at the sight of a squirrel bounding from limb to limb. In spring, you’re surrounded by patches of fragrant bluebonnets, Indian blankets and delicate buttercups.

Each of these living things is like a cell in a human body; each species, an organ. Destroy one cell, and the body recovers. Destroy one organ, and the body is damaged, perhaps beyond repair.

Like the human body, the ecosystem nestled among the hills of southwest Austin is dynamic and hardy. It changes over time. Variations in climate might force one species to leave the area, but another will find the new conditions quite hospitable. It can resist some tampering from the outside, with the delicate balance among species shifting to maintain the overall health of the ecosystem. Yet too much tampering — polluted water, increased soil erosion, more pavement or the introduction of a ferocious new organism (such as the fire ant), can ravage the ecosystem.

Today, the area still is a naturalist’s dreamland of hundreds of species of plants, mammals, fish, reptiles and invertebrates. Some are found no farther west than Austin. Some are quite rare. A few are found nowhere else on Earth.

A cursory glance at the area delivers one overwhelming impression: green. The hills are thick with many species of oaks and elms, as well as ash juniper (better known as cedar) and hackberry. Open areas are covered with wild grama or bluestem grasses. Creekbeds and springs are surrounded by cottonwood, pecan, elm, willow, chinaberry, redbud and many other species of trees, along with an abundance of shrub and wild-grass species. Each of these plant species harbors birds, mammals and insects.
Among the many plants that live in the creeks and springs are a variety of ferns, coontail, water primrose, wild celery and cattail.

Of course, the water in Barton Creek and other creeks, springs and ponds is the centerpiece of life in the area, sustaining the deer, rabbits, bobcats, foxes, raccoons, field mice and other mammals that inhabit the rocky countryside. It’s home to frogs and turtles. Fish and insects living in creeks and ponds attract myriad species of birds, from great blue herons to spotted sandpipers.

It’s obvious, then, that each portion of the ecosystem depends on other parts for survival and population control. If the bobcat and predatory birds that inhabit the region disappear, populations of small mammals could run wild. If one clump of trees is destroyed, some critical habitat for a bird species may be affected.

The Barton Springs salamander, (Eurycea sp.), is a small amphibian found only in the Barton Springs water system. Most salamanders spend their juvenile period in an aquatic form, then metamorphose into an adult form that lives on land. The Barton Springs salamander, however, retains its aquatic characteristics throughout life. The red plumelike gills, visible just behind the head, are used for breathing. They are an example of the salamander’s adaptations for life in the water. The Barton Springs salamander is rarely seen because most of the population lives below ground in the water-filled caves of the Aquifer.

For example, the golden-cheeked warbler inhabits steep canyons in part of the Barton Creek basin. Because it uses cedar bark that is more than 20 years old to make its nests, when mature cedar woodlands are destroyed, the species has nowhere to nest and rear its young — and could face extinction. The warbler also faces danger from the cowbird, which lays its eggs in the warblers’ nests, displacing the warbler chicks.

Several other rare or endangered species inhabit the basin. Two species of eyeless arachnids, called harvestmen, are found in the caves on Barton Creek, along with at least four other rare invertebrates. Barton Springs itself is home to two rare, blind snails, and scientists recently discovered that a two-inch long salamander first seen in Barton Springs Pool in the 1940’s is unique to Barton Springs. There are also rare plants in the basin. The endangered bracted twistflower is found infrequently on rocky wooded slopes in the upper reaches of Barton Creek.
The wildlife of Barton Creek

After summer and fall rains, orange pinwheels, *Marasmius siccus*, resembling miniature parasols, decorate woodlands adjacent to Barton's streambed (right).

Barton Creek is home to many species of insects, some of which overwinter and might appear in great masses on warm winter days, like the milkweed bugs, *Oncopeltus* sp. (above).

Although frequently seen along Barton Creek, centipedes, *Scolopendra* sp., are secretive creatures, preferring the shelter of rocks and tree stumps during the day.

Common in still pools of Barton Creek, the crayfish, *Cambarus* sp., is an important item in the diet of raccoons, opossums, fish and birds.
Travis County has many endangered species because it is a crossroads of several distinct ecosystems — the Edwards Plateau, the Blackland Prairies, the Crosstimbers and the Prairies. A transition zone, the Balcones Canyonlands, lies west of the Balcones Fault Zone, which runs north-south through Austin. Canyons and mixed woodlands of ashe juniper (cedar) and oak separate the Blackland Prairie from the Edwards Plateau to the west. Many areas are "karst" terrain, which contains caves, sinkholes, and other solutional features.

The rare species have survived many climatic changes. The climate was cooler and wetter long ago, but when it dried out, some species were left stranded on limestone hills, in caves or in cool canyons. These isolated species evolved into distinct forms adapted to their specific habitats. This is especially true of the numerous cave species, which are isolated in cave islands within the limestone. Many cave species have lost their eyes and pigment over thousands or millions of years.

Some of the more common creatures seen along Barton Creek are the black-and-white warbler, Mniotilta varia (far right, top); Texas tailed blue, Everes texanus (far right, middle); and one of children's favorite, the red eared slider, Chrysemys scripta elegans (above).

Found only in the Hill Country, the beautiful scarlet leatherflower, Clematis texensis, grows over shrubs and rocks near Barton Creek.
Groundwater moving through the Edwards limestone slowly dissolves openings in the rock. Some of these openings become caves large enough for human explorations (above).

Slowly dripping water sometimes deposits minute amounts of calcite on cave ceilings and floors. Slender, pointed stalactites hang "like" to the ceiling, while stalagmites "mite" reach the ceiling someday.

A single drop of water is not significant by itself. However, without it and the drops that follow, there wouldn't be any caves, cave formations, aquifer or springs.
If you could peel away the tops of the hills in the Barton Creek recharge zone like the skin of an orange, you would find quite a few holes. The limestone beds that comprise the Edwards Aquifer are full of cavities carved over millions of years by underground rivers and streams.

Many of the cavities are filled with water. Some of the cavities act as conduits, or tunnels, and feed water to Barton Springs. But other cavities are relatively dry. They form a network of caves — at least 24 in all — that underlie the Barton Creek watershed. Some of the caves are remnants of ancient conduits, while others were gouged from the sheer cliffs by creeks.

Most of the caves are less than 400 feet long — about the length of a football field, measured from end-line to end-line. But the largest, named Airman's Cave, is at least 12,000 feet long, making it the eighth longest known cave in Texas.

The caves of Barton Creek are home to many fascinating creatures that have adapted to life in the subterranean world. Airman's Cave, for example, houses a new species of harvestman (a relative of the spider) much like the Bee Creek Cave harvestman, which is on the federal endangered species list. Cave X, another major cave in the basin, contains a rare species of blind cave millipede.

Scientists have recently recognized that dozens of rare species of cave animals live in different geological zones near Austin. Barton Creek appears to be a barrier between zones. Many of the rare species found in these caves evolved over hundreds of thousands or millions of years in isolated cave "islands."

We are only beginning to study and understand these cave ecosystems. One thing is certain though: each depends for survival on unpolluted water from the surface.

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The blind cave harvestman is a rare species which was discovered so recently it hasn't been named. Harvestmen are arachnids but differ from spiders because they lack poison glands and a waist between the front of the body and the abdomen.

Millipedes have a formidable appearance, but are actually harmless. They lack poison glands and generally feed on fungus. This blind cave millipede (above) is a new, unnamed species. Travis County contains six endangered cave species plus 26 other rare cave species that are highly adapted to their environment.
"Personally, if I have to fight for this country, I will not fight for the flag, or the American way of life, or democracy, or private enterprise or for any other abstractions, which seem cold as kraut to me. But I will fight to the last ditch for Barton Creek, Boggy Creek, cedar covered limestone hills, Blazing star and Bluebonnets, Golden-cheeked Warblers and Black-capped Vireos, and so on through a catalogue of this natural environment of Austin, Texas. It is through this natural environment of Austin, Texas, that I love America..."

Roy Bedichek, Texas Naturalist

Water in Barton Creek, the Edwards Aquifer and Barton Springs is becoming increasingly polluted. The water isn't as clear as it used to be. More algae are growing in the streambed. Unsafe levels of bacteria force periodic closings of Barton Springs Pool. Austin is at risk of losing the critical resource that sustains the Barton Creek watershed.

Water resources are assaulted by a battery of pollutants. Some, called point source pollutants, are easy to identify and relatively simple to correct. They include leaking underground storage tanks, factory discharge, broken sewer lines and so on.

Nonpoint source pollutants are a tougher problem because they're generated by many different sources — thousands of people and even animals.

Nonpoint source pollution is directly related to the way land is used. For example, automobiles leak motor oil, gas, antifreeze and other fluids onto parking lots and city streets. Rains wash these pollutants into the watershed, where they find their way into creeks, the Aquifer and Barton Springs. Lawn care products, such as pesticides and fertilizer, also find their way into the watershed. Animals, even domestic pets, generate pollution; fecal coliform and streptococci bacteria in their digestive tracts are a significant pollutant. Loose sediment caused by construction activities is washed into the streams where it may enter the Aquifer and perhaps be discharged at Barton Springs.

To help protect Barton Creek and other contributing watersheds, the City of Austin has implemented the Comprehensive Watersheds Ordinance. The ordinance is targeted specifically at nonpoint source pollution, which can be widespread and difficult to identify. The ordinance also is designed to protect recharge features of the Aquifer.

Other federal, state and regional agencies have also implemented laws or regulations to protect aquifers and other water resources.
What you can do to help

Even though an extensive set of laws and ordinances protects the natural resources of the Barton Creek watershed, it isn’t enough. Pollution is everyone’s problem. Ultimately, preserving Barton Creek requires that society as a whole change its habits and viewpoints. We can all look at the way we live and find ways to make small changes that will avoid or eliminate pollution.

The following recommendations are adapted from a set of practical tips developed by the Texas Water Commission.

**Household Products**

- Follow label directions for proper use and disposal.
- Look for alternative, non-polluting products.
- Use water-based paints, rather than oil-based.
- Don’t clean paintbrushes or rollers in the yard or street.
- Instead of throwing them away, share extra products with friends and neighbors.
- Use insect and rodent traps instead of poisons.

**Yard Maintenance**

- Use Xeriscape™ landscaping principles to reduce water use.
- Don’t use more fertilizer than your yard really needs.
- Use slow-release fertilizers.
- Replace herbicides and pesticides with organic substitutes; the county extension agent or knowledgeable garden center employees can help.
- Water your lawn no more than once a week; with a good weekly soaking, your lawn can survive the hot summer.
- Use native grasses, which require less water and fertilizer.
- Leave grass clippings on the lawn, or compost them for later use on the lawn or garden.

**Automotive Products**

- Take used oil to a recycling facility.
- Repair oil leaks; a single pint of oil can create an oil slick the size of a football field.
- Drive less and tune your car regularly to reduce air pollution, which also finds its way into the water supply.
- Do not allow brake fluid, antifreeze, gasoline or other products to drain or drip onto driveway or street.

There are many other ways you can help prevent further destruction to the environment. What’s important is that you start today. We’re often reluctant to change the way we live and work, because we’re too comfortable with our familiar patterns. But we’re learning that everything we do has a positive or negative effect on the world around us, and in turn, on ourselves.

Protecting the clear waters and the diverse plants and animals of the Barton Creek watershed deserves our best efforts. We must be guided by a common vision of how each of us can work to save this remarkable place. In addition to our individual efforts, there must be a carefully developed and consistently implemented conservation plan. Only the combination of our individual efforts, guided by a visionary conservation plan, can preserve the Barton Creek watershed for future generations.
For more information

Organizations

Austin Parks and Recreation Department
200 S. Lamar Boulevard
Austin, Texas 78704
512-499-6700

Barton Springs/Edwards Aquifer Conservation District
1124-A Regal Row
Austin, Texas 78748
512-282-8441

Colorado River Watch Foundation
206 Wild Basin Road, Suite 200
Austin, Texas 78746
512-469-6883

Edwards Aquifer Research & Data Center
248 Freeman Building
Southwest Texas State University
San Marcos, Texas 78666-4616
512-245-2329

Environmental and Conservation Services Department
Post Office Box 1088
Austin, Texas 78707
General Information 512-499-3500
Environmental Hotline 512-474-2368

Austin-Travis County Health Department
Environmental Health Services
15 Waller Street
Austin, Texas 78702
512-469-2015

The Hill Country Foundation
Post Office Box 50411
Austin, Texas 78763
512-478-5743

Lower Colorado River Authority
Post Office Box 220
Austin, Texas 78767
512-473-3217

Save Barton Creek Association
Post Office Box 5923
Austin, Texas 78763
512-480-0055

Texas Organization for Endangered Species
Post Office Box 12773
Austin, Texas 78711-2773
512-442-7149

Texas Parks & Wildlife Department
4200 Smith School Road
Austin, Texas 78744
512-389-4800

Texas Water Commission
Post Office Box 13087
Austin, Texas 78711-3087
512-463-8452

Travis Audubon Society
1404 Travis Heights
Austin, Texas 78704
512-443-0075

U.S. Geological Survey
8011 Cameron Road, Building 1
Austin, Texas 78753
512-832-5791

Publications

The following is a list of recommended reading:

1990 Update to the Nonpoint Source Water Pollution Management Report for State of Texas


Endangered Resources Annual Status Report (E.R.A.S.R.)

Ground-Water Quality of Texas — An Overview of Natural and Man-Affected Conditions, Report 89-01

Guide to Points of Geologic Interest in Austin

Hydrology and Water Quality of the Edwards Aquifer Associated with Barton Springs in the Austin Area, Texas


The Bird Life of Texas

The Caves of Texas

The Edwards Aquifer — The Balcones Fault Zone — Austin Region
An Educational Unit, by Nancy J. Charbeneau, August 1988.

The Travis Audubon Society's Bird Check list for the Austin Area
Gives the abundance of each species for each month. Available from the Society or at the Austin Nature Center, 25c.
| **Glossary** |
|----------------|--------------------------------------------------|
| **Aquifer**    | an underground layer of soil, gravel or porous rock that contains water. |
| **Arachnid**   | a small invertebrate with four pairs of legs. Spiders, scorpions and harvestmen — all found in the Barton Creek area — are arachnids. |
| **Conduit**    | a natural opening that allows water to flow through an aquifer. |
| **Contributing zone** | land area upstream from the recharge zone where the watersheds of creeks and rivers catch rainfall. |
| **Ecosystem**  | a collection of interacting plants and animals, together with their natural environment. |
| **Edwards Aquifer** | an aquifer that underlies portions of nine counties in central and south-central Texas. The central section of the aquifer supplies water to Barton Springs. |
| **Edwards Plateau** | the southern extension of the Great Plains, which covers much of south Texas, from the Rio Grande River to the Colorado River. |
| **Evaporation** | changing of a liquid to a gas; for example, when water becomes water vapor. |
| **Fertilizer** | any material in the soil or water that acts as a nutrient for plant growth. |
| **Groundwater** | water that seeps down from the Earth’s surface and is stored in aquifers, porous rock or soil pores. |
| **Karst aquifer** | a geological landform typified by structures created by water, such as caves, sinkholes and highly porous rock. The Edwards Aquifer is a karst aquifer. |
| **Nitrate**    | a nitrogen compound that is a major plant nutrient. |
| **Nonpoint source pollution** | pollution caused by sediment, nutrients, organic and toxic substances; originates from land use activities; and is carried to lakes and streams and groundwater by surface runoff. |
| **Pesticide**  | any chemical agent used to kill specific insects or animals. |
| **Phosphorus** | one of the primary nutrients required by plants; often is the limiting factor for the growth of aquatic plants. |
| **Point source pollution** | pollution that originates from a single, well-defined point, such as a leaking underground storage tank, a factory or a damaged sewer line. |
| **Pollutants** | toxic substances that enter the air or water. |
| **Recharge zone** | the area of land where surface water enters the ground and moves into an aquifer. The aquifer is exposed at the surface at some points in this zone. |
| **Reservoir**  | any holding area used to store, regulate or control water; may be natural or man-made. |
| **Runoff**     | the portion of rainfall, melted snow or irrigation water that flows across land surfaces and eventually enters a stream. |
| **Sediment**   | water-transported and water-deposited particles of rock, soil or biological material. |
| **Silt**       | fine-grained sediment. |
| **Toxic substances** | poisonous materials that cause sickness, disease and/or death in plants and animals. |
| **Water pollution** | the contamination of water by the addition of substances which degrade water quality. |
| **Watershed**  | the land area that contributes surface water runoff to a given point in a drainage system. |
You have in your hands a bird’s eye view, a snapshot in time, of Barton Springs and its watershed. Ever-present and ever-changing, it is literally ours to do with as we will. Along with the forces of nature, we are a part of its future. The part we are to play is not small. We have the ability to impact it adversely, more rapidly and more permanently than any natural event. We also have the ability to preserve and protect it perpetually, if that is our desire. The fork in the road is upon us, and we must choose our path wisely.

Those who have given their time, money and talents to create this book dedicate it to those who will follow and hopefully pay heed to the admonition of Mr. Andrew Jackson Zilker, for whom the surrounding park is named.

"This is a sacred place. One would be wise to listen to the Springs when deciding how to care for this land and these waters in the future."