

# America's Most Endangered Rivers of 2006



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BRINGING RIVERS TO LIFE



## About America's Most Endangered Rivers

Each year since 1986, American Rivers and dozens of partners in the river movement have released the America's Most Endangered Rivers report to spotlight those rivers across the country facing critical and near-term threats. The report is not a list of the nation's "worst" or most polluted rivers, but rather it highlights ten rivers confronted by decisions in the coming year that could determine their future.

American Rivers solicits nominations from hundreds of river groups, conservation organizations, outdoor enthusiasts, and concerned citizens. Our staff and scientific advisors review the nominations for the following criteria:

- The magnitude of the threat to the river
- A major decision point in the coming year
- The regional and national significance of the river

This report is more than a warning; it offers solutions and identifies those who have the power to save the river.

AMERICAN RIVERS THANKS AND RECOGNIZES BERT AND BARBARA COHN for their dedicated financial support of this campaign. By helping us spread the word about threats to America's rivers, and focusing on significant rivers in jeopardy, the Cohns' generosity ensures that needed attention will be paid to these special yet embattled resources. As in years past, we expect that this report will contribute to positive outcomes for the featured rivers.



## About American Rivers

American Rivers, founded in 1973, is the leader of the nationwide river conservation movement. American Rivers is dedicated to protecting and restoring healthy rivers for the benefit of communities and the fish and wildlife they sustain.

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# Table of Contents

## Introduction

Natural Events, Unnatural Disasters .....	2
Map: Most Endangered Rivers of 2006 .....	10

## Most Endangered Rivers (by rank)

1. Pajaro River .....	11
2. Upper Yellowstone River .....	14
3. Willamette River .....	16
4. Salmon Trout River .....	18
5. Shenandoah River .....	20
6. Boise River .....	22
7. Caloosahatchee River .....	24
8. Bristol Bay .....	26
9. San Jacinto River .....	28
10. Verde River .....	30



WABASH, AR, 1927

SOURCE: LIBRARY OF CONGRESS

**“When you ask a giant river to do unnatural things, when you ask it to stay inside impenetrable dikes all the way to the Gulf, then you get unnatural results: the entire estuary system starts to collapse and disappear. But when you ask a river to simply do what it does naturally, you get different results entirely.”**

DR. DENISE REED  
UNIVERSITY OF NEW ORLEANS  
GEOMORPHOLOGIST,  
AS QUOTED IN  
MIKE TIDWELL'S 2003 BOOK,  
*BAYOU FAREWELL*

It was the most devastating storm in memory. Quickly rising water — up to 30 feet deep in some places — covered 27,000 square miles, ripping apart levees in the Gulf region and forcing more than one million people to flee their homes. At least 1,000 people died and the Red Cross fed nearly 700,000 evacuees for months. When the rest of America learned of the devastation from front-page news accounts, charitable contributions poured in from heartsick people across the nation.

This eerily familiar account is not of Hurricane Katrina, but of an epic storm that swept the Mississippi River basin nearly 80 years ago, as described in gripping detail by John Barry in his 1997 book, *Rising Tide: The Great Mississippi River Flood of 1927 and How It Changed America*. Although that flooding resulted from weeks of constant rainfall rather than a hurricane, the similarities to the impacts of Katrina are uncanny. Both storms devastated communities, both offered Americans unsettling realizations about race and poverty, both imposed significant costs on the nation, and both generated political turmoil.

Unfortunately, the legacy of the 1927 flood was a renewed commitment by government leaders to stay the wrong course, continuing the quest to “control” rivers through an over-reliance on engineering. The folly of this misguided strategy was tragically exposed by extensive flooding along the Mississippi and Missouri rivers in the summer of 1993, and again in the flooding of New Orleans last year. Although the circumstances around each of these disasters differ, they demonstrate how over-reliance on engineering can harm, rather than help communities.

While the nation has learned some hard lessons from flooding disasters, it remains to be seen whether the Katrina tragedy will finally provide the catalyst needed to change course — to one which recognizes that protecting and sustaining our communities is best achieved by working with nature, and not against it.

## FLOOD CONTROL FAILURE

Floods are natural events, and are vital to sustaining the health of rivers. Floods carry nutrients downstream, depositing them along floodplains. In addition to creating fertile soil for farming, sediments transported by floods also form islands and backchannels that are home to fish, birds, and other wildlife. Floods scour out river channels and riparian areas, preventing them from becoming choked and overgrown with vegetation. The first line of defense against floods is healthy rivers and wetlands, which act like basins and sponges, soaking up floodwaters and then releasing them gradually after a storm has passed.

Unfortunately, for more than 100 years, the U.S. Army Corps of Engineers (the Corps) has opted for flood control policies that have resulted in the destruction of many communities' natural defenses against flooding damage. The Corps has built levees and floodwalls, channelized rivers, and encased them in concrete straitjackets. In many locations, however, levees actually cause rivers like the Mississippi to rise higher than they otherwise would. Over the past century this has led to the hydrological version of an arms race — the construction of taller and taller levees to hold larger and larger volumes of water. While it is necessary to maintain some levees for the protection of established communities, it is counterproductive to maintain an extensive levee



JOCELYN AUGUSTINO, FEMA

IN MANY CASES, THE U.S. ARMY CORPS OF ENGINEERS HAS MADE FLOODING ALONG THE MISSISSIPPI RIVER WORSE, NOT BETTER.

system along the entire length of a river. Re-establishing some floodplains would ultimately reduce flood losses in developed areas.

The devastation of New Orleans, in the wake of Hurricane Katrina, is the most blatant example of our misplaced reliance on engineering at the expense of natural watershed functions. The Corps' work on the Mississippi River has had an enormous negative impact downstream, cutting off more than 90 percent of the Mississippi's floodplain from the river. The agency also has built 29 locks and dams,

SOURCE: LIBRARY OF CONGRESS



MELVILLE, LA, 1927



ERATH, LA, 2005

ASSOCIATED PRESS

THE CORPS CUT THROUGH 76 MILES OF WETLANDS THAT USED TO BUFFER THE CITY OF NEW ORLEANS FROM STORM SURGES TO CREATE AN UNDERUTILIZED SHIPPING CANAL KNOWN AS MRGO.

as well as countless other structures that have increasingly interfered with the Mississippi River's natural process of carrying sediment downstream to sustain and replenish coastal wetlands.

Louisiana alone has lost about 1,900 square miles of wetlands and islands due to the sharp drop in sediment deposits. Prior to Katrina, those losses were continuing at about 30 square miles per year. Since every 2.7 miles of coastal wetlands between the Gulf and solid land reduces ocean storm surges by about one foot, this massive wetlands loss — the equivalent of a football field of Louisiana's land turning into water every twenty minutes — makes New Orleans especially vulnerable.

## THE BIRTH OF TRAGEDY

After Hurricane Betsy smashed into New Orleans in 1965, killing 75 people, the Corps created the flood protection scheme that ultimately intensified Katrina's impact. Instead of providing needed protection by reinforcing levees located at the city's edge, the Corps constructed an elaborate new system, stretch-

USACE



ing miles into uninhabited wetlands. Additionally, an array of policies and practices lured people into harm's way by allowing and, in some cases, encouraging the further destruction of the Mississippi's floodplain. Tragically, the newly drained wetlands were eventually developed into New Orleans East, which bore the brunt of Katrina's deluge.

Making matters worse, the Corps constructed a navigation channel — the Mississippi River Gulf Outlet (MRGO) — that contributed significantly to the drowning of New Orleans. Construction and operation of this controversial outlet destroyed more than 20,000 acres of coastal wetlands that would have helped reduce the storm surge. But MRGO did far more than eliminate this crucial storm buffer — it greatly exacerbated the hurricane's impacts by funneling and intensifying the storm surge into New Orleans. In fact, the initial flooding that overwhelmed the lower Ninth Ward and St. Bernard Parish — where only 52 of 28,000 structures survived — came from MRGO.

Rather than learn from its mistakes, the Corps has a tendency to repeat them. Over the past 50 years the Corps has constructed more than 500 large (and thousands of small) flood control projects. Despite this wave of construction in the name of protection, the overall national average cost for annual flood damages has more than doubled in real terms, according to a report in 2000 by the National Wildlife Federation and Taxpayers for Common Sense. That is an increase from more

THE CORPS' FAILED PLANNING LED TO THE FLOODING OF NEW ORLEANS — THE SAME PLANNING THREATENS COMMUNITIES ACROSS THE COUNTRY.



ASSOCIATED PRESS

than \$2.6 billion in the first half of the 20th century to more than \$6 billion per year in the past ten years.

A big reason why spending to build more projects has not necessarily yielded greater flood protection is that neither Congress nor the Corps prioritize flood control planning and construction to address the nation's most pressing needs. Instead, Corps projects have subsidized industries or simply provided pork to Congressional districts, rather than focus on reducing the vulnerability of communities and critical infrastructure to flooding.

## WORKING WITH NATURE WORKS

This year's list of America's Most Endangered Rivers provides further evidence of the often negative environmental and economic consequences of working against natural systems. Leading this year's list is the Pajaro River (#1), located in the heart of California's central coast. From constructing 22 miles of levees along the lower river, to ripping out virtually all the vegetation along those levees, to decades of sand and gravel mining in the river's upper tributaries, our working against nature has exacerbated high-water events in the floodplain. Despite the levees' repeated failure to protect communities from floods, the Corps remains intent on a plan that would merely fortify existing levees along the Pajaro rather than improve the natural flood protection capabilities of the entire river system. This approach will likely perpetuate an interminable cycle of levee failures, human and economic suffering, and costly repairs.

Concerned citizens in the Pajaro watershed would prefer that the Corps develop an alternative plan that would restore a healthy riparian corridor. This strategy would identify upstream wetlands and riparian lands where floodwaters could naturally and safely overflow. Not only would this restore some of the river's natural floodplain, but it would improve habitat along stream banks for numerous at-risk species, and enhance recreation along the river and its tributaries. Unless and until the Corps proposes a comprehensive approach to



flood control on the Pajaro that works with nature, the river will remain an economic drain — and a danger — for the communities along the river.

As the Pajaro situation demonstrates, the Corps has focused too often on short-term, structural solutions to try to reduce flooding. Tragically, such measures can actually lead to disasters by robbing rivers of their natural flood protection systems and by providing a false sense of security to people living in the developed floodplains.

Another example of floodplain mismanagement can be found along the Upper Yellowstone River (#2), which flows through Montana. New construction in the 100-year floodplain has increased by 57 percent, placing high-priced houses in harm's way and leading to the placement of hard structures to control the banks of the river. Clearing cottonwoods and other riparian vegetation has destroyed valuable natural flood control and wildlife habitat, as well as the beauty and character of this iconic river. Now that the problems with this approach have become clear, local citizens are seeking a comprehensive plan for

RAPID DEVELOPMENT ALONG THE UPPER YELLOWSTONE'S BANKS LEADS TO LEVEES, DIKES, AND RIPRAP, INCREASING FLOOD DAMAGE.

**“Natural systems are resilient and bounce back. The problem is when we try to control nature, rather than letting her do what she does.”**

SUSAN CUTTER,  
UNIVERSITY OF SOUTH  
CAROLINA GEOGRAPHER,  
AS QUOTED BY ASSOCIATED  
PRESS, JAN. 28, 2006

future development that works with the river rather than against it. Nearby communities hope to preserve the very qualities that attract people to the river valley in the first place.

The San Jacinto River (#9) in Texas has been plagued for years by sedimentation and bank erosion due to unregulated sand mining operations. These projects have damaged adjacent forests and wetlands, removing the natural flood protection of these native hardwood forests that would benefit the already flood-prone Houston area. Local organizations and elected officials are now seeking to protect the remaining forests, in the hope of improving natural flood protection and protecting clean water.

Similarly, the same kind of manipulation has harmed the legendary “river of grass” — the Florida Everglades. As a prime example, the Corps’ over-engineering directs toxic water into Lake Okeechobee and then into the

Caloosahatchee River (#7). This river is a major source of drinking water, a \$2 billion recreational resource and home to endangered manatees. Local citizens are pushing for a more sensible approach that lessens the pollution flowing into the river by working better with the natural river system.



SUSAN RICHARDSON

## NEW CENTURY, NATURAL SOLUTIONS

Few things can be as horrific as watching lives destroyed and a city drowned. Sadly, too often the Corps has reacted to such disasters with more concrete, more engineering, and more poorly-spent money — leading to widespread destruction of natural systems.

Last year’s devastating hurricane and this year’s list of endangered rivers provide a lesson we cannot ignore: While levees and other

RESTORED TO ITS NATURAL MEANDERING COURSE, UTAH’S PROVO RIVER IS A GOOD EXAMPLE OF HOW COMMUNITIES CAN RECAPTURE MANY OF THE BENEFITS A HEALTHY RIVER PROVIDES.



BOTH PHOTOS: UTAH RECLAMATION MITIGATION AND CONSERVATION COMMISSION



structural solutions will continue to be part of the nation's flood control strategy along rivers and coastlines, the key component to ensuring community safety lies in working with nature, not against it.

Without question, the destruction of watersheds and the manipulation of river channels have led to more floods and droughts, degraded water quality, destroyed wildlife habitat, diminished recreational opportunities, and endangered communities. It is far better to consider simpler and more cost-effective natural solutions. Indeed, many damaged rivers can be saved, and natural flood protection benefits restored, by repairing the natural form and function of rivers that have been damaged.

Strong wetlands protection and floodplain management, for example, provide rivers with more room to spread out, reducing flood levels. In some areas, levees can be set back farther from the river, or removed altogether if appropriate floodplain management steps are implemented. Giving some of the floodplain back to the river in unpopulated areas can also help alleviate pressure on levees guarding cities. In addition, restoring meandering river channels allows rivers to hold and gradually release heavy rainfall.

Protecting and restoring natural flood control assets also yield tremendous benefits to communities beyond the obvious buffers from flooding. These same wetlands and floodplains contribute to the purification and distribution of clean drinking water to millions of Americans. They also support commercially and recreationally valuable inland and coastal fisheries, provide habitat to the majority of species, and offer beautiful places for people to visit and enjoy.

Unfortunately, no amount of river protection, restoration, or engineering will protect every neighborhood from flooding. In some cases the safest and most cost-effective approach to sparing life and property is to relocate buildings to higher ground. Policy changes implemented after the Mississippi River floods of 1993 allowed neighborhoods in places like Arnold, Missouri; Trenton Island, Wisconsin; and Kampsville, Illinois



NATIONAL AQUARIUM OF BALTIMORE

## Investing in Restoration

**Many wetlands that once soaked up and filtered floodwaters — releasing them gradually after storms pass — are drained and filled for commercial development or cut off behind levees. Landscapes are paved over, or stripped of trees and soils, causing polluted water to run more swiftly off the land and then quickly downstream. Once-meandering river channels, which slowed the rate of water coursing down a river and provided habitat for fish and wildlife, are straitjacketed by concrete and stone “rip-rap.”**

**Fortunately, the science of river restoration has emerged in recent years aimed at undoing some of this damage and bringing back some of the natural benefits provided by healthy watersheds. River restoration can include a variety of different projects such as re-vegetating stream buffers to filter pollutants, removing unused concrete structures from river channels, establishing more natural flow patterns, or re-establishing habitat for fish and wildlife.**

**Thanks to the work of federal, state, and local resource managers, scientists, private consultants, and volunteer organizations, river restoration has grown exponentially over the past decade with well over 39,000 projects throughout the nation. Restoration is also good for the economy, with annual expenditures in excess of \$1 billion. More and more, state and federal legislatures are beginning to see the lasting value in these projects and have plans to spend billions more.**

**The end result of river restoration is finding the very best ways to provide communities with clean, abundant water, to protect public safety, and to preserve beautiful places that everyone can enjoy. For more information, visit [www.RestoringRivers.org](http://www.RestoringRivers.org).**

USDA NRCS

RESIDENTS IN THE NAPA VALLEY REJECTED A RECENT CORPS PROPOSAL FOR RIVER DREDGING AND HIGHER LEVEES IN FAVOR OF A MORE NATURAL APPROACH THAT INCLUDED RESTORING 650 ACRES OF WETLANDS IN THE NAPA RIVER FLOODPLAIN.



NAPA FLOOD AND WATER CONSERVATION DISTRICT

to relocate and thereby remove themselves from the hardship of frequent floods. National policy-makers should use these successes as guidelines to reform our federal flood insurance program, which continues to provide perverse incentives to rebuild not just in harm's way, but also in an economically unsustainable way.

## THE CORPS PROBLEM

The problems highlighted by Hurricane Katrina cry out for changes to the agency that played a significant role in that catastrophe.

As America's most influential and powerful entity affecting rivers and coastlines, the Corps must be held accountable for its past mistakes and take responsibility for charting a new course.

Congress has an important role to play by modernizing the rules and policies governing the Corps. True reform would ensure that the over-riding objective of all federal water projects would be to safeguard and sustain communities by protecting natural ecosystems that can prevent or reduce flooding damage, as well as provide a host of other benefits.

In the wake of rising waters, the focus quickly shifts to new beginnings and next steps. Now, then, is the time for all Americans to consider our nation's legacy of flooding, and to chart a new course. By taking advantage of natural benefits provided by healthy river ecosystems, not just defaulting to engineering, we can better guard against what can only be described as unnatural disasters.

*Rebecca R. Wodder*  
Rebecca R. Wodder  
President

FLOOD CONTROL EFFORTS THAT RELY ON CONCRETE AND ENGINEERING, SUCH AS THOSE USED ALONG THE LOS ANGELES RIVER, COMPLETELY DEPRIVE COMMUNITIES OF THE BENEFITS A HEALTHY RIVER PROVIDES.



ALAN LOOMIS

## Fixing the Corps

**W**ith the help of Congress, the U.S. Army Corps of Engineers has leveed, dammed, diked, deepened, and diverted countless rivers with devastating environmental impacts. But as the post-Katrina flooding of New Orleans tragically demonstrates, the environment does not suffer in a vacuum. When natural flood protection is destroyed, people are put at risk. There are many reasons why it is time to change the way the Corps does business, but none more important than to protect the lives and property of millions of Americans.

Building on their longstanding efforts to modernize the Corps, Senators Russ Feingold (D-WI) and John McCain (R-AZ) have introduced legislation addressing many of the problems highlighted by the Corps' role in the flooding of New Orleans. The Water Resources Planning and Modernization Act of 2006 (S.2288) would overhaul the Corps' planning process by requiring:

### Better Corps Planning

The Corps' planning guidelines have not been updated in more than 20 years, and are woefully out of date. The current guidelines promote the destruction of healthy rivers and wetlands that provide the first line of defense against storm surges and flooding. Worse, they allow the Corps to recommend projects that encourage development of high risk areas — putting people in harm's way — and do not adequately address potential loss of life. The bill would require an update of the Corps' planning guidelines to ensure that the Corps builds only projects that protect both communities and healthy rivers and wetlands, providing natural flood protection and ecological benefits.

### Independent Review of Key Projects

A steady stream of studies shows that Corps projects are not based on the best available science, economics, or engineering. In addition, the Corps often ignores the views of the public, civic leaders, and scientists. The bill requires review of costly or controversial Corps projects by independent experts to help ensure that Corps projects are properly designed and cause the least possible harm to communities and the environment. This in turn would help ensure that our tax dollars are spent responsibly.



THE HEALTH OF THE KISSIMMEE RIVER ECOSYSTEM WAS UNDERMINED WHEN THE CORPS CHANNELIZED AND DAMMED THE RIVER IN THE 1960S. AFTER ITS RESTORATION, FLORIDIANS SAW THE RETURN OF WATERFOWL, CLEAN WATER, AND NATURAL FLOOD CONTROL BENEFITS.

## Critical Protection of Natural Resources

The Corps has proposed no mitigation at all for the vast majority of its projects, according to Government Accountability Office reports. This adds to the loss of healthy rivers and wetlands that are vital to fish and wildlife, and are essential for a vibrant economy. To ensure effective mitigation for unavoidable harm to rivers and wetlands, the bill would make the Corps meet the same mitigation requirements as everyone else.

## Focus on National Priorities

Corps project planning and construction are not prioritized to address the nation's most pressing needs. The bill takes a number of steps to ensure that the agency focuses its efforts on projects that address national priorities for flood damage reduction, navigation, and ecosystem restoration. The bill also requires that all Corps projects avoid impacts to natural flood protection systems.

# America's Most Endangered Rivers of 2006



1. Pajaro River
2. Upper Yellowstone River
3. Willamette River
4. Salmon Trout River
5. Shenandoah River
6. Boise River
7. Caloosahatchee River
8. Kvichak & Nushagak Rivers (Bristol Bay)
9. San Jacinto River
10. Verde River

# #1 Pajaro River

THREAT: FAILURE TO ADOPT A COMPREHENSIVE FLOOD CONTROL PROJECT

## Summary

The U.S. Army Corps of Engineers' antiquated approach to flood control jeopardizes the future of the Pajaro River. The Corps' plan to rebuild levees and ignore problems upstream is fundamentally flawed and, if implemented, would lure businesses and residents to build in harm's way. Unless the Corps adopts a modern and comprehensive flood control project that works with nature — instead of against it — the health of the river will continue to decline and the safety and economic viability of riverside communities will face an ever-increasing threat of catastrophic flooding.

## The River

Located in the heart of the Central California coast, the Pajaro River flows through mountains, rugged rural range lands, chaparral, redwood forests, urban areas, and agricultural lands on its way to Monterey Bay — the centerpiece of the nation's largest federally protected National Marine Sanctuary. Below the river's confluence with the San Benito River, a narrow canyon concentrates flows to the floodplain where the city of Watsonville and the community of Pajaro are located. Low water levels from arid summers and agricultural withdrawals disguise the peril of winter floods.

Encompassing 1,300 square miles and five counties, the Pajaro watershed is one of the most geologically complex in North America. The San Andreas Fault bisects the watershed, and the river passes over at least two other active fault lines. Any meaningful flood control plan must take into account the significant influence of geologic activity on the shape and stability of the river, its tributaries, and the floodplain.

The Pajaro is designated as "impaired" under state clean water standards, and contributes the worst quality water of any river to the Monterey Bay Sanctuary. However, the river is currently able to support numerous federally protected species and state species of concern, including steelhead trout, red-legged frog, southwestern pond turtle, tidewater goby, western snowy plover, peregrine falcon, and yellow warbler. The Pajaro and its tributaries also provide abundant recreational opportuni-

ties including swimming, boating, biking, picnicking, and bird-watching in numerous small local parks peppered throughout the region.

## The Threat

By 1949, the Corps completed over 22 miles of levees along the lower Pajaro that were supposed to provide 50-year flood protection. These levees have not performed as planned. Instead, they provide only a fraction of the promised flood protection and have aggravated the river's significant sedimentation problems. As a result, the communities in the lower Pajaro Valley have flooded repeatedly in recent years, with dramatic flood events in 1995 and 1998.

Human activities have exacerbated flooding in this historically flood-prone river. The transformation of the lower river's once lush riparian habitat into a denuded channel has compromised natural flood mitigation measures. Following severe floods in 1995, most of the trees along the lower Pajaro's levees were removed in a misguided attempt to reduce flooding. Instead, the now bare channel has led to the increased velocity of flood waters, further erosion, and millions of dollars in flood damage recovery efforts.

Additionally, 70 years of extensive sand and gravel mining in upstream tributaries has degraded the riverbed, causing millions of cubic yards of sediment to be carried downstream,



DONNA DEWHURST, USEFWS

UPSTREAM ACTIVITIES AND THE WIDESPREAD REMOVAL OF TREES ALONG THE RIVER WASH EXCESS SEDIMENTS DOWNSTREAM.

LOIS ROBIN



# Pajaro River continued



KEN ADELMAN

A LESS ENVIRONMENTALLY DESTRUCTIVE FLOOD CONTROL STRATEGY SHOULD BE DEvised TO BETTER PROTECT PEOPLE LIVING IN THE FLOODPLAIN.

changing the river's hydrology, sullyng water quality, and harming wildlife. This mining, along with upstream farming and development, has also substantially increased peak flood flows, adding to the risk of flooding downstream.

Ignoring the upstream sedimentation problems effectively thwarts the success of any flood control project implemented on the lower river. But that is precisely what the Corps is doing. The Corps is poised to propose rebuilding the 57-year-old levee system and to keep the river channel stripped of most vegetation. Despite having the legal authority to develop a new solution that would restore the lower Pajaro and address both upstream and downstream problems, the Corps, with dubious economic justification, is looking to duplicate the antiquated approach of the past that has repeatedly failed the river and its communities.

The Corps' proposal for destructive and outdated levees would mislead residents about the safety of living in the floodplain, cost taxpayers more than \$200 million to construct, require significant maintenance funding, and despoil important habitat. Instead of restoring the historic upstream floodplain and wetlands that could provide the first line of defense against flooding, the current plan would virtually eliminate natural flood protection.

## What's At Stake

The Corps' plan will perpetuate an interminable cycle of levee failures, human and economic suffering, and costly repairs. It also will further impair the health of the river and put the safety of riverside communities at risk. Already the Monterey County Board of Supervisors has identified the Town of Pajaro as a desirable site to direct future county growth despite damage sustained by floodwaters in 1995. The county's draft updated General Plan encourages development of agricultural lands along the Pajaro River, provided that there is adequate flood protection. The Corps' new levees will encourage unwise development in the river's floodplain by providing a false sense of security to businesses and residents along the lower Pajaro.

If Hurricane Katrina has taught us anything, it is the danger of depending solely on structural solutions to protect people, homes, and businesses from a high-water event. New Orleans' tragic flooding has revealed the human, economic, and ecological costs of over-engineering river systems and foreshadows the threat faced by communities lying directly in harm's way. Levees can — and do — fail, and the risk of failure is greatest where natural wetlands and flood storage are no longer available to provide natural flood protection.

## The 12-Month Outlook

Congress, the Corps, local officials, floodplain property owners, concerned citizens, and other stakeholders have an extraordinary opportunity to develop a better plan that will improve the health of the Pajaro — and, there-



LOIS ROBIN

by, the Monterey Bay National Marine Sanctuary — and protect surrounding communities.

The Corps is expected to recommend a flood control plan for the lower Pajaro River in a Draft Environmental Impact Statement and feasibility report in June 2006. Issuance of these documents will provide a critical opportunity for the public, local governments, and other federal and state agencies to urge the Corps to advance a plan for the Pajaro that works with nature, and not against it. Such a plan would seek a more natural course for the river, restore a healthy riparian corridor, revegetate the river's banks and channel, and identify upstream wetlands and riparian lands where floodwaters could naturally and safely overflow. Local advocates have already provided the Corps with a plan for upstream measures that would protect floodplain properties, enhance other developmental uses, and improve the river's water quality.

The state of California should tell the Corps that it will not receive the necessary state approvals for constructing a flood control project that promotes the failed approaches of the past. The U.S. Fish and Wildlife Service and the National Marine Fisheries Service should ensure that any plan for the Pajaro complies strictly with wildlife protection laws. California also should strictly enforce all water quality requirements for the Pajaro and its tributaries.

The Corps should evaluate all mitigation requirements for past sand and gravel mining permits along the river for effectiveness, and should impose the strictest possible requirements on any new permits.

Congress should ensure that appropriations are available in 2007 to fund implementation of a watershed-wide management plan for the Pajaro that must be fully integrated with any flood control project on the river. Also, Congress should implement long overdue reforms to the Corps' project planning procedures as part of the Water Resources Development Act. Such reforms would help ensure that Corps projects will better safeguard communities, and protect natural systems that provide the first line of defense against flooding.



LOIS ROBIN

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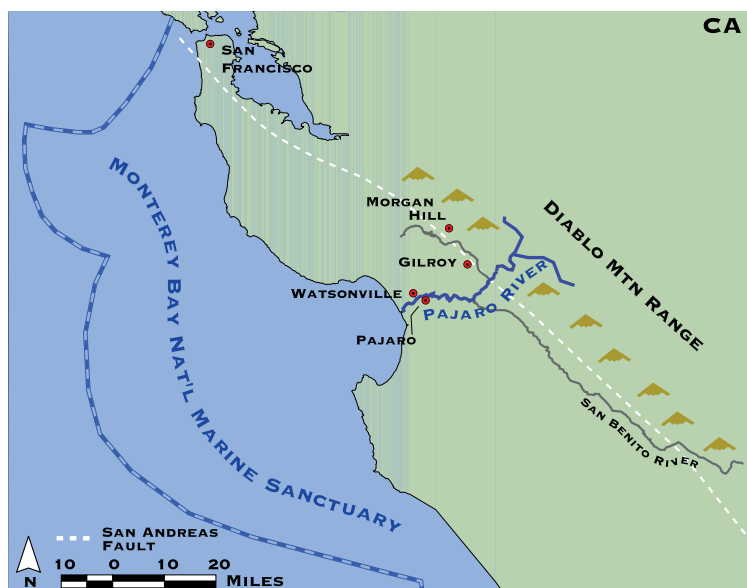
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LOW WATER LEVELS FROM ARID SUMMERS AND AGRICULTURAL WITHDRAWALS DISGUISE THE PERIL OF WINTER FLOODS.

FOR MORE INFORMATION OR TO TAKE ACTION:  
[HTTP://WWW.AmericanRivers.org/EndangeredRivers](http://www.AmericanRivers.org/EndangeredRivers)



## #2 Upper Yellowstone River

THREAT: FLOODPLAIN DEVELOPMENT

### Summary

Burgeoning riverside developments and widespread bank alterations threaten to compromise the integrity of the Upper Yellowstone River. The U.S. Army Corps of Engineers must properly assess the cumulative impacts of bank stabilization and flood control projects along the river, working in tandem with local officials to guide development in a way that protects one of the West's most scenic and vibrant rivers.

### The River

Dubbed "America's last best river" by National Geographic, the free-flowing Yellowstone journeys from the wild and rugged mountains of Yellowstone National Park through Montana's expansive prairies until it reaches its confluence with the Missouri River just east of the North Dakota border. As the Yellowstone transforms from a racing mountain stream into a wide, meandering river, it supports an astounding array of fish and wildlife, from cutthroat trout and bison, to pallid sturgeon and elk.

The Upper Yellowstone River, an 85-mile

stretch, is treasured for its world-class wild trout fishery and magnificent views of the towering Absaroka and Gallatin mountain ranges. The river is heavily used by anglers and whitewater enthusiasts, and in late winter and spring, birdwatchers come to see nesting bald eagles that congregate in its magnificent cottonwood forest. For these reasons, the Upper Yellowstone is frequently photographed and a popular recreation destination, making it central to local economies.

### The Threat

Although agriculture and ranching remain the dominant land uses in the surrounding Paradise Valley, the balance is shifting as ranches are continually parceled into new residential subdivisions, many of which are located on the banks of the highly flood-prone Yellowstone. In Park County, Montana, floodplain development has increased by 57 percent in the last two decades, with more than 600 buildings now located in the river's 100-year floodplain. This development has been accompanied by a dramatic increase in riprap, rock barbs, dikes, and levees that are intended to protect riverfront homes from flooding and erosion. Sadly, these so-called bank stabilization and flood control projects provide only a false sense of security to riverfront residents, and increase the threat of flooding downstream.

Floodplain development results in the loss of cottonwood forests and other riparian vegetation that provide natural flood protection and crucial habitat for fish and wildlife. Riprap and levees disconnect the Yellowstone from its floodplain, preventing adjacent wetlands from absorbing and then slowly releasing floodwaters. This, in turn, speeds the velocity of the current and increases the frequency and severity of flooding. In the long run, binding the river with riprap and levees also results in a loss of habitat diversity by eliminating side-channels, logjams, islands, and other natural features that support the Yellowstone's wild trout and other fish and wildlife.



GREATER YELLOWSTONE COALITION

PARK COUNTY'S TOURISM ECONOMY DEPENDS ON A HEALTHY, FREE-FLOWING YELLOWSTONE RIVER.



GREATER YELLOWSTONE COALITION



## What's At Stake

No amount of engineering can make the Upper Yellowstone floodplain safe for residential development. The safest, most cost-effective approach to sparing life and property is to build on higher ground. Unwise floodplain development and flood control projects only increase the risk of flooding, compromise recreational activities, harm fish and wildlife habitat, and diminish the river's scenic character. Unless future development is steered out of the floodplain, the Upper Yellowstone River will be deprived of the very qualities that currently attract thousands of visitors to Park County each year, fuel the local economy, and contribute to a high quality of life for local residents.

## The 12-Month Outlook

In 1999, Congress authorized and provided funding for the Army Corps of Engineers to develop a Special Area Management Plan for the Upper Yellowstone River. The plan will allow the Corps to assess the cumulative effects of bank stabilization and flood control projects on a watershed level, and implement a conservation strategy to protect important aquatic and riparian resources along the river. This is the first time the Corps is doing such a plan for a river, providing an opportunity to establish a good precedent.

The management plan was originally slated to be completed by now, yet the Corps has made little progress and continues to hand out permits for new bank stabilization projects. In order to protect the Upper Yellowstone from relentless floodplain development, the Corps must commit to completing this plan in a timely manner. The result should be a cap on bank stabilization activity along the Upper Yellowstone.

In conjunction with the management plan, the Corps should also ask Congress to appropriate \$50 million to conserve ecologically critical riverfront lands. This approach would allow thoughtful, well-planned development to continue, while protecting agricultural open space, recreational opportunities, fish and wildlife habitat, and preserving one of Park County's most valuable economic assets.

The majority of Park County citizens recognize the need to protect the Upper Yellowstone from poorly planned development, and the

GREATER YELLOWSTONE COALITION



County Commission is in the process of adopting a new growth policy that should call for protecting the health of the river and its many natural assets. The County Commission should commit to prohibiting any new residential building construction in the river's 100-year floodplain.

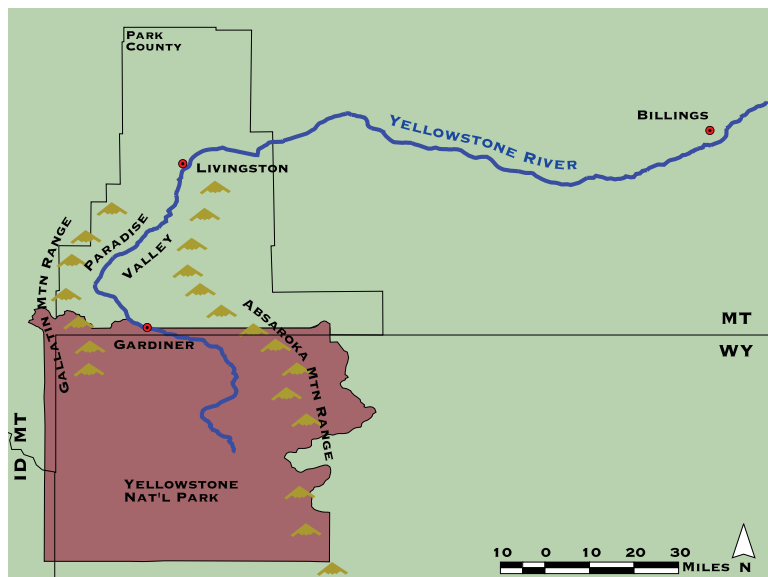
LEVEES, DIKES AND RIPRAP PROVIDE A FALSE SENSE OF SECURITY, INCREASING THE RISK OF FLOODING DOWNSTREAM AND PUTTING PEOPLE AND PROPERTY AT RISK.

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# #3 Willamette River

THREAT: INDUSTRIAL AND MUNICIPAL POLLUTION

## Summary

Along the Willamette River, a policy loophole allows factories and cities to routinely dump millions of pounds of pollution into the river each year in areas known as “toxic mixing zones.” This year, Oregon Governor Ted Kulongoski and state decisionmakers have the opportunity to eliminate this loophole by directing the Oregon Department of Environmental Quality (DEQ), the agency responsible for water quality, to phase out the use of toxic mixing zones. If polluters again convince lawmakers to oppose elimination of the loophole, toxic pollution will continue to threaten people and aquatic species who depend on a clean, healthy Willamette River.

## The River

The Willamette River in northwestern Oregon begins as a series of cold water springs in the Cascade Mountains, ending in Portland at its confluence with the Columbia River. Since the Willamette River Valley is home to more than 70 percent of Oregon’s population, fishing, boating, and other outdoor recreation activities are a key part of the local economy, and the high quality of life. The river is also the main water source for drinking water and agriculture. The Willamette River basin contains the richest native fish fauna in Oregon, including endangered steelhead and Chinook salmon.

The cleanup of the Willamette River is an ongoing public health issue in Oregon, dating back more than 100 years. As early as 1875, Portland residents complained about the quality of the river as a drinking water source. In 1938, Portland Mayor Joe Carson and local students led one of the first clean water rallies in Oregon, demanding the cleanup of the Willamette River. Through the early 1960s pulp and steel mills sent rafts of toxic sludge float-

ing downriver and discharges of raw sewage left fish unable to breathe. However, in the late 1960s, Governor Tom McCall led a significant cleanup effort, which resulted in improved treatment of discharges from municipal and industrial pipes. In 1972, National Geographic ran a cover story on the Willamette River titled “A River Restored.” Despite significant improvements, some industries and municipalities continued to use the Willamette River as a pollution dumping ground.

Current Oregon Governor Ted Kulongoski touts his Willamette River Legacy as the major environmental initiative of his first term. Under the program, the governor promises to clean up industrial pollutants in the Willamette River — but he needs to eliminate the use of toxic mixing zones.

## The Threat

The Willamette River is in danger of continued toxic contamination due to the toxic mixing zone loophole. With this loophole, factories and cities are allowed to seriously degrade water quality and threaten river health by dumping millions of pounds of pollution into the Willamette, including mercury, lead, zinc, and arsenic, at levels known to be toxic. These discharges are commonly eight to ten times the levels set by DEQ for water quality standards to protect human health and aquatic life. In some cases, these toxic zones can be the size of several football fields in areas frequently used for swimming, fishing, and boating. Despite the threat to the river and people, the DEQ allows the existence of these toxic areas as long as the chemicals are diluted enough at some point downriver and outside of the mixing zone to meet minimum state standards.

## What’s At Stake

Continued dumping of toxic levels of pollution in the Willamette threatens a whole host of economic activities dependent on a clean,



OSPIRG



OSPIRG

PORTLAND RESIDENTS DESERVE A CLEAN AND HEALTHY WILLAMETTE RIVER. GOVERNOR KULON-GOSKI NOW HAS THE POWER TO HELP MAKE THAT A REALITY.



WILLAMETTE RIVERKEEPER

healthy Willamette River. Cities draw drinking water from the river, farmers use water from the Willamette to irrigate crops, and anadromous fish migrate up river to spawn. Over two million Oregonians live within 20 miles of the Willamette, and the river is heavily used by the public for recreation.

Cities such as Eugene, Corvallis, and Portland embrace a healthy Willamette River as a valuable amenity and economic asset, and are investing in developing waterfront parks and marinas, while restoring fish and wildlife habitat. Yet, swimmers and anglers do not know if they are swimming or fishing in polluted mixing zones, because the toxic areas are not even identified with warning signs.

## The 12-Month Outlook

Governor Kulongoski should uphold his promise to clean up industrial pollutants in the Willamette River and direct DEQ to phase out the use of toxic mixing zones. The governor can direct the agency to eliminate toxic dumping without further action by the Oregon Legislature. This is an opportunity for him to create a lasting legacy to protect public health and recreation on the Willamette River.

During the last legislative session, the Oregon Legislature considered the Water Quality Protection Act, introduced to rein in the use of toxic mixing zones. The bill would

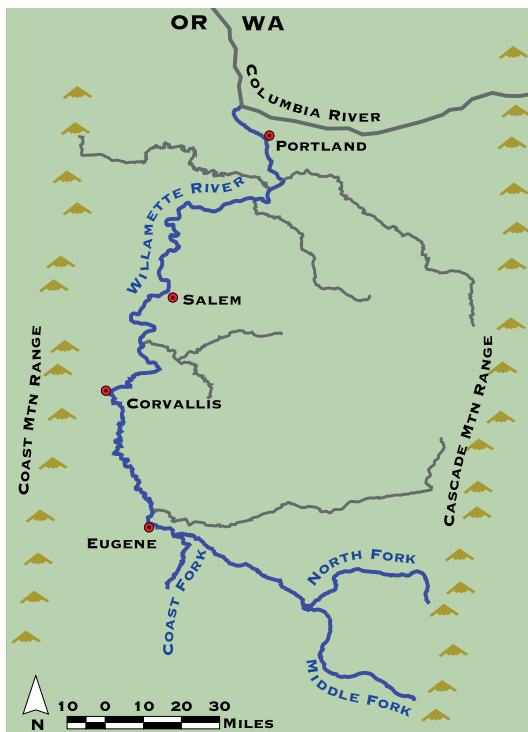


STRENGTH IN PERSPECTIVE

have required the DEQ to develop a plan to quickly phase out the practice of allowing the discharge of pollutants at toxic levels into Oregon's waters. Unfortunately, polluters pressured legislators to defeat the bill.

If the governor does not act, the 2007 Oregon Legislature will revisit the issue of toxic dumping in the Willamette River when water quality protection legislation is reintroduced. It is expected that the bill will require the DEQ to inform the public of the location and pollution levels within toxic mixing zones and develop a plan to phase out this dumping. This is a clear opportunity for Oregon's elected officials to take a stand for a clean, healthy Willamette and eliminate this dangerous mixing zone practice.

ONLY A HEALTHY WILLAMETTE RIVER WILL SUPPORT THE WIDE ARRAY OF ECONOMIC AND RECREATIONAL ACTIVITIES DEPENDENT UPON CLEAN WATER AND ABUNDANT FISH RUNS.



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# #4 Salmon Trout River

THREAT: ACID MINE DRAINAGE

## Summary

The pristine Salmon Trout River, in the heart of one of Michigan's largest remaining wilderness areas, provides critical natural, economic, and drinking water benefits to the nearby communities and the region. A mining operation is poised to convert part of the Salmon Trout's headwaters into an industrial zone, creating a risk of acid mine drainage that could contaminate the river and seep into Lake Superior. Unless the Michigan Department of Environmental Quality (MDEQ) denies the operation's mining permit application, this recreational and natural jewel could be ruined.

## The River

The Salmon Trout River flows through the Huron Mountains and empties into Salmon Trout Bay on Lake Superior. The headwaters of the river begin in the Yellow Dog Plains, known for its remoteness, wild areas, and abundant wildlife, such as moose and wolves. The Salmon Trout River is currently in excellent ecological health, and this vast expanse of forest and wetlands is one of the Midwest's few and most significant remaining wilderness areas. The river is home to the only known breeding population of the native coaster brook trout on Lake Superior's south shore. The plight of the coaster brook trout recently prompted several groups to petition for the species to be designated as endangered

THE SALMON TROUT RIVER, HOME TO THE RARE COASTER BROOK TROUT, EMPTIES DIRECTLY INTO LAKE SUPERIOR, THE MOST PRISTINE OF THE GREAT LAKES.



YELLOW DOG WATERSHED PRESERVE, INC.

under the Endangered Species Act.

Residents in the Salmon Trout watershed rely on the river and groundwater for part of their drinking water supply, including the use of public artesian wells. Tourism, fishing, and recreation account for 70 to 90 percent of the local economy. The river and surrounding areas contribute to the livelihood of the local Keweenaw Bay Indian Community, and is included in their Ceded Territories, established through a treaty in 1842. Within these territories, the Tribe retains traditional rights for hunting, fishing, and gathering.

## The Threat

The Kennecott Minerals Company's proposed Eagle Project would convert roughly 92 acres of forest and wetlands at the Salmon Trout River's headwaters into an industrial zone. The underground mine would extract about four million tons of sulfide ore containing nickel and copper from bedrock below the surface. Kennecott, a subsidiary of London-based Rio Tinto, plans to operate the mine for six to eight years, and then spend another two years attempting to restore the area to its natural state.

When the high-sulfide ore comes in contact with air and water, it forms sulfuric acid. The acidic solution leaches harmful heavy metals, like copper and cobalt, creating what is commonly known as acid mine drainage. Rivers and groundwater become contaminated when acid mine drainage seeps from a mine site into the ground and streams.

The proposed mine poses a significant threat to the water quality of the Salmon Trout and nearby shores of Lake Superior.



YELLOW DOG WATERSHED PRESERVE, INC.

The mine has the potential to contaminate groundwater and the Salmon Trout with a harmful, toxic stew, adversely affecting the drinking water supply, local economies, recreational opportunities, and the rare coaster brook trout's habitat. Beyond the direct impacts on water quality, the construction of the mine would cause significant disruptions in what is now a sparsely populated area that is prized for its natural benefits that support local economies and provide critical habitat for wildlife.

## What's At Stake

The Salmon Trout River flows through some of the most remote and pristine areas remaining in Michigan. Throughout the Salmon Trout River watershed, residents hunt, hike, fish, and depend on this healthy ecosystem for their economic livelihood. Such a large and remote tract of wilderness is not only an important economic resource, but also a cherished natural treasure to the people who live and visit here.

The threat of contamination from acid mine drainage is a concern in any sulfide mining operation, and the proposed Eagle Mine project is no exception. Because the ore body is located directly under



the river, and the mining site will be directly adjacent to this, any acid mine drainage that occurs would have a direct impact on river and groundwater quality. Such contamination in the river could bring serious harm to water quality — potentially contaminating the drinking water supply, and seriously harming the natural habitat of the unique native species. Even minute quantities of these toxins are deadly to juvenile coaster brook trout.

## The 12-Month Outlook

The Kennecott Company submitted a permit application February 21, 2006. A public hearing will be held on April 18, and a second hearing is being planned. MDEQ should deny Kennecott's permit because this proposed mine would set a dangerous precedent for the development of more, risky sulfide mining in Michigan.



CENTRAL LAKE SUPERIOR WATERSHED PARTNERSHIP

KENNECOTT'S PROPOSED MINE COULD BRING HEAVY INDUSTRIAL DEVELOPMENT TO ONE OF THE MIDWEST'S LARGEST WILDERNESS AREAS, DEPRIVING COMMUNITIES AND WILDLIFE OF DRINKING WATER, RECREATIONAL OPPORTUNITIES, AND HABITAT.

## Contact

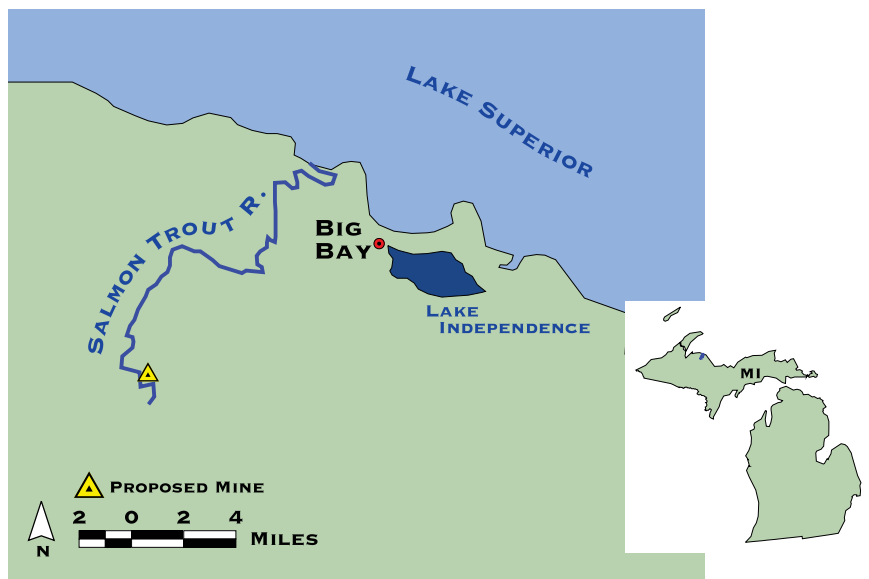
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# #5 Shenandoah River

THREAT: RUNAWAY DEVELOPMENT



DOUGLAS GRAHAM, WLP, INC.

## Summary

Rapid development threatens the health of the Shenandoah River, well-known for fishing and boating, as well as the high quality of life it provides surrounding communities. Unless local governments plan responsibly for growth by recognizing the link between land use decisions and clean water, the very characteristics that make the Shenandoah Valley so attractive to its residents and visitors could be lost.

## The River

The Shenandoah River's North and South Forks flow through agricultural valleys in northwestern Virginia, converging at the town of Front Royal, before continuing on to its confluence with the Potomac River at Harper's Ferry, West Virginia. As the Potomac's largest tributary and an important source of drinking water, the Shenandoah's health is critical to both local and downstream residents in the Washington, D.C. region, and the imperiled Chesapeake Bay.

Home to a rich history, the Shenandoah Valley was a corridor for pioneer movement, a thriving agricultural area, and host to a number of significant Civil War battles. This heritage, in addition to excellent boating and fishing opportunities, draws hundreds of thousands of visitors annually.

WELL-PLANNED DEVELOPMENT CAN HELP COMMUNITIES IMPROVE THE HEALTH OF THE SHENANDOAH RIVER AND CHESAPEAKE BAY.



EDNEVILLE.COM

## The Threat

The Shenandoah River is at a high risk of becoming a victim of its own popularity. Now, as the population of the Shenandoah Valley soars and agricultural land is replaced by urban and suburban development, the river is under siege from increased polluted runoff, as well as over-burdened sewage treatment and water



EDNEVILLE.COM

supplies. According to the Chesapeake Bay Tributary Strategy, more than \$2 billion is needed to restore the Shenandoah River to meet clean water goals. Since development is controlled at the community level, local governments largely hold the fate of the river in their hands.

More than 1,300 miles of rivers and streams in the Shenandoah watershed fail to meet federal clean water standards because of excess nutrients, sediment, and other pollutants. A major cause of these problems is overdevelopment. Rapid growth leads to more roads, parking lots, and roofs. These hard surfaces prevent rain from soaking into the ground naturally and result in significant increases in runoff tainted by automobile oil, lawn fertilizer, and other pollutants into nearby streams that feed into the river. Likewise, population growth is taxing sewage treatment capacity and drinking water supplies, threatening the river and human health. According to the Virginia Department of Environmental Quality, 80 percent of the Shenandoah South Fork's adult smallmouth bass and red breasted sunfish populations died in 2005, while an identical fish kill occurred in the Shenandoah's North Fork in 2004. Although the cause of these kills remains unclear, polluted water is the prime suspect, underscoring the degradation of this river.

## What's At Stake

The Shenandoah River is vital to the culture, economy, and health of the residents of Virginia and West Virginia. It is an important local and regional drinking water source. Nearly 90 percent of the Washington, D.C. metropolitan region depends on the Potomac and its major tributary, the Shenandoah, for clean drinking water.

Also long known as a recreation destination, recent fish kills now threaten angling, and declining water quality may affect the desirability of the river for boating. Unless run-away development is controlled and funding is set aside to restore the river, the beauty and clean water that attracted residents and visitors alike may be lost.

## The 12-Month Outlook

Several county-level planning decisions during 2006 are key to the Shenandoah's future. These decisions are opportunities for decisionmakers to adopt river-friendly ordinances encouraging natural stormwater management and requiring developers to implement development techniques that minimize the use of hard surfaces.

This year, Frederick County, Virginia will finalize its Rural Area and Urban Area plans that will control development patterns for years to come. County officials should heed recommendations from the county's Planning Commission, special study committees, and citizens, and encourage low-impact development practices that limit the amount of concrete surfaces, and thereby allow more rain to soak into the ground naturally, minimizing polluted runoff. The County should also take steps to protect the river's water quality by creating a stream buffer ordinance that preserves and restores vegetation along the river to filter out pollutants and prevent riverbank erosion.

Recently, Virginia's Shenandoah and Warren counties adopted new Comprehensive Plans to guide future development. Yet, developers are already requesting exemptions. The counties should stand up against efforts to undermine their authority and reject attacks on sound planning. Additionally, both counties should follow up on their stated interest in streamside buffers and buffer ordinances.

It is also essential to increase funding for the cleanup of the Shenandoah River through a dedicated state funding source. Such assistance should be used to reduce polluted runoff from



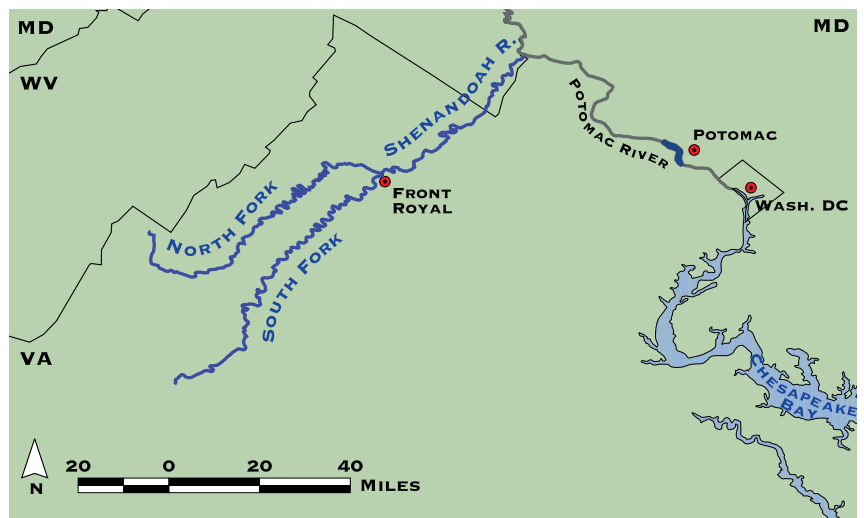
urban and agricultural areas, restore degraded streams in the Shenandoah watershed, improve sewage treatment infrastructure, and identify the cause of the recent fish kills.

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THE SHENANDOAH RIVER IS AN INCREDIBLE COMMUNITY ASSET, PROVIDING DRINKING WATER, IRRIGATION, AND RECREATIONAL OPPORTUNITIES TO AN AREA RICH IN HISTORY.



# #6 Boise River

THREAT: CYANIDE LEACH MINE

## Summary

The Boise River is threatened by a proposed cyanide leach gold mine that could poison this important source of drinking and irrigation water and popular recreation destination. Unless state and federal decisionmakers stop plans for the mine, the river that provides Boise — Idaho's capital and largest city — a high quality of life could be ruined by toxic pollution.

## The River

The Boise River, formed by its North, Middle, and South Forks, is a tributary of the Snake River. The Boise River provides more than 20 percent of Boise's drinking water and irrigation for 300,000 acres of crops in Idaho's Treasure Valley. It is a popular destination for rafting, inner-tubing, and fishing. Additionally, it is home to a variety of fish and wildlife including, bull, rainbow and cutthroat trout, elk, black bear, and wintering bald eagles. The U.S. Forest Service has determined that portions of the river's North and Middle Forks are eligible for national Wild & Scenic river protection.

## The Threat

A Canadian mining company's proposal to build a cyanide leach gold mine near the Middle Fork, puts the health of the river at

risk and endangers the city of Boise and other downstream communities.

The Atlanta Gold Company proposes to blast two giant pits in the headwaters of the Boise River and remove more than 1,000 feet of mountain. Rock taken from the pits would be crushed and placed on leach pads, then doused with a cyanide solution to extract the gold. Liners would then seek to capture the toxic solution after it filters through the crushed rock. More than 27 million tons of mining waste containing arsenic would be dumped in a valley overlooking the town of Atlanta, Idaho.

The mining operation would cover more than 350 acres of steep, unstable, and rugged terrain that receive large amounts of snow and rain, creating a risk of a toxic cyanide solution spill. This could, in turn, pollute streams and groundwater that feed the Boise River.

Cyanide leach mining can create toxic waste piles, barren land, polluted drinking water supplies, and public health threats. This type of contamination from cyanide leach mines led voters to ban such mining in the state of Montana and in five counties in Colorado.

## What's At Stake

The city of Boise's drinking water and the Treasure Valley's irrigation water depend on a clean Boise River. Boise consistently rates as one of the best cities in the country in which to live and to do business, and the parks and trails along the Boise River attract scores of families who hike along and raft, fish, and splash in the river.

Both direct and indirect effects of this proposed mine threaten the area. Cyanide is highly toxic to people and wildlife — even minute quantities can kill fish, birds, and mammals — and could severely degrade fish and wildlife habitat, particularly the critical habitat of bull trout, federally-listed as a threatened species.



IDAHO CONSERVATION LEAGUE

RESIDENTS OF BOISE AND THE SURROUNDING AREAS HAVE LONG ENJOYED RECREATING IN AND ALONG THE BOISE RIVER. A CYANIDE GOLD MINE COULD MAKE THE RIVER UNSAFE FOR PEOPLE AND WILDLIFE.



IDAHO CONSERVATION LEAGUE

**SNAKE RIVER UPDATE**  
 2006 WILL BE A PIVOTAL YEAR FOR THE LOWER SNAKE RIVER, LISTED IN PAST YEARS IN THIS REPORT. FOR AN UPDATE, PLEASE SEE [WWW.AMERICAN-RIVERS.ORG/SNAKEUPDATE](http://WWW.AMERICAN-RIVERS.ORG/SNAKEUPDATE)





IDAHO CONSERVATION LEAGUE

IF DECISIONMAKERS DO NOT PROTECT THE BOISE RIVER, RESIDENTS COULD SEE THE DETERIORATION OF ONE OF THE MAJOR NATURAL ATTRACTIONS MAKING BOISE AMONG THE TOP PLACES TO LIVE IN THE COUNTRY.

And millions of pounds of hazardous chemicals and diesel fuel would have to be transported on narrow, riverside dirt roads, creating an unacceptable risk of chemical spills to the community and the river.

### The 12-Month Outlook

The U.S. Forest Service is reviewing Atlanta Gold's proposal and will release a Draft Environmental Impact Statement in the fall of 2006. A public comment period will immediately follow. The Forest Service should reject the cyanide mine at the Boise River's headwaters that poses an unacceptable risk to clean drinking water and outdoor recreation. There is too much at risk for the health and well-being of the surrounding communities and wildlife.

Meanwhile, until the suitability for national Wild and Scenic status for the North and Middle Forks is determined, the Forest Service should diligently protect the Boise River's natural resources as called for in its current management plan for the Boise National Forest.

The Atlanta Gold Company must apply to the Idaho Department of Environmental Quality and the Idaho Department of Lands for permits to conduct cyanide leaching. These state agencies should refuse to issue the permits on the grounds that the cyanide leaching process poses too great a threat to public welfare.

At the national level, Congress must reform the antiquated Mining Law of 1872 governing hardrock mining activities on federal lands. In October 2005, Representatives Nick Rahall (D-

WV), Christopher Shays (R-CT) and Jay Inslee (D-WA) introduced a bill into the U.S. House of Representatives that would put an end to irresponsible mining by implementing environmental protections and cleanup provisions, and instituting important fiscal reforms. Congress should pass this bill, for the sake of the city of Boise, and the health of the Boise River and other rivers threatened by irresponsible mining activity.

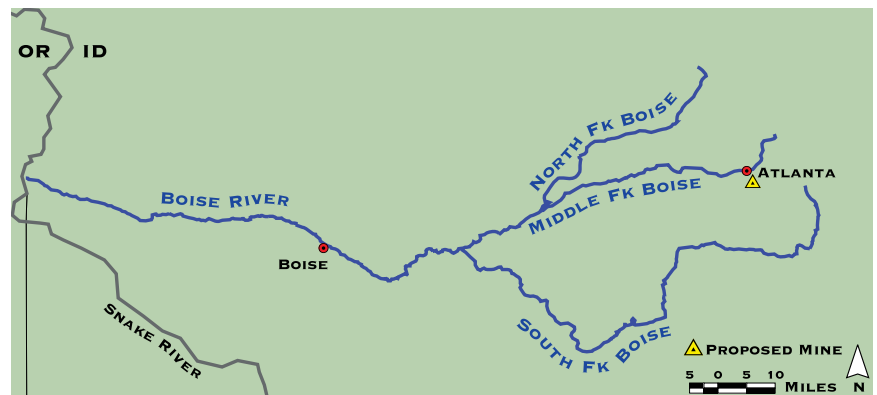
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# #7 Caloosahatchee River

THREAT: RELEASES OF TOXIC WATER

## Summary

The U.S. Army Corps of Engineers regularly releases large quantities of polluted water from Lake Okeechobee into the headwaters of the Caloosahatchee River. Unless the Corps regulates discharges from Lake Okeechobee to protect the ecological health of the river, polluted discharges will continue to put human health at risk, devastate native fish and wildlife populations, and harm Southwest Florida's tourism economy.

## The River

The Caloosahatchee River flows through Southwest Florida and empties into San Carlos Bay on the Florida Gulf Coast. The lifeblood for many of the surrounding counties, the river contributes more than \$2 billion annually to tourism through recreational use and cultural events. The waters of the Caloosahatchee provide drinking water for 40,000 residents in Lee County and irrigation for Florida's west coast citrus and sugar crops.

This river basin is an ecological jewel, and comprises part of the Great Calusa Blueway — a water trail home to dolphins, manatees, and more than 300 species of birds. Five National Wildlife Refuges are dependent upon this river for water, including those on the Sanibel and Captiva islands.

## The Threat

Historically, Lake Okeechobee — the second largest lake completely within the continental United States — overflowed into the Caloosahatchee River only during extreme wet-weather conditions. In the 1930s, a dike was built by the Corps around the lake to secure a water supply for agriculture and to protect against flooding. Throughout the 20th century, urban and agricultural expansion continued, resulting in the steady reduction in natural wetland habitat and degraded water quality.

Successive severe hurricane seasons in recent years have created dangerously high water levels in the lake, exacerbating water quality problems in Lake Okeechobee by churning nutrient-laden sediments and re-suspending them into a trillion gallons of lake water. Prompted by limits on storage volume, the South Florida Water Management District (SFWMD) now regularly releases polluted water — up to 69,500 gallons per second — from Lake Okeechobee into the Caloosahatchee River.

These water releases sacrifice the river's water quality. The combination of re-suspended sediments and fertilizers has turned Lake Okeechobee water into what local reporters liken to chocolate soup, which now flows regularly into the Caloosahatchee, and eventually reaches San Carlos Bay. Of primary concern are the nutrient-induced harmful algal blooms that deplete dissolved oxygen, block sunlight, clog boat intakes, and produce fish-killing toxins. These toxins are also a threat to human health, irritating human skin, causing nausea and vomiting, and, in large doses, affecting liver functions.

The estuary also suffers because of the mismanagement of the river. Fluctuating water levels in the Caloosahatchee cause two distinct but significant problems. Excess water during rainy seasons produces low salinity levels that are unable to support marine aquatic life, while severe low flows as a result of municipal and agricultural withdrawals during the dry season cause salinity levels to spike. Discharges from Lake Okeechobee are affecting the salinity and nutrient levels in the waters



JIM REID, USFWS

INTENSE ALGAL BLOOMS FED BY AGRICULTURAL AND URBAN NUTRIENT RUNOFF HAVE SEVERELY DEPLETED RIVER OXYGEN LEVELS, CONTRIBUTING TO THE RECENT DECIMATION OF THE RIVER'S COMMERCIAL SEAFOOD SPECIES AND SEAGRASS — AN IMPORTANT SOURCE OF FOOD FOR MANATEES.



CALOOSAHATCHEE RIVER CITIZENS ASSOCIATION

surrounding the Ding Darling National Wildlife Refuge, causing algal blooms that have already devastated the ecosystem and the fish and bird life for which the refuge is famous.

## What's At Stake

The impacts of the Lake Okeechobee releases to the Caloosahatchee River are extremely harmful to the local communities that rely on the river and the natural river ecosystem. Both scientists and fishermen report decimation of most of the river's game and commercial species, including blue crabs, oysters, redfish, goliath grouper, and catfish. Algal blooms result in bans on public swimming in the river. Finally, the endangered West Indian Manatee, the river's signature species, has lost nearly its entire food source along the length of the Caloosahatchee, despite the river's designation as critical habitat.

## The 12-Month Outlook

The Army Corps of Engineers and SFWMD regulate Lake Okeechobee discharges. These agencies are now reviewing the lake management plan that dictates the discharges into the Caloosahatchee River and San Carlos Bay.

The Jacksonville Army Corps District committed itself to finalizing a new discharge schedule by January 2007 and is slated to release a Draft Supplemental Environmental Impact Statement for public comment in June 2006. The Corps should ensure that Lake discharges are managed to dramatically reduce the devastating impacts to the Caloosahatchee. At the same time, the U.S. Fish and Wildlife Service must ensure that any new water management plan complies strictly with the Endangered Species Act.

The Corps is building a reservoir to hold excess water from Lake Okeechobee in an effort to mitigate the impacts of the water releases, as part of the Everglades Restoration Plan. But the reservoir is a palliative solution, and to protect the Caloosahatchee, the Corps and SFWMD must apply state water quality standards to the project to ensure that this reservoir does not become a problem, too. The agencies must develop and implement a proactive water quality plan that includes specific pollution reduction targets aimed at the source of the pollution.



CALOOSAHATCHEE RIVER CITIZENS ASSOCIATION

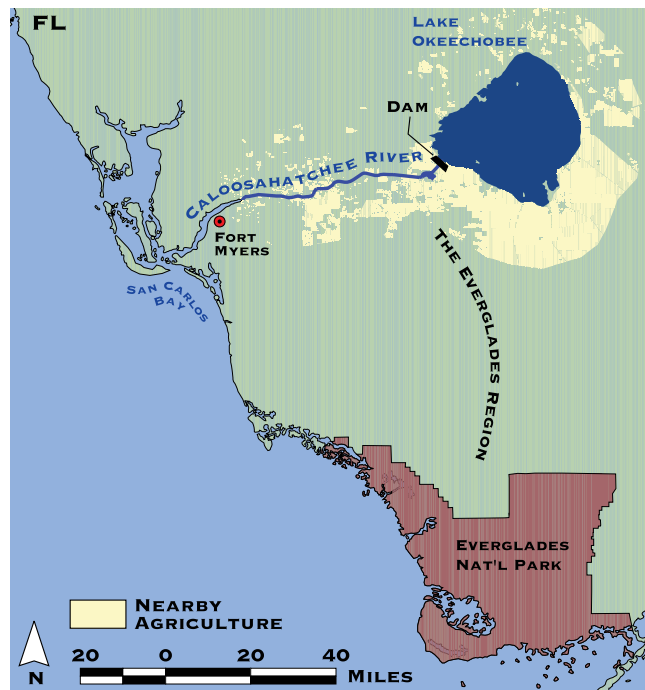
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TOXINS FROM FERTILIZER RUNOFF, PROVEN TO CAUSE SKIN IRRITATION, NAUSEA, VOMITING, AND LIVER FAILURE, ARE BEING RELEASED INTO THE DRINKING WATER ON A REGULAR SCHEDULE.

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# #8 Bristol Bay

THREAT: OPEN PIT MINING

## Summary

Alaska Governor Frank Murkowski, the U.S. Bureau of Land Management (BLM), and a small group of mining companies plan to develop a major mining district — including plans for North America's largest open pit gold and copper mine — in the headwaters of the Kvichak and Nushagak rivers. These rivers form the heart of the Bristol Bay drainages, and support the largest and most productive wild salmon fishery in the world. The proposed mining district would result in a perpetual risk of toxic runoff that threatens to harm the health of nearby communities, while potentially decimating the fishery and poisoning nearby wildlife.

## The Rivers

The Bristol Bay watershed is an intricate system of lakes, streams, and rivers southwest of



EMILY CHENEL

Anchorage, Alaska that remains remarkably unchanged by human activity. The watershed is an integral part of the state's economy and has provided sustainable jobs, subsistence foods, and other benefits to Alaska Natives — including the Yupik Eskimos, Aleuts and Athabascan Indians — for generations.

There are no significant dams and few roads. With only sparse trees, it has not been subjected to logging. In addition to spectacular salmon and trout runs, the Bristol Bay area provides a home to brown bears, moose, one of Alaska's largest herds of caribou and a very rare freshwater seal population.

The Kvichak River is home to the single largest salmon run on the planet. The Nushagak River hosts the largest king salmon run in Alaska. The region's spectacular salmon runs result in an annual catch numbering in the tens of millions. The area also includes Alaska's first designated trophy trout area, attracting more wilderness recreation than any other area of the state.

## The Threat

As the demand for gold continues to climb, a new, more toxic gold and copper rush — that uses cyanide to extract the metals — is taking place in Alaska. According to the U.S. Environmental Protection Agency, the hardrock mining industry is the biggest toxic polluter in the country, yet the industry faces some of the weakest environmental regulations. These operations blast and excavate several tons of rock to retrieve mere ounces of gold. Open pit mines using cyanide and other toxic chemicals to leach gold and copper from the rubble have left a legacy of water pollution in their wake. This, in turn, costs taxpayers billions of dollars in cleanup costs to remove sulfuric acid and toxic heavy metals from water supplies after the mines close. Even minute quantities of these leached toxins are deadly to juvenile salmon and trout.

Governor Murkowski and the BLM are attempting to develop an enormous mining district in the pristine Bristol Bay watershed. This proposed district poses the single greatest threat to the region's environment and the commercial fishing economy. Of particular concern, Northern Dynasty Mines, Inc. proposes building the Pebble Project, North America's largest open pit gold and copper mine, in the Bristol Bay headwaters. The open pit would cover more than two square miles and would be at least 1,600-foot deep. The entire mine complex, including a tailings



ALASKA SPORTSMAN'S LODGE

THE SINGLE LARGEST SOURCE OF TOXIC RELEASES IN AMERICA, HARDROCK MINING, ENDANGERS THE FERTILE RIVERS OF BRISTOL BAY WITH CYANIDE, SULFURIC ACID, AND OTHER TOXIC CHEMICALS, THREATENING WILDLIFE, AND LOCAL RESIDENTS.

lagoon potentially holding billions of tons of chemically treated mine waste, would cover approximately 15 square miles. One lake and several streams — which contain salmon, northern pike and other gamefish — would be completely eliminated. Wildlife could drink from the toxic tailings lagoons, and runoff from the mining operation could taint drinking water supplies and salmon spawning and rearing habitat.

## What's At Stake

The proposed Pebble Project and the proposed broader mining district threaten a way of life that has sustained the residents of the Bristol Bay area for generations, while posing a significant danger to the native fish and wildlife. Downstream residents draw drinking water from the Kvichak and Nushagak rivers, and the local economy is built on the salmon runs, supporting both large-scale commercial fishing and a world-class sport fishery. The Alaska Native villages in the watershed still rely on the robust yearly salmon harvest for survival.

## The 12-Month Outlook

A strong alliance has formed to oppose this unprecedented risk to Alaska's environment and the native fisheries, including Alaska Native leaders, commercial fishermen, hunters, anglers, and conservation organizations.

Mining proponents are highly motivated and the Northern Dynasty corporation has announced its intention to apply for mining permits in early 2007 from the Alaska Department of Natural Resources. The agency should protect the communities, fisheries, and wildlife that depend on the Bristol Bay watershed, and deny Northern Dynasty's permit.

The BLM has an opportunity to protect its lands in the region, including the site of the proposed mine, in its Resource Management Plan. The agency is currently scheduled to release the Draft Resource Management Plan in late 2006, and should include preferred alternatives such as closing the area to mining.

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EMILY CHENEY

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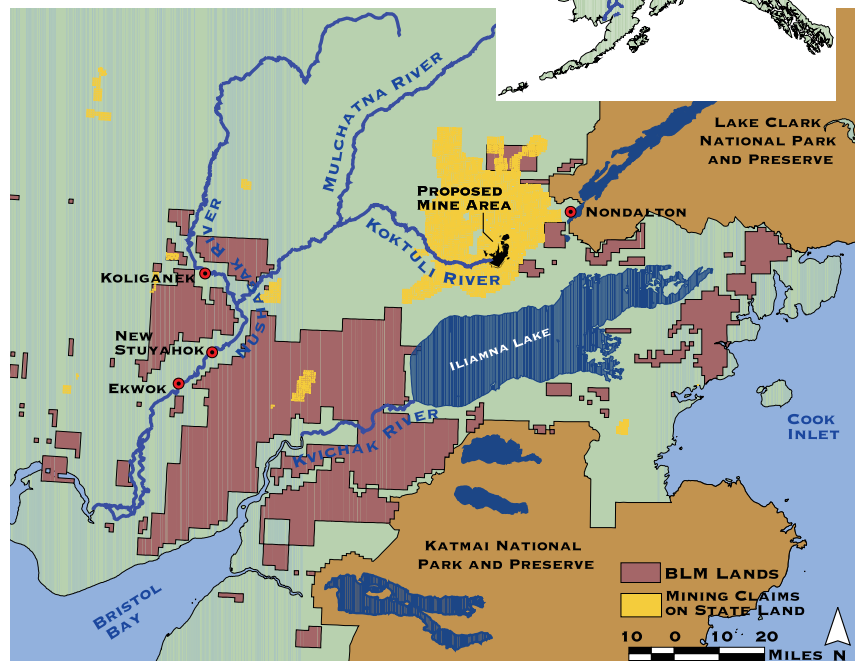
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SUBSISTENCE, COMMERCIAL, AND RECREATIONAL FISHERMEN DEPEND ON THE BRISTOL BAY'S SPECTACULAR SALMON AND TROUT RUNS—SOME OF THE LARGEST IN THE WORLD.

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# #9 San Jacinto River

THREAT: UNREGULATED SAND MINING

## Summary

Unregulated sand mining operations threaten the San Jacinto River and its adjacent forest and wetlands. Unless decisionmakers establish and enforce sand mining regulations and acquire critical lands in the San Jacinto River watershed, Texas could lose the last remnants of this ecological and recreational gem.

## The River

With headwaters near Huntsville, Texas, the East and West Forks of the San Jacinto River wind their way through bottomland hardwood forests, and converge at Lake Houston before continuing on to deposit freshwater into Galveston Bay. The San Jacinto is the westernmost boundary of the historic Big Thicket, a heavily-forested area renowned for its stunning tree diversity. The area is home to several rare, threatened, and endangered species, and is a stopover for neotropical migratory birds crossing the Gulf of Mexico.

The San Jacinto River is also historically significant. The Texas Revolutionary War ended on the banks of the river in 1836, as General Sam Houston's troops defeated the Mexican Army. In the same year, brothers James and Augustus Allen founded the city of Houston along a San Jacinto tributary, named in honor of the victorious general, now the nation's fourth largest city.

CYPRESS TREES IN THE BOTTOMLAND HARDWOOD FOREST PROVIDE A HOME TO MANY THREATENED AND ENDANGERED SPECIES ALONG THE SAN JACINTO.



RD KISSLING



SHERRY JUSTUS

## The Threat

The San Jacinto River system is threatened by sedimentation and bank erosion due to sand mining operations. Sand mining involves cutting down and excavating of forests and wetlands to access adjacent sandy riverbanks. When intact, these forests and wetlands provide natural filtration and flood protection benefits by absorbing, filtering, and then gradually releasing stormwater into the river.

Unfortunately, sand mining is unregulated in Texas, and companies can deforest and dig as long as the sediment does not enter the river or fill wetlands. Sediment discharge into the river requires a stormwater permit from the Texas Commission on Environmental Quality (TCEQ). The placement of sediments in the river or adjacent wetlands requires a permit from the U.S. Army Corps of Engineers. However, recent aerial footage shows evidence of non-permitted spills into the river.

Additionally, in the absence of state regulations, sand mining operations are not required at the end of mining operations to restore the sites to a more natural state. The topsoil is seldom replaced, leaving the land unable to support reforestation. If restored, it would prevent further erosion and recoup some of the natural floodwater controls and clean water benefits.

## What's At Stake

Sand mining threatens to permanently damage the San Jacinto watershed, and the last remnants of the ecological Big Thicket habitat. A 2004 TCEQ study found that 47 percent of construction sand and gravel mining operations investigated ran facilities without a stormwater permit. According to the Texas Parks and Wildlife Department, increased sedimentation in the San Jacinto River has caused severe bank erosion, filling in the Lake Houston Reservoir — which provides drinking water to the Houston metropolitan area — by as much as 20 percent. As sediment settles in the reservoir, it reduces the amount of drinking water available to surrounding areas. Increased sedimentation also causes excessive turbidity in the river and downstream in the Galveston Bay estuaries, thereby harming fish, mussels, and other aquatic organisms important to the

commercial and recreational fishing industries.

Sand mining drastically increases the potential for flooding along the San Jacinto River. Excavations remove the riparian forests that absorb floodwaters and sedimentation fill reduces the amount of water the river can hold, causing more water to spill over into adjacent lands.

Texans place a high value on outdoor recreational opportunities in close proximity to metropolitan areas. The Big Thicket National Preserve — a series of separate units approximately 120 miles east of the San Jacinto — provides swimming, fishing, paddlesports, hiking, hunting, bird watching, and other recreational activities. The preserve protects approximately 97,000 acres of the remaining 300,000 acres of the Big Thicket — a bottomland hardwood forest that once spanned 3 million acres. Within this remaining hardwood forest is the “Little Thicket” — 10,000 acres wedged between the West Fork of the San Jacinto River and its tributary, Spring Creek — that provides recreation opportunities similar to the Big Thicket National Preserve, but is much closer to the Houston metropolitan area. However, the “Little Thicket” is not protected from sand mining operations and, without protection, could possibly be mined into oblivion.

## The 12-Month Outlook

Congressman Kevin Brady and Senator Kay Bailey Hutchison (both R-TX) are spearheading efforts to acquire additional land for the Big Thicket National Preserve. They should seek to add the “Little Thicket” to their list of acquisitions and introduce legislation to purchase the land as a unit for the Big Thicket National Preserve using money from the Land and Water Conservation Fund. Congress should approve the acquisition of the “Little Thicket,” protecting it from sand mining operations that would undermine the natural benefits the land provides to the river and surrounding communities. This acquisition would provide additional recreational opportunities in the Big Thicket National Preserve within reasonable distance from Houston, the state’s largest city.

The Texas Legislature should develop effective state sand and gravel mining regulations. These standards should require a natural habitat buffer between water bodies and mining operations to reduce sedimentation, and reclamation measures that return the nutrient-rich

topsoil and replant native trees and vegetation after mining operations have ended. State lawmakers should provide Texans with an effective recourse when sand mining operations infringe upon the availability of clean drinking water, erode riverbanks, and reduce natural flood controls by excavating riparian forests and wetlands. Until then, decisionmakers should insist that the Corps and the TCEQ are vigilant and impose penalties on violators whose non-permitted sand mining operations deposit sediments into the state’s rivers and wetlands.



BRYAN CARLILE, LEGACY LAND TRUST

BOTH THE CORPS AND THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY SHOULD ENFORCE LAWS THAT PREVENT THE ILLEGAL DUMPING OF SEDIMENT FROM SAND MINING OPERATIONS INTO THE SAN JACINTO.

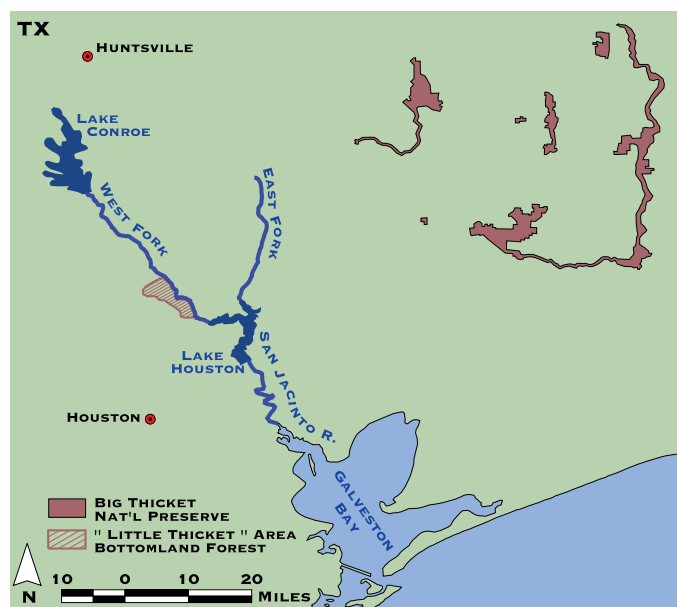
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# #10 Verde River

THREAT: GROUNDWATER PUMPING

## Summary

Intense demand for water due to rapid population growth in an arid watershed threatens the long-term health of the Upper Verde River. A proposed 30-mile pipeline would transfer enough water each year from underground aquifers to significantly reduce the flows of the Upper Verde River. As Arizona communities continue to grow, the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, and local municipalities must properly safeguard the use of surface and groundwater supplies to protect the Upper Verde's ability to provide clean water to communities and wildlife.

## The River

A true desert river, the Verde begins its journey across central Arizona from a series of springs emanating from the underground aquifer — the Big Chino, which contributes more than 80 percent of the Upper Verde's flows. The Upper Verde River provides critical drinking water supplies to Phoenix and many other communities in central Arizona, and irrigators depend on water from the Verde to farm successfully. Additionally, the river provides outstanding recreational values, including boating, hiking, birdwatching, and fishing that traditionally have generated stable economic benefits for local communities.

The Upper Verde River is one of the largest perennial streams in the Southwest and supports numerous fish species including the roundtail chub, razorback sucker, and spikedace — designated by the Arizona Game and Fish Department as wildlife species of special concern. Species such as the bald eagle, southwestern willow flycatcher, javelina, and Arizona toad also depend on the Upper Verde and its important riparian habitat. The lower 40 miles of the Verde is the only Arizona river to carry the national Wild and Scenic river designation.

## The Threat

Excessive groundwater pumping poses a serious threat to the Verde River. Although in Arizona there is no legal recognition of the hydrological connection between groundwater and surface water, the substantial reduction of underground aquifers will significantly reduce flows in the Upper Verde River.

Municipal water use in central Arizona has increased by more than 39 percent over the last eight years. Demand for clean water will only increase as the population of major cities and towns within the Verde watershed continues to grow — the population is expected to more than double within the next 50 years.

Arizona's 1980 Groundwater Management Act grouped some municipalities into Active Management Areas (AMAs). The act calls for most AMAs to reach a balance between the pumping and replenishing of groundwater by 2025. The Prescott AMA, including the communities of Prescott, Prescott Valley, Chino Valley, and Dewey/Humboldt, already pumps water faster than it can recharge its underground aquifer. Of all the cities located within an AMA, only Prescott is allowed (by special legislation) to import groundwater from outside its AMA.

In order to sustain their growing population, the City of Prescott and the Town of Prescott Valley propose to pump groundwater from the Big Chino sub-basin, an area outside the AMA, and transport the water to their AMA. The proposed 30-mile pipeline, known as the Big Chino Water Ranch project, would carry up to 12,400 acre-feet of water per year, creating a huge drain on the aquifer and the Verde River.



DR. ROBIN SILVER



MICHAEL COLLIER

INCREASED GROUNDWATER PUMPING WILL SEVERELY DIMINISH THE UNDERGROUND AQUIFERS THAT NOURISH THIS UNUSUAL RIVER OASIS.

DEXTER L. ALLEN





## What's At Stake

Rapid, poorly-planned growth, combined with the lack of comprehensive water use planning, threatens Arizona's rivers and groundwater supplies. The Big Chino Water Ranch project will exacerbate this water supply management problem on the Verde River. A reduction in the volume of water in the Upper Verde would reduce the availability of clean water in downstream communities and farms in the Verde Valley and in Phoenix, diminish the recreational opportunities on the river, and threaten the health of many native fish and wildlife species.

## The 12-Month Outlook

Before any final decisions are made on the Big Chino Water Ranch project, the U.S. Army Corps and the U.S. Fish and Wildlife Service should complete a full Environmental Impact Statement (EIS) in 2006 that addresses not only the impacts to species located on the lands that the pipeline will cross, but also the species that rely on the flows of the Verde River and its associated riparian areas. A "No Action" alternative should be included in this EIS, and all proposed alternatives should include appropriate mitigation for impacts to Upper Verde River flows and its associated riparian habitat.

In November 2005, residents of the city of Prescott voted to pass a Reasonable Growth Initiative in recognition of the area's increasing demand for water. This initiative, created in response to unplanned land annexations, poor water management, and the fast-tracked Big Chino Water Ranch project, provides the citizens a powerful tool to manage growth. The initiative should be fully implemented in 2006, giving citizens a voice in long-term water supply management and its impacts on important surface waters like the Upper Verde River.

The Fish and Wildlife Service and other key federal and state agencies should conduct thorough environmental analyses of plans for future large developments that require the pumping of groundwater. Using the results of these analyses and careful planning, developers and the agencies should develop detailed mitigation plans in order to resolve the potential harm to communities, habitat, and wildlife.

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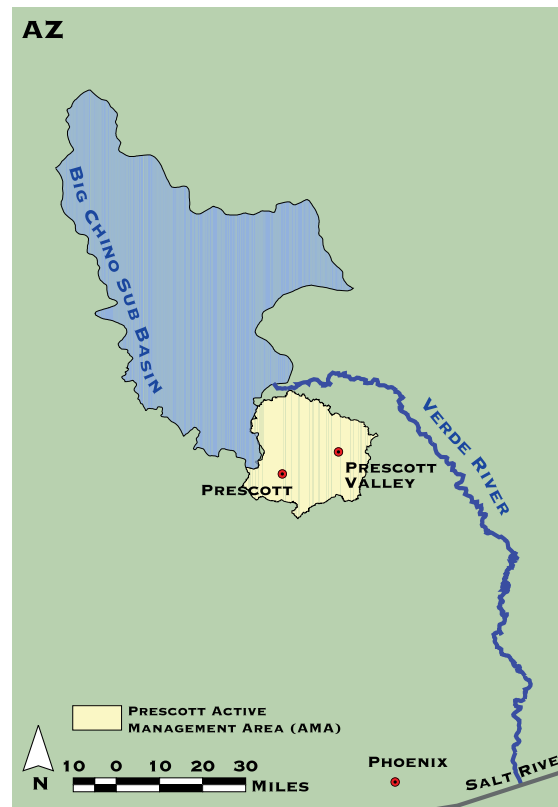
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ARIZONA'S ONLY WILD AND SCENIC SECTION OF RIVER IS A FAVORITE SPOT FOR FISHING, CANOEING, AND KAYAKING—AT LEAST FOR NOW.

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