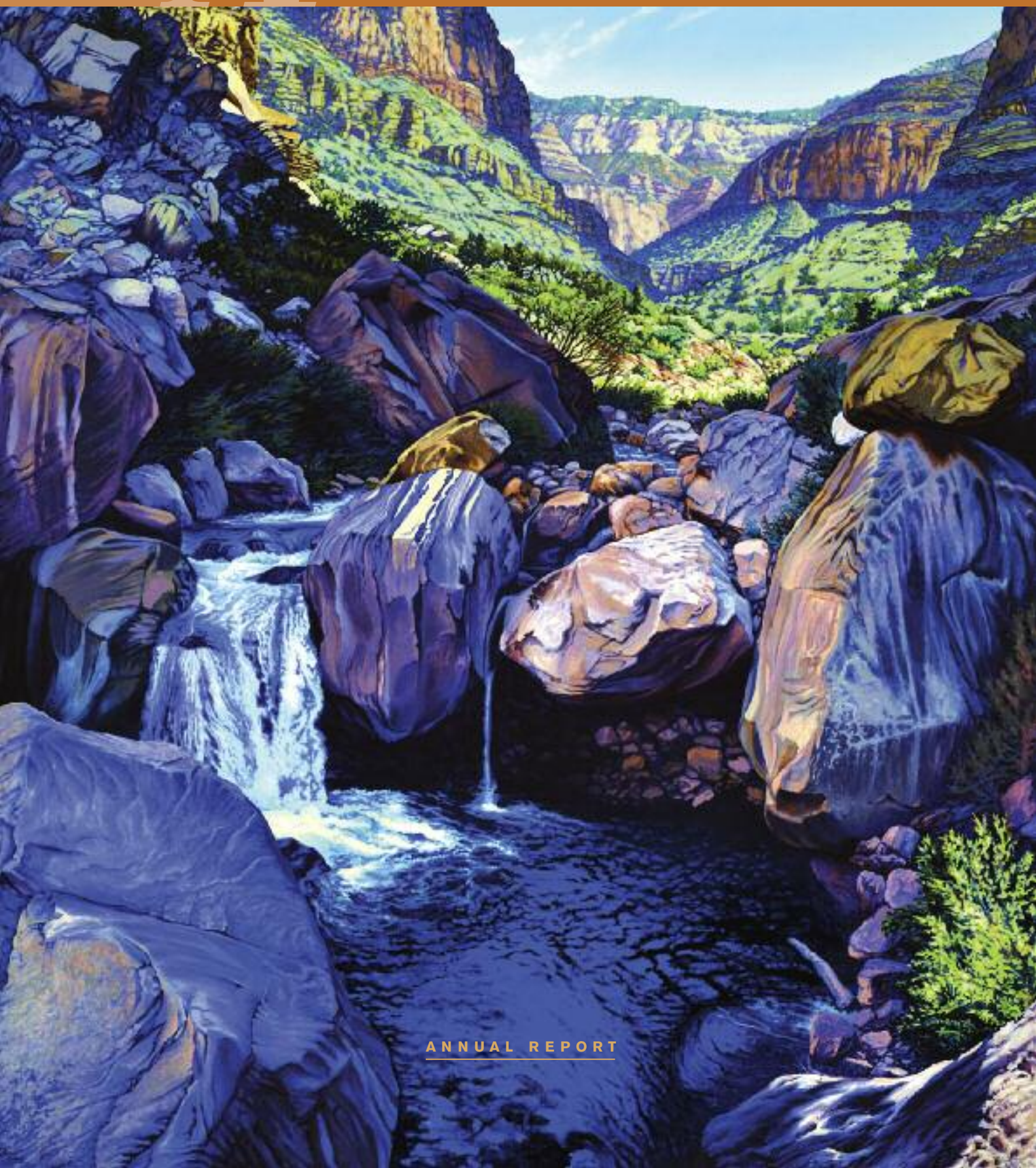
COLORADO PLATEAU Advocate

SUMMER/FALL 2008

GRAND CANYON TRUST



ANNUAL REPORT

Contents

John Aber

Editor's Note: The views expressed by the guest writers in this issue are solely their own and do not necessarily represent the views of the Grand Canyon Trust.

You can help the Grand Canyon Trust by taking action on any of the issues presented in this magazine by going to the ***"Take Action"*** section of our website at: www.grandcanyontrust.org; by writing a letter to the editor or an opinion-editorial piece for your local newspaper; by circulating a petition or writing a letter for presentation to your elected officials; or by organizing a forum and speaking out in your community.

The Kentucky state legislature annually provides $400,000 in tax dollars to the coal industry to promote mining, including the controversial practice of mountaintop removal. The *Herald Leader* newspaper reports that the money is used for classroom programs and websites that feature games and helpful information like this: "Only the topmost portion of the mountain is mined and generally leveled for the maximum recovery of coal. What's left is flatter, more useful land on top of the mountain…it is simply the right thing to do both for the environment and for the local economy. A true win-win." No wonder our schools lag in science and technology education! I hadn't realized how good it is for the environment to chop down the mountains and use the rubble to bury the streams. That kind of wisdom seems to inform most of America's energy policy these days. We will do whatever it takes to keep our fossil fuel party going as long as possible.

In this issue of the *Advocate* we hear from S. David Freeman, who heads the Hydrogen Car Company and has, during a stellar career, led enormous utilities like the Tennessee Valley Authority and Los Angeles Department of Water and Power to see the critical importance of conservation. He describes how well-placed industry lobbying dollars and relentless advertisement have our leaders parroting lines about *clean coal* as a description of something "inherently filthier than dirt." The same spin machine conjures *safe nuclear* power from some of the most dangerous and terrorism-prone materials on the planet; but tells us that abundant renewable energy sources are too expensive, remote and diffuse to become a source of the serious power our civilization needs. Freeman reminds us that the propagandists are hiding the truth that the direct costs of dirty fuels are rising rapidly and their indirect costs to our health, environment and future are awesome and forever.

These stories we tell ourselves matter. In Colorado, where 5.2 million acres have been newly opened to energy exploration to accommodate a six-fold increase in oil and gas drilling permits since 1999, Mesa County Commissioner Craig Meis says, "What well pads are doing is creating wildlife habitat." With that kind of thinking, it is not surprising to learn from an

Bill Hedden

authoritative new report called *The Living Planet Index* that worldwide animal biodiversity has declined by nearly a third over the last 35 years. That is a tragedy so large and pervasive we cannot even comprehend it, so we focus instead on surrogates like the polar bears stranded by open water. Like countless other species, they may not get on the ark.

Our almost magical belief that we can drill our way out of trouble reaches its zenith with oil shale. The marlstones that underlie two million acres of Utah, Colorado and Wyoming contain about a trillion barrels of oil, chronically prompting promoters to call the region the Saudi Arabia of oil shale. But, the oil under the Middle East is easy to extract and dense with energy, while oil shale gives up its low grade hydrocarbons so grudgingly that after a century of experimentation nobody knows whether extraction is feasible on a commercial scale or not.

One major problem, as energy expert Randy Udall points out, is that the deeply buried shale has an energy density one quarter that of dung cakes, about equal to a baked potato. To free the scanty hydrocarbons from the marl, the entire rock formation must be cooked at 450 degrees for four years; and to avoid calamitous contamination of the groundwater during the big bake, the surrounding rock formation must be turned into a "freeze wall" by underground cryogenic wizardry. Each heating, producing, and refrigerating unit requires a separate 1,000 foot deep well, all connected by a maze of pipes. Like Kentucky's mountaintop removal, the ground surface is obliterated.

In addition to enormous volumes of water, running a 100,000 barrel per day shale operation would require a 1,500 MW power plant, since the energy invested is a large fraction of what is produced. As Udall says, "Using coal fired electricity to wring oil out of rocks is sort of like feeding steak to the dog and eating his Alpo." Nonetheless, Utah Governor Jon Huntsman just wrote the Senate Energy Committee about oil shale saying, "As the price of oil surpasses $120 per barrel and we become increasingly dependent on foreign oil, our national security is in jeopardy. We cannot afford to wait any longer to develop this critical energy resource. The opportunity for environmentally sound energy development must be supported." We can have our Alpo and eat it, too.

The Senators who received Governor Huntsman's letter must be getting lots of good advice. They have tucked into the Lieberman/Warner climate change legislation a provision offering $544 billion in subsidies for nuclear power, but do not even consider renewable energy in the bill's section on low carbon technologies. Amory Lovins has shown that half a trillion in taxpayer money spent on renewable energy generation would create a safer, more reliable energy system while offering far greater reductions in greenhouse gases per dollar than investments in nuclear, without the intractable waste and terrorism problems.

The sobering fact is that all these futuristic fuels don't offer us much of a future. Yet it is important to understand the ballpark scale of the challenge. To power present levels of U.S. consumption with renewables, we would need a program to cover some 700 square miles with concentrated solar collectors each year for thirty years at a cost of roughly $80 billion annually, augmented by perhaps 100,000 well-placed wind turbines. That is why the low cost alternative of conservation is going to become more and more attractive.


Mike Watson, Media Bakery

Promoting Nevada's Renewable Energy

By Nevada Senator Harry Reid

Growing up in the picturesque state of Nevada, I developed a deep appreciation for the beauty and the sanctity of the outdoors. I strongly believe in preserving Nevada's unique outdoor heritage so future generations can enjoy the clean air and unspoiled splendor of the West.

In the Southwest, natural wonders like the Grand Canyon and Great Basin National Park attract visitors from around the world. We must protect and maintain them. This is why I remain committed to investing in clean renewable energy and energy efficiency, while opposing the construction of any more dirty coal-fired power plants in Nevada.

Scientific studies and models project the desert Southwest will get warmer and drier over the next few decades as a result of global warming. Coal-fired power plants without carbon capture already emit billions of tons of greenhouse gases into the atmosphere, and continue adding greater risks to an already dire climate change situation.

Last year, I initiated a Government Accountability Office investigation on the impacts of pollution on the Great Basin National Park, Nevada's first and only national park. Because Great Basin was created after the 1977 Clean Air Act Amendments, it doesn't get the same air quality protections that Grand Canyon or Zion National Parks receive. I think that's wrong and needs to be corrected. I have urged the governor of Nevada to request that the park be designated as a Class I area, which would give it the highest available air quality standards.

Protecting our environment goes hand-in-hand with meeting our nation's growing energy demand. The future of Nevada and our country is in clean renewable energy technologies and production. I am pushing for Nevada to be the world leader in this movement, tapping into its immense solar, wind and geothermal resources to curb America's dependence on dirty fossil fuels and create an industry with thousands of good-paying jobs.

Consider the now-closed Mohave Generating Station in Laughlin, Nevada. That coal burning power plant repeatedly violated the Clean Air Act, emitting dangerous levels of sulfur dioxide, and was the dirtiest in the Southwest. Mohave contributed to pollution and haze visible around the Grand Canyon and surrounding areas. The plant was shut down eventually because the owners were unwilling to spend the money necessary to comply with basic public health and environmental protection standards.

Unfortunately, when Mohave Generating Station closed in 2005, many people in the local communities and on Indian reservations lost their jobs. The Navajo Nation and the Hopi Tribe shared ownership of Black Mesa, where they earned royalty payments from the coal they mined. The closing of the power plant added to the tribes' already high unemployment rates and impacted their revenue. I believe that renewable energy, however, holds the potential to be a "green" solution that creates jobs and sustainable economic development.

I have asked the owners of the Mohave Generating Station to look into converting the plant and its significant transmission ability into a mega-solar power producer that could meet the needs of millions of customers with clean, pollution-free electricity. Given the land and solar resources available in the area, the workforce and the existing assets, it looks like a perfect candidate for such conversion. However, the owners must join with the communities, local governments and tribes to make it happen. Study after study shows that renewable energy creates more jobs than old dirty coal technologies.

The time is now for the desert to bloom with environmentally responsible renewable energy development. We have a responsibility to our children and future generations to start a clean energy revolution now so they can enjoy the same quality of life and the beauty of the Western landscape that we have.

Uranium Claims Inundate Canyon

by Roger Clark

Richard Mayol

Kanab Creek looking south to Grand Canyon, is lined with uranium claims.

"Our well of knowledge is bone dry," quipped my hydrologist friend. I was demanding to know why one of my favorite springs in the Grand Canyon was disappearing after serving my backpacking needs for more than two decades. I wanted to know what was causing it to go dry and all the ferns around it to die.

"Good luck," he said unsympathetically, "we know next to nothing about these springs and the aquifers that feed them."

The National Park Service (NPS) is more blunt: what affects "…the water quantity and quality of these delicate and rare ecosystems is unknown."

Springs and seeps occur in less that 1/100th of one percent of the Grand Canyon's parched landscape. The number of plant and animal species living near springs is 500 times more abundant than those surviving in spring-less surroundings. The NPS notes: "Without water not much would survive the rotisserie of Grand Canyon."

How water behaves beneath the surface is fraught with uncertainty, allowing those who benefit from drilling more uranium mines within the region to speculate that such activities "will do no harm." But our past experience has taught us to proceed with caution before we allow another bunch of uranium prospectors to plunder Grand Canyon's pristine aquifers.

Claims Climb Exponentially

Concerns about groundwater mushroomed during the past three years as the price for uranium ore shot from $7 per pound to more than $90 per pound causing a deluge of uranium claims adjacent to Grand Canyon National Park.

Once uranium is oxidized, it dissolves readily and becomes a persistent poison that can easily enter ground and surface water and move rapidly through faults and fractures, eventually discharging into springs within the Grand Canyon.

Taylor McKinnon

Orphan Mine at South Rim at Grand Canyon National Park.

Within five miles of the Park, there are now more than 1,100 uranium claims, compared with just ten in the beginning of January 2003. The Kaibab National Forest reported earlier this year that they had more than 2,100 claims filed in the Tusayan Ranger District. Thousands more claims have been staked on Bureau of Land Management Lands (BLM), north of the Grand Canyon in Kanab Creek drainage and House Rock Valley.

Uranium in the Grand Canyon region is found in sedimentary layers, where the Coconino and Redwall formations serve as significant regional aquifers. Mining disturbs and mobilizes uranium and other elements that have been mineralized and encased in these rocks for millions of years. Once uranium is oxidized, it dissolves readily and becomes a persistent poison that can easily enter ground and surface water and move rapidly through faults and fractures, eventually discharging into springs within the Grand Canyon. Large aquifers such as those feeding Pipe Creek at Indian Gardens, Thunder River, and Havasu Creek then flow into the Colorado River.

In late 2007, the Kaibab National Forest approved a uranium exploration project without any analysis of its environmental impacts. Vane Minerals began drilling 39 test holes, some within two miles of the South Rim. The Grand Canyon Trust joined with the Center for Biological Diversity and Sierra Club in filing a suit to challenge the "categorical exclusion" granted by the government and its failure to assess effects of the exploratory drilling under the National Environmental Policy Act (NEPA).

Following an all-day hearing in April, the court issued a preliminary injunction halting any further drilling. The case was recently settled to the satisfaction of all parties when the Forest Service agreed to prepare environmental assessments for public review in full compliance with NEPA before authorizing any new drilling activities.

Legislative Withdrawal

To stem the tide of even more uranium prospecting, the Grand Canyon Trust launched a campaign to withdraw federal land surrounding the Park from future mining and mineral leases. The Coconino County Board of

Supervisors passed a unanimous resolution asking Congress to withdraw lands managed by the BLM and U.S. Forest Service (USFS) from mineral entry. Arizona Governor Napolitano wrote a letter to Secretary of Interior Kempthorne requesting that lands adjacent to Grand Canyon be withdrawn from mineral entry. We then began to secure Congressional support for legislative withdrawal.

In March, Arizona Congressman Raul Grijalva introduced legislation to withdraw federal lands adjacent to the Grand Canyon from mineral exploration under the 1872 Mining Law. The Grand Canyon Watersheds Protection Act (H.R. 5583) has been referred to the Committee on Natural Resources. When asked to comment on the legislation, Grand Canyon Superintendent Steve Martin said:

> *"There should be some places that you just do not mine. Uranium is a special concern because it is both a toxic heavy metal and a source of radiation. I worry about uranium escaping into the local water, and about its effect on fish in the Colorado River at the bottom of the gorge, and on the bald eagles, California condors and bighorn sheep that depend on the Canyon's seeps and springs. More than a third of the canyon's species would be affected if water quality suffered."*

The bill would withdraw from mining 628,886 acres in the Kanab Creek area and 112,655 acres in House Rock Valley managed by the Bureau of Land Management, as well as 327,367 acres in the Tusayan Ranger District of the Kaibab National Forest. The bill will not affect claims that were shown to contain economically developable uranium deposits prior to the date of the mineral withdrawal. Therefore, the Grand Canyon Trust will continue to press for assessing impacts from specific project applications and for considering the cumulative effects from thousands of uranium mines in the region.

Cumulative Effects

The Grand Canyon has been accumulating radioactive residues from our nation's nuclear policies and practices for more than five decades. On January 27, 1951, Leonard Heaton wrote in his journal, "At about 6:30 this morning I heard what I thought was two distant dynamite blasts or rocks rolling. Later while in Kanab and Orderville I learned of atomic bomb blast in Nevada at about that time, so believe it was atomic blasts." During the next 12 years, our government detonated 126 aerial bursts over the nearby test site.

As custodian of Pipe Springs National Monument, Mr. Heaton faithfully recorded the day-to-day activities of life and events among the rural residents living in the Kanab Creek watershed. Three years after the first atomic test, his journal entry noted "…a lot of prospectors going and coming through the monument hunting for that rare metal, Uranium….Several hundred acres have been staked to the west and southwest of the monument." Ten years later, the nearby town of Fredonia recorded "an unusually high number" of children diagnosed with leukemia.

That first wave of uranium prospectors eventually opened up six mines near Kanab Creek, which flows south into the Grand Canyon. In 1984, a massive flash flood washed tons of high-grade uranium ore into Kanab Creek. The Orphan Mine, located near the South Rim's Powell Point, continues to contaminate creeks below it, prompting the park service to post signs warning backpackers along the Tonto Trail not to use water from two drainages.

Between 1950 and 1980, hundreds of uranium mines and cancer-causing mills were developed along tributaries to the Colorado River on the Navajo Reservation. In 1979 an earthen dam in Church Rock, New Mexico released eleven hundred tons of radioactive mill wastes and ninety million gallons of contaminated liquid into a tributary to the Little Colorado River. The Nuclear Regulatory Commission acknowledges another ten accidental releases of tailings solutions into major watercourses in the region. Collectively, these events correlate with documented risks.

Today, the National Park Service advises against drinking and bathing in the Little Colorado River, Kanab Creek, and other waters in the Grand Canyon where excessive "radionuclides" have been found. While it is difficult to attribute contamination in these major waterways to any specific activity, there can be

continued on page 28

Energy and the Next Generation

by S. David Freeman

In 1974, I wrote in a book entitled *Energy: The New Era*: "The next ten years—the period through 1984—probably will be decisive for our high energy civilization." It was. I advocated and advanced a policy of "energy thrift" that helped the nation achieve zero growth in energy while gaining healthy growth in the economy. The result: we bought some time in the energy field, although the earth was then and still is on an escalating path of global warming. It just wasn't as well publicized.

Now it is thirty-four years later and we've used up all the time we saved. Without a dramatic commitment to efficiency and a strong shift to renewables, the energy troubles we confront will do massive and irrevocable harm to the people on Earth today and for generations to come.

The initial cost of renewables has gone down over the years and, as anyone who took Economics 101 will know, costs will decline with increased demand.

Essential Truths

Most people believe that we fuel our civilization with poisonous power sources because they are cheaper than renewables. Another myth is that renewable sources are so diffuse and remote that they are not a significant enough alternative source of power generation. The essential truth is just the opposite. Renewables are a cheaper, feasible, practical alternative and a huge one at that.

Folks who sell oil, coal, and nuclear reactors, spend tremendous amounts of money convincing the American people that what they sell is economical, safe, and clean. They contribute huge sums of money to the politicians who repeat their propaganda. How often have you heard phrases such as "clean coal," "safe nuclear power," "clean diesel,"or "low-level radioactive waste"?

These phrases are images invented by highly paid, highly skilled advertising firms. But these claims are lies. There are even ads on TV and in the newspapers featuring pristine landscapes and young, freshly scrubbed spokespeople advertising coal as a clean energy resource. This is ridiculous. Coal is inherently filthier than dirt. The current energy industry has quite masterfully succeeded in lulling many Americans to sleep on the dangers of the poisons they sell while portraying renewables as a distant dream.

The phrase "clean coal" is an insult to human intelligence. There is no such thing. Coal is inherently dirty and is an unhealthy source of energy throughout every stage of its mining and use. I say this based on my experience as the former head of Tennessee Valley Authority, which bought and burned more than 30 million tons of coal a year. I was deeply involved in the strip mining, underground mining, trucking, and most importantly, the burning of huge quantities of coal. No one who has been deeply involved with coal can rightfully say it is clean.

Clean and Affordable Alternatives

The oil, coal, and nuclear folks have for thirty years dismissed solar and wind power as too expensive for ordinary Americans. They've targeted renewables as a "show-off" symbol for environmental elites. In the meantime, the price of oil, our electric bills, and their "hidden" costs have crept steadily upward. Whether it is electricity rates, costs for gasoline, medical bills for pollution-related illnesses, or the cost of our national defense budget to safeguard our international oil supply, guess who pays for it—no one else but the American people.

But now that the price of gasoline has jumped up so far and so fast, price is the last thing the oil folks want to talk about.

But that's exactly what needs our attention. The price. If we look at what each source really costs the American people, renewable energy today and certainly tomorrow is our lowest cost source.

Renewables are a better financial bet for the consumer than oil, coal, or nuclear power for the following reasons:

- The total cost to the American consumer is lower over the life of their energy-using equipment.

- The direct cost of the renewable energy is fixed when it is built. There are no fuel costs for solar and wind, and thus it is virtually inflation-proof.
- Renewables are converted to electricity, the price of which is regulated to reflect costs plus a reasonable profit. This is in contrast to the unregulated price of oil and fossil fuels and the unknown price of new nuclear power.
- Renewable costs are going down while the price of coal, oil, and gas is going up.
- The savings in cost of renewables over coal, oil, and nuclear power are virtually incalculable. These indirect costs are health benefits, savings in our defense budget, and the overall benefits to the environment.

Today, electricity from wind, biomass, and geothermal can be generated at or near the cost of natural gas—in the six- to ten-cents-per-kWh range. Coal is lower priced, but new coal plants with good controls will not cost consumers much less than renewables directly and will cost much more indirectly. And we have no valid idea what a new nuclear power plant in America will cost, except we know it won't be cheap, and the indirect costs will be awesome and forever.

Here's the crucial difference—once the infrastructure is built, the cost of renewables is largely fixed. The fuel, which is most of the cost with oil or coal, is free. As long as the sun shines and the wind keeps blowing, the fuel costs remain the same—zero.

The initial cost of renewables has gone down over the years and, as anyone who took Economics 101 will know, costs will decline with increased demand. So, the costs of renewable power will keep going down as more plants are built and technological innovation allows for more natural "fuel" to be collected and turned into usable energy more efficiently.

The Next Generation

If we examine new power plants, we must look at all of their costs. Burning coal creates poisons that contaminate the air, create smog, and bring on global warming. Nuclear power plants expose the U.S. to massive doses of radiation and require major subsidies from the federal government, greater than those required by other energy sources, in the form of accident insurance and the security cost of protecting plants against terrorism.

In poll after poll the American people have said that they are willing to pay more in their electric bills for renewable power to reduce environmental impacts. This "more" really is the people's understanding that if they pay a little more in their electric bill now, over time they, their children, and their grandchildren will pay less in their health-care bill, live a little longer, and leave a better Earth for generations to come.

Excerpted from *Winning Our Energy Independence* by S. David Freeman, former director of the Tennessee Valley Authority under the Carter administration and the Los Angeles Department of Water and Power.

Comstock Photos

Cleaner Air for Four Corners Region

by Rick Moore

There is no escaping the simple fact that coal-fired power plants are massive, and the 1,800 megawatt San Juan Generating Station located near Four Corners and Mesa Verde National Park is no exception. Four concrete smokestacks tower hundreds of feet into the air, huge ducts—ten feet in diameter—wind through the guts of the plant, gigantic fans powered by 6,500 horsepower electric motors push exhaust gas through scrubbers ten stories tall, and 13,000 gigantic fabric bags in the "baghouse" capture fine particles of soot created by burning 6-7 million tons of coal every year.

All of this equipment dwarfed members of the Grand Canyon Trust and the Sierra Club who, along with attorney Reed Zars, recently toured the plant to get a first-hand look at the newly installed pollution control equipment required by the settlement agreement resolving a lawsuit brought by the two groups in 2002. The tour was hosted by Public Service Company of New Mexico (PNM), the majority owner and operator of the plant and it focused on the new carbon injection system to reduce mercury—a first for any western coal-fired power plant—the new baghouse to capture soot, and the new "low NOx burners" that will significantly reduce nitrogen oxide, which creates the brown cloud seen above many cities.

Pollution from these mammoth plants is also enormous. Prior to the installation of the new pollution

Michael Collier

controls, San Juan dumped about 14 million tons of carbon dioxide, 16,500 tons of sulfur dioxide, 29,000 tons of nitrogen oxides, and 750 pounds of mercury into the Four Corner's air. The plant also violated its opacity limit (opacity measures the density of tiny soot particles coming out the smokestack that can lodge deep in lung tissue) more than 42,000 times. To put some of those numbers into perspective, consider that the plant's nitrogen oxide emissions are roughly equivalent to driving 1.5 million cars for a year, and one ounce of mercury can make the fish in a 400-acre lake unfit for human consumption.

After the new controls are installed on all four units, nitrogen oxide emissions will drop by about 10,000 tons, sulfur dioxide emissions will drop by about 7,000 tons, mercury emissions should be reduced by about 500 pounds, and the 42,000-plus violations of the opacity limit will be a thing of the past.

The health of current residents, future generations, visitors, and the environment of the Four Corners region will all benefit from the installation of these new pollution controls. The Trust would like to extend its deep appreciation to its members who were willing to stand up for clean air and risk being directly involved in a legal battle, we appreciate the wisdom of Congress when it gave citizens the right to enforce the Clean Air Act, and we applaud PNM's decision to invest $325 million to clean up the San Juan Generating Station.

this page: Rick Moore

Left: Steam Plumes from the San Juan Power Plant: The San Juan Generating Station is made up of four units, with each unit consisting of a boiler, pollution controls, smokestack, and turbine. The plant consumes about 22,000 acre-feet of water a year, enough water for roughly 55,000 average homes.
This page, top to bottom: **The Baghouse:** More than 13,000 fabric filter bags in the baghouse for Unit 4 capture fine particles that have been shown to cause a number of health problems. Every year, about 250,000 tons of fly ash are sold to companies that use it for making concrete. **The Heart of the Plant:** Coal pulverized to the consistency of talcum power is mixed with air and pumped to forty-two massive burners in the boiler. Seven of the supply lines to the burners are shown in this photo. **Coal:** San Juan burns 6-7 million tons of coal every year, or about 18,000 tons per day. The plant produces about 1.4 million tons of combustion waste, which is buried in the mined out portion of the coal mine. **Fighting for Clean Air:** Reed Zars, an attorney based in Wyoming, has fought to clean up coal-fired power plants for many years. Reed represented the Trust in its successful efforts to reduce pollution from the Mohave, Springerville, and San Juan power plants.

Volunteers: Giving the Gift of Time

by Kate Watters

Most of us can remember the first moment we set foot on the Colorado Plateau. The memory stays with me as one of the most indelible experiences of my adult life. I arrived at Canyon de Chelly fresh out of college from southern Vermont for a three-month volunteer internship with the Student Conservation Association. I went to work at the visitor center, leading interpretive hikes and giving talks to visitors. I had a lot to learn about this new landscape and Navajo history. The sandstone canyons, the desert plant life, and the language and culture of the Navajo people were mysterious and wonderful to me. I watched the sun slip behind the endless horizon of Black Mesa from the rim of the canyon. The last sunlight glowed on the corn growing in the sandy canyon bottom, and I heard the sound of sheep bells drifting in the breeze. That was my introduction to the Colorado Plateau and to the amazing opportunities that volunteerism can present. Needless to say, I was hooked!

The Volunteer Program continues to be the mechanism for forging important, new relationships with land management agencies by getting people out in the field to do much-needed work, whether it is scientific research, ecological assessments or physical removal of invasive species.

Top: University of Virginia alternative winter break in Grand Canyon.
Above: Trusters monitor restoration in the Paria Canyon.
Right: Eli Bernstein teaching volunteers plant identification.

Leading trips for the Trust's Volunteer Program, we relive that first awe-filled moment again and again as we venture out into the wilds of the southern Colorado Plateau alongside volunteers representing all ages, regions and backgrounds. We are fortunate to witness volunteers' lives changing before our very eyes.

During the heart of this last, wet winter I took eleven University of Virginia college students on a week-long Alternative Winter Break volunteer trip at the bottom of the Grand Canyon. The plan was to complete follow-up work removing tamarisk from several tributaries, part of a successful Park Service project that was previously unfunded. We were greeted with dramatic weather events that reached a crescendo in a snowstorm that covered the prickly-pear of the Tonto Plateau with big, wet snowflakes. The eager students, including many first-time Southwest visitors, were not able to even see the Canyon for the first four days of the trip. "I promise, it's out there!" I had to keep telling the soggy students. They were surprisingly undaunted by the weather as Ed Abbey's fiery words about the West kept them warm in their tents at night. Their patience was rewarded when the Grand Canyon began to be exposed incrementally.

Then, magically, the sky began to clear and a break in the clouds revealed a bright blue sky and Redwall limestone covered in snow. We dried out and warmed ourselves with the work of sawing tamarisk in the narrow tributary of Monument Creek. The sun hardly ever made its way down to us. We sought it out at lunch on the top of a sand dune overlooking Granite Rapid and shared it with a family of bighorn sheep, grazing in the sun. We watched a science party negotiate the rapids and I explained that they were collecting data in anticipation of the high-flow, Glen Canyon dam release experiment that the Trust was promoting to help restore the degraded Canyon ecosystem. The students left the experience with a deeper connection and understanding of the Grand Canyon.

Not all of our volunteers are experiencing these dynamic landscapes for the first time. Many have lived on the Colorado Plateau for decades and are sharing their love and passion for their home by learning about the issues confronting these great places and breaking a sweat to help restore them. For example, Denise, an avid explorer of the Southwest, recently opened a new chapter in her life. After spending the last thirty years working full-time for the post office in Flagstaff, she has signed on with the *Budding Botanist Project*, in which she will learn botanical identification skills in the field from regional experts, and learn how to collect, document, process and mount herbarium specimens. This will help Grand Canyon Trust research projects as well as contribute valuable regional flora information for the Arizona Native Plant Society's *Plant Atlas Project of Arizona* (PAPAZ).

Since 2005, with the purchase of the Kane and Two Mile Ranches (K2M), the work that Grand Canyon Trust volunteers have done on public lands has led to a shift in management priorities within the Bureau of Land Management (BLM) and the U.S. Forest Service (USFS). The Volunteer Program continues to be the mechanism for forging important new relationships with land management agencies by getting people out in the field to do much-needed work, whether it is scientific research, ecological assessments or physical removal of invasive species.

In 2008 the program expanded to three full-time staff and a seasonal field intern. By increasing our capacity, we have also been able to restructure the program to include both a Grand Canyon and Native America program component in addition to the development of our work on the K2M.

The synergy between the K2M Project, the Restoration Program, and the Volunteer Program continues to grow; strengthening our role in the Trust's science-based restoration efforts. This spring we began an ambitious effort to remove tamarisk and Russian olive from an eighteen-mile stretch of the Paria River. Volunteers will also participate in scientific monitoring to help us understand how exotic removal affects native vegetation recovery, channel formation, and breeding bird populations.

With a new superintendent and leadership staff in Grand Canyon National Park, we have the opportunity to significantly expand volunteer stewardship activities on this iconic landscape. We are currently developing project plans and partnerships, and are implementing several projects in 2008, including tamarisk removal in Colorado River tributaries, a river trip focusing on invasive species with Grand Canyon Youth, and springs assessment in Kanab Creek in cooperation with the National Park Service, USFS and the BLM.

We initiated a Native America volunteer stewardship program that has helped with trail restoration projects at both Second Overlook Gorge of the Little

continued on page 28

In the past few years Grand Canyon Trust **VOLUNTEERS** have donated

Our volunteers and our projects are as diverse as the landscapes of the Colorado Plateau. People of all ages and backgrounds from all over the U.S. and the world come to learn about important issues confronting this unique area, and to participate in on-the-ground restoration projects and science-based research.

TENS OF THOUSANDS OF HOURS TO HELP US ACHIEVE OUR MISSION:

TO PROTECT AND RESTORE THE COLORADO PLATEAU.

WHETHER IT'S REMOVING OLD BARBED WIRE FENCES TO IMPROVE ANTELOPE HABITAT AND RESTORING NATIVE GRASSLANDS IN HOUSE ROCK VALLEY, REMOVING INVASIVE TAMARISK IN THE PARIA RIVER CANYON AND GRAND CANYON, OR MONITORING SCIENTIFIC EXPERIMENTS ACROSS THE VAST KANE AND TWO MILE RANCHES, THE TRUST HAS A MEANINGFUL TASK THAT WILL FIT YOUR NEEDS AS A VOLUNTEER STEWARD OF THIS MAGNIFICENT PLACE.

www.gctvolunteers.org

Chris Marin

Dam it! Nine Ways Dam-Building Beaver Change Everything

by Mary O'Brien

While we know dams humans build across some of earth's biggest rivers radically alter landscapes, so do the comparatively modest, leaky, stick-in-the-mud dams of the American beaver. That's why the Trust has launched a campaign to restore beaver to suitable habitat throughout southern Utah's three national forests: the Dixie, Fishlake, and Manti-la Sal.

Below are nine ways dam-building beavers change everything, ranked from the easiest for humans to appreciate, to the hardest for us to accept.

Beaver dams make ponds and meadows. Backed up behind beaver dams are some of our most cherished ponds, lakes, and meadows in mountains, canyons, and deserts. Often the conical ends of beaver-chewed logs can be seen at a pond's outlet or poking out of a meadow's lower margin. At other times beaver sign is harder to locate, but a smallish flat meadow at the base of two parallel slopes is one good indicator.

Beaver ponds provide habitat for myriad wildlife. Ponds behind dams drown trees, creating forest openings and snags for woodpeckers and other cavity nesters. Shallow water and vegetation at the pond's edge host amphibians. Ponds enhance trout fisheries and become waterfowl habitat. Muskrats cruise the water and occupy parts of the dam. Migratory birds gather to raise families in the expanded riparian area. This extraordinary enhancement of wildlife diversity is why beaver are considered a keystone species: out of all proportion to their numerical abundance, beaver create new ecosystems and habitats.

Beaver dams extend the season and years of creek flow. Creek water, slowed and spread by multiple beaver dams, soaks in and fans out below each dam, raising the water table in the meadow or valley below. This stored water becomes available to the creek and vegetation later in the season and during drought. Often, intermittent creeks are restored to perennial flow, particularly critical in light of rising temperatures, early snowmelt, and droughts predicted under climate change.

Beaver dams decrease flood damage. As flood waters encounter a series of dams, the water slows and spreads over the floodplain reducing the possibility of eroded stream banks, incised creeks, or chunks of soil gouged from the head of creeks or tributaries.

Beaver dams reconnect incised creeks with their floodplain. Beaver dams raise the bed of an incised creek by capturing sediment that would otherwise be carried out of the system. When a creek bed nears the top of its banks, floods from healthy lands upstream

Please contact Utah Forest Project Manager, Mary O'Brien (mob@uoregon.edu), if you are interested in helping with the Trust's Beaver Project in southern Utah.

"Dams change everything – that is their job."
–Architect, artist, and author David Macauley, *Building Big Sketchbook*

rise over the banks, delivering water and sediment to the floodplain. This helps recharge aquifers and creates habitat for riparian plant establishment. Bank-jumping water can create meanders and backwater habitats.

Some private landowners have bermed streambanks to prevent overbank flooding into their fields, but this ultimately prevents water recharge and renewal of their land.

Beaver dams expand riparian areas. Because beaver dams spread water out in ponds above dams and underground below dams, riparian vegetation is expanded. Riparian areas are the most bio-diverse and endangered habitats in the West.

But healthy riparian areas, with their dense willows and other vegetation, snaking water channels, and sogginess, can limit cattle or horse movement. In the past, willows were often sprayed with herbicide by ranchers so that cattle could have open fields of grass, even though it destroys riparian biodiversity and depletes bank-stabilizing, woody-plant roots.

Beavers can knock down big trees. During summer, beaver prefer to eat non-woody plants such as grasses, herbs, and aquatic vegetation, while in winter beaver subsist on the bark and cambium of cottonwood, willow, and aspen trees. If smaller aspen or cottonwood aren't available for food or dam construction, beavers will down large trees to access the upper branches.

Cottonwood, willow, and aspen readily re-sprout after being cut. But if cattle, elk, or deer are crowding the riparian areas, they will browse the sprouts repeatedly, preventing them from becoming tall, reproductive willows or trees.

Individual, large trees can be protected by wrapping with chicken wire. But if young cottonwood and aspen are not being allowed to grow above browse height, "protected" older trees will eventually die, with no younger trees replacing them.

Beavers build dams where they want to. Humans are famously occupied with "controlling" creeks, rivers, and floods. We do this primarily by straightening waterways; berming, rip-rapping or paving banks; directing creeks through culverts; damming waterways for electricity, flood control, or recreation; and diverting water into ditches and pipes for irrigation, drinking water, and other uses.

Busy engineers that they are, beavers can mess with *our* engineering plans. Beaver may hear water flowing out of a culvert or through an irrigation ditch, and decide to dam it. Their pond may flood an off-road vehicle route or picnic tables beneath an old cottonwood tree.

At these times we have non-lethal options. For instance, we can place a pipe (a "beaver deceiver") through the dam, underwater, at the maximum desired level of the pond. The beaver won't hear the water flowing through the pipe underwater, and consequently won't plug it. Or we can build a sturdy, inexpensive fence below a culvert to foil beaver plans. Beaver can be live-trapped and moved to a location where their engineering skills are desired. And if necessary, it is not difficult to kill "nuisance" beaver.

Beaver make us re-think our values for creeks and riparian areas. Beaver confront us with a potentially stark choice on both public and private lands: Do we want the ponds, meadows, riparian areas, willows, cottonwood, aspen, ducks, frogs, fish, birds, aquifer recharge, and late-season water that beaver bring? Do we want beaver assistance in mitigating dwindling water availability?

continued on page 29

Westend61/MediaBakery

For a May 3, 2008 National Public Radio audio story on this project, click on http://www.grandcanyontrust.org/whatsnew/05_06_08beavernpr.php

The Essence of a Mountain: Landscape conservation across the Kaibab Plateau

by Ethan Aumack

> **" ... we can look far beyond and see the tree trunks vanishing away like an infinite colonnade. The ground is unobstructed and inviting. There is a constant succession of parks and glades, dream avenues of grass and flowers winding between sylvan walls, or spreading out in broad open meadows. From June until September there is a display of wildflowers which is quite beyond description".**
>
> ***Clarence Dutton, member of John Wesley Powell's expeditionary party, describing the Kaibab Plateau in 1871***

Rising above a sea of windswept grassland, desert scrub, and pinon-juniper woodlands, and towering over the Grand Canyon's north rim, the Kaibab Plateau has at various times been described as a sky island, as "the mountain"—by Arizona Strip locals, and as "the mountain lying down"—by Paiute Indians. As with mountains elsewhere in the world, the Kaibab Plateau has for millennia served as a place of refuge and sustenance for humans and animals alike. It has inspired the likes of John Wesley Powell, Teddy Roosevelt, and Aldo Leopold. It has also, over the last several decades, become a place of land use and resource extraction-based conflict, controversy, and acrimony. The Kaibab Plateau now stands far and above the surrounding landscape as a place of unparalleled need and potential for collectively-supported and visionary conservation.

Composed largely of Toroweep, Coconino, and Hermit shale, the Kaibab Plateau is capped by a thick layer of Kaibab Limestone—the remnants of a 250 million year old shallow sea bed. As a function of the Colorado Plateau's massive uplift beginning nearly 20 million years ago, the Plateau began rising above the downcutting Colorado River to its prominent position today.

Human occupation across the Plateau began in the early thirteenth century, with nomadic Paiute tribes drawn to its cool forests, grasslands, and woodlands for harvesting, hunting, and trade. While information describing land uses prior to Euro-American settlement in the area is scant, it is likely that the Paiutes used fire prominently across the landscape and throughout the spring, summer, and fall, to encourage growth in desired plant species, and to help in the collection of pinon pine nuts.

Due in large part to the Plateau's remoteness and rugged terrain, it was not until the 1870's that Mormon pioneers began to introduce large herds of cattle and sheep to the area. By 1897, however, more than 33,000 head of cattle were being run across the Plateau and House Rock Valley, with cattle numbers increasing to more than 60,000 by the early 1900's. Throughout the early twentieth century, the Kaibab Plateau was used hard by ranchers and was significantly affected by the actions of game wardens and hunters who, in mis-guided efforts to protect the Kaibab mule deer herd, killed (by one account) more than 750 mountain lion, 20 wolves, 5,000 coyotes, and 500 bobcat by 1931. Later in the century, large-scale timbering activities occurred in earnest across the Plateau, resulting in a significant reduction in the abundance of old-growth forests, and serious impact to old-growth dependent species.

In spite of unsustainable resource extraction-based use across the Plateau over the past century, the Kaibab Plateau stands as one of the Colorado Plateau's ecological jewels. Its higher elevations contain some of the best remaining old-growth ponderosa pine forests in the region, and the densest breeding population of northern goshawks in North America. The renowned Kaibab mule deer herd calls the Plateau home during summers, and disperses off to either side of the Plateau during winter. The Plateau hosts a number of threatened, endangered, and sensitive species, as well as endemic species—limited in distribution only to the Plateau itself.

While the Plateau's inhabitants are not threatened by the same timbering and overgrazing that they experienced earlier in the century, they are far from secure. In large part due to the legacy of historical

Ethan Aumack

extraction-based forest management, ponderosa pine forests across the Plateau are ecologically out of balance. Intense fires, such as the Warm Fire that burned 60,000 acres in 2006, threaten the Plateau. Invasive, non-native species such as cheatgrass threaten to colonize and dominate vast reaches of the Plateau. Without natural population control by predators, some of which have been extirpated from the Plateau, the Kaibab mule deer herd has the potential to overbrowse sensitive habitats, especially in its winter range on the Kaibab Plateau's west side. Climate change is likely to place enormous stress on the Plateau's native plant communities and wildlife populations.

The Grand Canyon Trust, through its purchase of the Kane and Two Mile ranches in 2005, has chosen to invest significant resources in reversing trends of degradation and pursuing landscape-scale restoration across the Kaibab Plateau. Across much of the Plateau, this restoration will entail preparing its forests for the reintroduction of natural fire through strategic small-tree thinning, prescribed burning, and cautious management of naturally ignited fires. Such landscape-scale work requires rigorous science, strong partnerships, and more on-the-ground restoration capacity.

We have worked over the past three years to build a rigorous science foundation for restoration-based forest management by partnering with the Forest Ecosystem Restoration Analysis project at Northern Arizona University. Through our partnership, we have developed maps linking ground plot data (collected by Trust volunteers in 2005 and 2006) with satellite imagery to describe current forest, fire, wildlife habitat, and invasive non-native species conditions across the Plateau. Using these maps and working with Forest Service staff and other stakeholders, we hope to assist in building a collective and ambitious vision for science-based restoration across the Plateau.

Landscape-scale restoration across the Plateau will require a social license that can only be built with broad and deep commitment from a number of partners. We have been working to build key partnerships with the U.S. Forest Service, the Arizona Game and Fish Department, university staff, local hunters, and other local community members. As we move closer

continued on page 29

Old growth ponderosa pine forest at Fire Point, Kaibab Plateau.

Hydrocarbon Heaven?

by Laura Kamala

Rick Moore

This could be heaven or this could be hell for the Cisco area.

On a late spring field trip with David Smuin, the Trust's watersheds manager, we noticed that the grey skies and fifty mile per hour winds choking the air with dust lent to the general ambience of doom out on the Cisco desert. New roads led in all directions to drill rigs, compressor stations, pipelines, and piles of oily junk. It was a stark contrast to the profusion of wildflowers carpeting a reputed barren landscape—cloud-white Cisco woody asters, sego and rosy mariposa lilies and crimson Indian paintbrush. Orange fields of globe mallow were just beginning to bloom on the low hills where white-tailed prairie dogs and pronghorn antelope live.

We then decided to drive by the new Danish Flats oil and gas wastewater disposal facility. Located only twenty miles northeast of Arches National Park, it's an area described by Danish Flats chief operating officer Jim Bradish as "…not located close to anything, there are no neighboring homes or residences or farms or ranches or anything. It is totally by itself." The facility consists of eight, five-acre ponds and a two-acre sludge pit, and can accept 20,000 barrels of contaminated water a day.

I disagree with Grand County councilman Gene Ciarus, who heartily welcomed this project after it was rejected by savvy western Colorado residents. He claims there will be no environmental hazards to the county from 40 million gallons of water containing benzene, toluene, xylene, naphthalene, methyl tertiary butyl ether (MTBE), polynuclear aromatic hydrocarbons, and numerous other toxic volatile organic compounds (VOCs) evaporating into the regional airshed encompassing Arches and Canyonlands National Parks, Moab, Cisco, and several other communities. The company plans to increase the capacity of the facility to 100 million gallons of wastewater.

Oil and gas companies are *not* required to fully disclose the identity of all chemicals used in drilling and production or the quantity and concentration of those substances. Additionally, *no* baseline assessment of

water quality, VOCs or ozone levels before oil and gas development begins, nor any monitoring during operations is required by regulators. Recent studies by the Utah Division of Wildlife Resources revealed high concentrations of methylmercury (a result of the region's many coal-fired power plants) in fish and waterfowl in Utah's lakes, reservoirs, and mountain streams. These findings indicate that airborne toxins, like those evaporating into the region's air from Danish Flats, can range long distances before being deposited on soils and in waterways. This is the kind of information that should be provided to all communities near such development.

When oil companies are being closely scrutinized, during the permitting process for example, they do their best to comply with agency regulations. However, this is a dirty business by nature and things happen that cannot be mitigated by regulation or managed by over-worked agency enforcers trying to cover the vast reaches of these altered lands. Unfortunately, Utah regulations are less stringent than Colorado, where citizens have been trying to convince the Colorado Oil and Gas Commission that even stricter regulation is needed to protect their health, welfare, and private property rights. Public meetings there are often packed with industry workers and officials attempting to override the voice of impacted citizens.

David, who once did hydrological consulting work in the industry, says, "sloppy operations routinely occur in the oilpatch." We saw evidence of this in a graveled staging area on BLM land where a 55 gallon plastic drum of oily liquid had been emptied on the ground next to its twin, which was still awaiting disposal. The BLM's hazardous material people had not responded in time to David's call a few weeks earlier reporting the presence of the two, partially-full barrels discovered on a previous field trip.

Evaporation pits are known to kill birds and other wildlife plunging into them. The Danish Flats company intends to cover their ponds with netting to discourage wildlife. On our last visit to the site in mid-May, the netting was not yet in place but a noisy propane gun was firing off regularly to scare intruders. The evaporation ponds are dangerously located at the head of Danish Flats Wash on private land that was purchased by the company from a rancher. In a worst case scenario, a catastrophic breach of the ponds would send millions of gallons of toxic waste seven miles downstream to the Colorado River.

Recent studies by the Utah Division of Wildlife Resources revealed high concentrations of methylmercury (a result of the region's many coal-fired power plants) in fish and waterfowl in Utah's lakes, reservoirs, and mountain streams. These findings indicate that airborne toxins can range long distances before being deposited on soils and in waterways.

In addition to the Danish Flats facility, there is an onrushing wave of industrial development proposed for southeast Utah. All are heavily polluting and require very large volumes of water to function. A new industrial park in Green River may one day house two, side-by-side nuclear power plants, a black wax crude and oil shale refinery, and a uranium mill in the town now famous for growing watermelons. On the periphery, Delta petroleum anticipates a full gas field development of up to 800 wells near the Crystal geyser and 430 new wells are now permitted within a 50 mile radius of the popular tourist town of Moab. Talk of reviving the nuclear power industry has inspired the staking of thousands of new uranium mining claims on public lands. The combined environmental effects of these proposals are hard to quantify, especially since various regulating agencies don't take into account cumulative impacts of multiple projects outside their jurisdiction. Consequently, there will not be an inclusive Environmental Impact Statement for these immense projects.

continued on page 29

Politics Trumps Science and Laws Protecting Grand Canyon

by Nikolai Lash

Releases from Glen Canyon Dam have not been kind to Grand Canyon. Day after day, month after month, year after year, flows fluctuate up and down like a washing machine, sometimes varying in a 24-hour period as much as 15,000 cubic feet per second. Scientists have learned that these fluctuations, although good for generating cheap, peaking power from the dam, are bad for Grand Canyon health.

High-Flow Test

In March of this year, the Bureau of Reclamation ran a 60-hour high-flow test through Glen Canyon Dam to help replenish lost sediment in the river system below the dam. Maintaining sediment, the foundation for the Colorado River ecosystem in Grand Canyon, is problematic because about 87 percent of the sediment volume that was once transported to Grand Canyon every year is now trapped in Lake Powell. The only possibility for maintaining beaches and near-shore habitats in Grand Canyon is by responding to significant sediment inputs from tributaries with high flows from Glen Canyon Dam.

Scientists monitoring river conditions following the high flows have already concluded that the experiment was a success, building beaches at numerous places in Grand Canyon. But unfortunately, Reclamation has caved in to powerful hydropower interests and immediately begun again releasing erosive fluctuating flows from the dam. These erosive flows are part of Reclamation's five-year Experimental Plan that fails to include another high-flow test (which sediment scientists say needs to be done every 12-18 months). The Experimental Plan also fails to include the steady flows needed to conserve sediment in the system and provide stable shoreline habitat for the endangered humpback chub.

Bureau of Reclamation's Damaging Experiments

Reclamation has chosen dam operations that maximize the production of cheap peaking power at the expense of Grand Canyon resources. Their Experimental Plan lacks both future high flows and sufficient steady flows. It violates federal law and runs counter to recommendations made by numerous scientists.

Reclamation's proposals ignore clearly stated opposition from the National Park Service, which has the authority and responsibility to protect the Park against any destructive federal activity, such activity technically known as "impairment."

Describing the present impairment by Reclamation's Experimental Assessment and Plan, Superintendent of Grand Canyon National Park Steve Martin stated in his public comments:

> *"Analysis of [Reclamation's] Environmental Assessment and proposed action (including strict limitations on future flows, a short-duration steady flow regime in the latter part of the monsoonal period, and other key factors) indicates these measures would likely result in impairment of the resources of Grand Canyon National Park. The [Plan] as written appears to be in conflict with NPS 2006 Management Policies, may not be consistent with CEQ guidelines, and is significantly in conflict with our understanding of the science and inconsistent with the intent of the Grand Canyon Protection Act . . ."*

Reclamation Not Cooperating with National Park Service

Even though the Park Service has the responsibility to protect the Park from illegal and damaging federal activities, Reclamation has refused to include the Park Service as a cooperator.

Senior officials at the Department of Interior and Solicitor David Bernhardt continue their misguided mission to strip the National Park Service of its authority and responsibility to protect Grand Canyon National Park. The Department of the Interior is knowingly supporting dam operations that violate federal law and go against $80 million worth of agency science.

Endangered Humpback Chub

The endangered humpback chub has survived in the lower basin of the Colorado River and the Grand Canyon for three to five million years. Yet in just the last 45 years, Glen Canyon Dam and its operation have caused the chub to become threatened with extinction on the lower Colorado River. The U.S. Fish and Wildlife Service (FWS) concluded in their 1994 Biological Opinion that Reclamation's operations of the dam are jeopardizing the chub and adversely modifying its critical habitat in violation of the Endangered Species Act (ESA).

Reclamation could operate the Dam in a manner that complies with the law and limits the adverse impacts to the chub and its critical habitat, but chooses instead to provide cheap peaking power to hydropower customers. Reclamation refuses to comply with the ESA and the National Environmental Policy Act (NEPA) and operate the dam in a way that ensures the humpback chub's survival and recovery.

Grand Canyon Trust Litigation

On March 17, 2008, the Grand Canyon Trust filed in federal court a legal complaint containing eight claims, including ESA, NEPA, and Grand Canyon Protection Act claims.

ESA Section 7(a)(2) mandates that Reclamation's Glen Canyon Dam operations neither jeopardize the endangered humpback chub in the Colorado River nor destroy or adversely modify the chub's designated critical habitat in the Grand Canyon. In its Biological Opinion, FWS determined that Reclamation's existing dam operations, which involve water releases under a "Modified Low Fluctuating Flow" regime, violate these ESA section 7(a)(2) prohibitions.

Moreover, Reclamation has not implemented the seven-month water release program called "Seasonally-Adjusted Steady Flows," as FWS required in the Biological Opinion. The result: Reclamation's operations are adversely impacting river flows, sediment loads, and temperatures, which, in turn, harm the chub and degrade its habitat by eliminating seasonal flows, destroying shoreline habitats, and preventing river warming.

As stated earlier, Reclamation adopted an Experimental Plan for Glen Canyon Dam that damages Grand Canyon resources and violates federal law. The Trust's sixth through eighth claims challenge this 2008 Experimental Plan on the grounds that it violates NEPA, the Grand Canyon Protection Act, the ESA, and the Administrative Procedure Act (APA).

Reclamation prepared an environmental assessment and issued a Finding of No Significant Impact (FONSI) for the 2008 Experimental Plan. The EA/FONSI violates several federal laws. Reclamation failed to provide adequate notice and public comment for the EA/FONSI. Reclamation's assessment of impacts and conclusion violated NEPA. Reclamation failed to adequately consider the NEPA significance factors. Reclamation ignored impacts to Grand Canyon Park's natural, cultural and recreational resources, and impacts to the humpback chub and its critical habitat.

The Grand Canyon Trust and the National Park Service urged Reclamation to consider a Seasonally-Adjusted Steady Flow alternative that complied with and implemented the legal requirement set forth in the 1994 Biological Opinion. In violation of law, Reclamation did not consider a Seasonally-Adjusted Steady Flow alternative that comported with the 1994 Biological Opinion.

The Grand Canyon Protection Act requires the Secretary of the Interior and Interior agencies, including Reclamation, "to protect, mitigate adverse impacts to, and improve the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established, including, but not limited to natural and cultural values and visitor use."

The Bureau of Reclamation's current activities violate federal law, but, more importantly, are destroying one of the most cherished national parks in our country.

Old Law Creates New Nightmare for Grand Canyon

by Jane Danowitz, director of the Pew Campaign for Responsible Mining

Photodisc/MediaBakery

May 22, 2008

It seems like a bad dream. A company is given the green light to explore for uranium within a stone's throw of the Grand Canyon and it is virtually impossible to stop it. Unfortunately, this nightmare is real due to a 19th-century law that gives uranium, gold and other metal mining priority over almost everything else on most public lands in the West. Fortunately, there are signs that lawmakers in Washington may finally take action before it's too late.

The nation's mining law made sense in 1872 when it was signed by President Ulysses S. Grant to reward pioneers who survived the trek across the frontier with the opportunity to take gold, uranium and other precious metals in unlimited amounts. As an added incentive, they also could purchase the land itself for $5.00 an acre or less. Today, the picks and pack mules are long gone but the 1872 General Mining Act remains on the books, virtually untouched. It's no longer lonely prospectors, but a profitable global industry reaping the riches—including the right to mine almost anytime or anywhere on public lands, even on the doorstep of the Grand Canyon.

Taylor McKinnon

Last December, the U.S. Forest Service gave approval to a British company, Vane Minerals, to drill exploratory wells for uranium at up to 39 sites in Kaibab National Forest, within five miles of Grand Canyon National Park. No hearing was held and public comment was minimal. The Forest Service said its hands were tied and that under the 1872 Mining Law it had no choice but to accede to the permits. Alarmed at the potential impacts of uranium mining, not only on this national icon but on water quality downstream, the Grand Canyon Trust joined with the Center for Biological Diversity and Sierra Club to file suit in federal court challenging the decision. In April, the judge issued a temporary order halting development until the case can be heard this summer.

But with soaring world demand and the skyrocketing price of metals, this could be just the tip of the iceberg. Within five miles of Grand Canyon National Park there are now more than 1,100 uranium claims, compared with just 10 in January 2003, according to an analysis of government data by the nonpartisan Environmental Working Group. Similar spikes in the number of claims can be found within a few miles of other national treasures such as Arches, Canyonlands and Yosemite National Parks.

Fortunately, Congress has finally emerged from its long hibernation on the issue of reforming the 1872 mining law. Last fall, the U.S. House of Representatives passed bipartisan legislation that would establish royalty payments similar to those paid by the oil and gas industries, set up long-overdue environmental standards for operation and cleanup, and give federal agencies the ability to say no when mining or exploration are not in the public interest. In addition, Rep. Raul M. Grijalva (D-AZ), who chairs the House subcommittee that deals with national parks and forests, has introduced a bill that would specifically address mining around the Grand Canyon by withdrawing a million acres of federal land adjacent to the park from future mining and mineral leases.

The measures face a tougher test in the U.S. Senate, where important environmental and taxpayer protections could easily be watered down by some western lawmakers who seem reluctant to embrace full-scale reform.

Above: Vane Minerals drilling rig just east of Grand Canyon National Park entrance.
Left: Riverbank at Grand Canyon.

The prospect of mining uranium or any other metal in areas bordering the Grand Canyon should persuade even the industry's staunchest allies that the 1872 Mining Act should be reformed and lands around the park placed off limits to mining. No one in Congress should get a good night's sleep until it's done.

Invest in Us

by Phil Pearl

Did you know that income from basic membership fees accounts for less than 8% of the Trust's annual operating budget with the remainder coming primarily from foundations and individuals giving at more substantial levels? In other words, more than 90% of our budget comes from foundations and individuals that invest beyond basic membership levels.

Foundations are investing in the work of non-profit organizations at unprecedented levels. However, this funding is extremely competitive and there remains far more need than there is available funding. Moreover, much of this investment is restricted to specific project expenditures and often does not support the necessary operational business expenses of non-profits, such as salaries, rent, utilities and the like.

This circles us back to individuals, who are the lifeblood of organizations like the Trust. Simply put, the more investors we have, and the more generous our investors are willing to be, the more time and energy we can spend focusing on the important work before us. Fortunately, the Trust is well positioned in this regard. Less than 21 cents of every dollar contributed to the Trust is expended on organizational overhead (a very low number by non-profit standards) with the remainder being directed exclusively to the projects and programs we all care deeply about.

When you can, invest generously in the work of the Trust. Thanks.

For more information on creative and tax advantageous ways to support the Trust, please contact Phil Pearl at 928.774.7488.

Monthly Pledging Option

Did you know that there is now a hassle and paper free way of supporting the Trust through a monthly pledging option? All you need to do is provide us with some basic information and let us know how much of a monthly pledge you would like to make and whether or not you would like to receive the bi-annual *Colorado Plateau Advocate*. Based on your preference, the pledged funds are debited on a monthly or quarterly basis from your checking or credit card accounts and an annual, cumulative acknowledgement is mailed to you at the end of the year. No checks to write, no stamps to lick and a few good trees left standing. It's a great, hassle free way of investing in Trust programs and projects. For more information, call Kim Phelps at 928.774.7488 x 212.

Statements of Financial Position

for the twelve months ended December 31, 2007

ASSETS	2007
Current Assets:	
Cash and cash equivalents	$2,158,875
Cash - restricted	397,874
Contributions receivable	66,000
Other receivables	7,012
Notes receivalbes	37,591
Prepaid expenses	6,569
Total current assets	2,673,921
Property and Equipment, net	1,540,060
Investments	2,302,412
Investment in North Rim Ranch, LLC	1,066,535
Conservation Easement	1,295,000
Beneficial Interest in Remaider Trust	57,565
Total Assets	$8,935,493

LIABILITIES AND NET ASSETS	
Current Liabilities:	
Account payable	$59,318
Accrued expenses	55,641
Total current liabilities	114,959
Note Payable:	919,700
Total liabilities	1,034,659
Net Assets:	
Unrestricted	5,561,661
Temporarily restricted	554,173
Permanently restricted	1,795,000
Total net assets	7,910,834
Total liabilities and net assets	$8,935,493

Statements of Activity

for the twelve months ended December 31, 2007

CHANGES IN NET ASSETS	2007
Revenues:	
Grants	$1,100,923
Contributions	1,803,428
Membership income	294,347
Donated materials and services	84,452
Investment income	299,177
Change in value of beneficial interest in remainder trust	-2,881
Equity share of net income/(loss) of investee	-504,852
Other income	110,835
Total revenues	3,185,429
Expenses:	
Program services	2,064,429
Education	117,874
Development and membership	284,259
General and administrative	309,689
Total expenses	2,776,251
Net increase in unrestricted net assets	409,178
Net assets at beginning of year	7,491,656
Net assets at end of year	$7,900,834

continued from page 7 **Uranium Claims**

little doubt that the cumulative effects of mining, milling, and detonating radioactive materials are causing long-term, adverse impacts on water and water users within the Grand Canyon region.

Using Precaution

Nuclear energy continues to be championed by our government, which repeatedly assures us that uranium mining poses no risk to human or ecological health. But time and consequences belie these conclusions. In 2005, the Navajo Nation outlawed uranium mining and processing on its lands and Nevadans steadfastly reject federal plans to dump nuclear wastes in their state.

Navajo President Joe Shirley offered the following testimony in support of mineral withdrawal legislation during Congressman Grijalva's field hearing in Flagstaff:

> *"The tragedy of uranium's legacy extends not only to those who worked in the mines, but to those who worked and lived near the mines that also experienced devastating illnesses. Decades later, the families who live in those same areas continue to experience health problems today. The remnants of uranium activity continue to pollute our land, our water, and our lives. It would be unforgivable to allow this cycle to continue for another generation."*

Hopi, Kaibab Paiute, Hualapai, and Havasupai leaders joined President Shirley in testifying to support legislation that would withdraw from new mineral development most of the remaining federal lands surrounding the Grand Canyon.

Abe Springer, Professor of Hydrogeology at Northern Arizona University, stated in a letter to the hearing committee, "Because there is potential harm to one of the most important natural wonders in the world, and to tribes which count on the water from the aquifers as a sole source of water, it makes good sense to exercise the precautionary principle."

Using precaution in this case would mean doing no harm and preventing more damage, even though we barely understand how water winds its way through regional aquifers. It would require proponents to bear the burden of proof to show that mining uranium will not contaminate springs in the Grand Canyon or risk the well-being of lives they support.

Perhaps we will never know why a hanging garden of maidenhair fern, hidden deep within the Canyon's heart, is failing to pump the lifeblood of water into my faithful pool. But grandchildren might honor our wisdom in preventing short-sighted speculators from poisoning Grand Canyon's wellspring of sustenance.

A detailed map of uranium claims surrounding Grand Canyon is available on our website at: www.grandcanyontrust.org

continued from page 13 **Volunteers**

Colorado River and Monument Valley Tribal Parks. Volunteers worked with Navajo elders to identify important cultural and medicinal plants along the trail at Second Overlook Gorge and will help create interpretive signs for visitors displaying this information. We will continue to build the program over the coming year, focusing on efforts in tribal parks that are community-prioritized and supported by both the Trust and the tribes.

Grand Canyon Trust volunteers give the gift of their time to projects that mean something in the larger picture of the Colorado Plateau. They learn about the issues that threaten our public lands: uranium development, dam management, the spread of invasive species, and degraded habitat for important wildlife species. Then they get a chance to get their hands dirty doing something to protect and restore these magnificent places. The diversity and experience of our volunteer community makes what we do more than just a day's work cutting tamarisk, monitoring springs, building fences and trails, and collecting seeds. This growing, extended family of citizen stewards cares about the fate of the Colorado Plateau and have invested their most precious resource—time.
For more information visit: gctvolunteers.org

continued from page 17 **Beavers**

Or do we want upland plants like rabbitbrush moving onto banks that once were "riparian areas" but are now isolated high, hot, and dry above incised creeks? Floods that erode creek beds and banks? Grandparent cottonwood and aspen trees with no parent or teenage cottonwood present? Eighteen-inch tall, gnawed stumps of ten-year old willows that should be eight feet tall? Creeks that dry up in August?

The Trust believes our nation deserves the former on southern Utah's three national forests. But here's the rub: Beaver engineers, like human engineers, need to eat to live. If beaver are going to eat, the forests' riparian willow, cottonwood sprouts, and young aspen need to find relief from too many big game and livestock mouths. If beaver colonies are going to survive, Utah's current allowance for unlimited trapping of beaver must be modified.

Throughout 2008, the Trust is gathering field data and working on both these reforms with private landowners, the Three Forests Coalition, Tushar Allotments Collaboration (including livestock permittees), US Forest Service, Utah Division of Wildlife Resources and, hopefully, you.

continued from page 19 **Essence of a Mountain**

towards implementing landscape-scale restoration across the Plateau, relationships built with partners will be critically important.

Finally, landscape-scale restoration will require substantial on-the-ground capacity. We have begun to build a critically important volunteer stewardship corps that will provide some of this capacity. So far, dedicated volunteers have provided tens of thousands of hours of time assisting with necessary research, monitoring, and on-the-ground project implementation—efforts that are vital as we work towards meeting landscape restoration goals across the Plateau.

In the Kaibab Plateau, Teddy Roosevelt once saw an iconic and invaluable landscape worthy of special protection—that of the Grand Canyon Game Preserve designated in 1906. Just over one hundred years later, and with an eye to the coming century, it is time that we again clarify and voice our collective will. Without landscape-scale conservation and restoration-based forest management, the Kaibab Plateau will succumb to the effects of unnaturally severe fire, cheatgrass invasion, and a greatly imbalanced predator-prey system. With such management—supported by strong science, collaboration, and collective leadership—the Plateau will stand tall in the face of daunting ecological and management challenges.

The Kaibab Plateau has long provided sustenance and inspiration. Please work with us to give back to the Plateau. Visit *www.gctvolunteers.org* to learn more about opportunities for assisting in Kaibab Plateau volunteer projects.

continued from page 21 **Hydrocarbon Heaven**

We're oil addicts. Here in the Paradox Basin we suck up carbonized algal slime from the Pennsylvanian geologic age like it's our last drink of water before a long trek across the Arabian Desert. Oil is a finite resource and one day we'll be down to our last drop. A 2005 study on peak oil by the Bush energy department stated, "Previous energy transitions (wood to coal and coal to oil) were gradual and evolutionary; oil peaking will be abrupt and revolutionary." The same administration has encouraged a gold rush mind-set on developing our domestic reserves. Utah's Senator Bennett has said, "If we are serious about reducing the price of gas at the pump we don't do it by relying on more foreign oil; we do it by opening up our own capacities in an environmentally responsible manner without harming our public lands." But the days of cheap oil are over and the price will continue climbing no matter where we acquire it. We pay an even heavier price for the long-term impacts to our air, water and public lands.

There's nothing heavenly about the conditions in the new oil fields that are springing up and pressing in on all sides of southeast Utah's spectacular canyon country. I'd call it hydrocarbon hell.

In Honor of Jim Trees

Jim Trees and daughters Willow and Sierra.

JIM TREES, Grand Canyon Trust Founder and Chairman of the Board from 1985-1992, passed away on June 2nd in Tiburon, California. Jim was such a big, energetic personality that his friends all seem to be having a hard time accepting the fact that we won't be getting any more of those calls alerting us that we simply must rise to meet some new threat to the land and people of the Colorado Plateau. For himself, Jim was always up to a challenge, and he brought a remarkable diversity of talents to any job. He had a Harvard doctorate in international finance and was a successful capitalist, farmer and conservationist. Anyone who heard him throw back his head in song didn't soon forget the experience.

Jim saw possibilities everywhere for life to be lived better, so he created many things like a big investment firm, Utah's first organic fruit farm, and the Grand Canyon Trust. His goal for the Trust was always for us to be a source of information and inspiration to bring the people of the southwest into a more harmonious relationship with this sacred place. His last act with the Trust was to establish the Trees Fellowships so that we might always have a writer or artist in residence to reach out ever more effectively with the critical message that our inhabitation of this place matters. We will miss him more than words can say.

—Bill Hedden

JIM TREES WAS A MAN OF PASSION AND ENERGY. His bright arc through life described the sense of urgency he had about all of his interests—from business, to farming, to environmentalism, and beyond. He had the need and capacity to push any project he was a part of, and those involved, forward with vigor and determination.

Ed Norton, the Trust's founding president, recently shared a poem with Jim in mind.

To Be of Use

by Marge Piercy

The people I love the best
jump into work head first
without dallying in the shallows
and swim off with sure strokes almost out of sight.
They seem to become natives of that element,
the black sleek heads of seals
bouncing like half submerged balls.

I love people who harness themselves, an ox to a heavy cart,
who pull like water buffalo, with massive patience,
who strain in the mud and the muck to move things forward,
who do what has to be done, again and again.

I want to be with people who submerge
in the task, who go into the fields to harvest
and work in a row and pass the bags along,
who stand in the line and haul in their places,
who are not parlor generals and field deserters
but move in a common rhythm
when the food must come in or the fire be put out.

The work of the world is common as mud.
Botched, it smears the hands, crumbles to dust.
But the thing worth doing well done
has a shape that satisfies, clean and evident.
Greek amphoras for wine or oil,
Hopi vases that held corn, are put in museums
but you know they were made to be used.
The pitcher cries for water to carry
and a person for work that is real.

Jim is survived by his daughters Willow and Sierra who, born to this desert land, share his enthusiasm and love for it. Most of all, however, they carry the knowledge of Jim's greatest love, his love for them, as they follow their own paths through this mystical and magical world.

—Coby Jordan

ARRIVALS

Lauren Berutich

Volunteer Program Coordinator

Lauren came on board with the Trust as a Volunteer Program Coordinator in January of 2008 after returning from a four-month, volunteer teaching position in rural Jamaica. In addition to leading volunteer trips, Lauren manages promotions for the volunteer program and associated events. She graduated in 2001 with a BA in Environmental Geography from Kutztown University of Pennsylvania and has focused most of her energy in outdoor environmental education. Her experience includes teaching at the Montessori Charter School of Flagstaff, three years with Camp Colton as an environmental educator and office staff member, and summer instruction with the Discovery Program through the Museum of Northern Arizona.

NEW STAFF ASSIGNMENTS

Rick Moore moves from Kane and Two-Mile Ranch Director to Associate Director for Programs.

Ethan Aumack is now the new Kane and Two-Mile Ranch Director.

Roger Clark has added the Grand Canyon uranium issue to his Air & Energy agenda.

Christine Albano is now a full-time Restoration Program Coordinator.

SCHOLARSHIP WINNERS

The Grand Canyon Trust is pleased to announce the scholarship winners of our *Colorado Plateau Scholars 2008* program.

Kanab High School – **Kenneth M. Lundberg**

Fredonia High School – **Hayden L. Ballard**

Grand High School (Moab) – **Zephyr S. Glass**

Hopi High School (Tuba City) – **Leandra Marie Calnimptewa**

Tuba City High School – **Alicia R. Tsosie**

Greyhills Academy High School (Tuba City) – **Tara L. Crank**

The Colorado Plateau Advocate

A publication of the Grand Canyon Trust, a non-profit organization dedicated to protecting and restoring the Colorado Plateau

Advocate Staff

Editor: *Richard Mayol*

Design: *Joan Carstensen Design*

Printing: *Arizona Lithographers*

Headquarters
2601 N. Fort Valley Road
Flagstaff, AZ 86001
(928) 774-7488
(928) 774-7570 Fax

Moab, Utah Office
HC 64, Box 1801
Moab, Utah 84532
(435) 259-5284

Front cover painting: Bruce Aiken
Back cover painting: Bruce Aiken

This publication is printed with soy based inks.

The marvelous art gracing the front and back covers of this issue is the work of Bruce Aiken. The cover painting is entitled *Split Rock* (1998) and the image to the left is *Acquiesce* (1996). Visit his website bruceaiken.com for information on his work.

Mission

The mission of the Grand Canyon Trust is to protect and restore the Colorado Plateau—its spectacular landscapes, flowing rivers, clean air, diversity of plants and animals, and areas of beauty and solitude.

Vision

We work toward a region where generations of people and all of nature can thrive in harmony. Our vision for the Colorado Plateau one hundred years from now is:

- A region still characterized by vast open spaces with restored, healthy ecosystems and habitat for all native plants and animals.
- A sustaining relationship between human communities and the natural environment.
- People living and visiting here who are willing and enthusiastic stewards of the region's natural resources and beauty.

Grand Canyon Trust
2601 N. Fort Valley Road
Flagstaff, Arizona 86001
(928) 774-7488

NONPROFIT ORGANIZATION
U.S. POSTAGE PAID
Flagstaff, AZ
Permit No. 43

Visit our website at www.grandcanyontrust.org