EL RIO DE LOS REYES EN REEDLEY CONSERVATION TRUST

# REFLECTIONS

Upon a Delicate Treasure!

**Winter Edition**

**January 2006**

Safeguarding the Kings River for future generations.

## Long Term Health of the River

By Kent Kinney

Conserving the Kings River and its landscape enriches our lives and ensures that future generations will be able to enjoy the Kings River's unique natural treasures.

Few people would disagree with that statement. But, for a conservation organization promoting wise use and environmental stewardship, obstacles to achievement of this goal can seem endless. This is especially true as the consideration for future generations is realistically examined. The success of this effort cannot be determined now in our lifetime. It may become more apparent when our great grandchildren have replaced us. But, as far as we know, there will be descendants of our generation inhabiting this area for thousands of years to come. Few people today give much thought to this and it makes public support for wise, long-term land use planning difficult to find. Because of this, the long term health of the river

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and its natural resources should be the main focus of a conservation organization. If the resource is protected for today but lost tomorrow, we will not have accomplished much.

The approach to managing natural resources cannot only center on 'the natural world'. People have been a part of the ecosystem in our area for at least 10,000 years and will continue to

*(Continued on page 2)*

## How Rivers Work

By Dr. David Cehrs, Hydrologist

Rivers and streams sculpt and form our landscape by eroding, transporting, and depositing sediment. Their main purpose is to remove the mountains through erosion and transport the resulting sediment to basins where it is deposited. The ocean basins are the largest of these basins. Thus, rivers are charter members of the flat earth society as they remove the high places and deposit them in the low places.

All rivers have a longitudinal profile with similar characteristics: they have steeper gradients (feet of fall per horizontal mile of river) in their headwaters and the gradients decrease down stream and become quite flat at the mouth of the river. This longitudinal profile is a compromise between a uniform rate of energy expenditure and minimum total work over the length of the river. Typically, river headwaters are in mountains or uplands; here the relief is higher and the terrain rougher. The water flowing down the steep mountain gradients have high velocities. Because of these high velocities and large water volumes during the spring runoff, mountainous rivers can move very large particles, boulders approaching room size. As the water moves down river the gradients decrease as does the velocity. As the velocity decreases so does the maximum size of material the river can move. Typically as rivers debouch from the mountains onto the plains below, the maximum size of material transported is small boulders to gravel. But on the plains further away from the mountains the sediment transported becomes sand, silt and clay size. This ability to carry different sized material is called the rivers competency and the competency varies down gradient.

***The environment overlying a river's deposited aggregate can never be reclaimed after mining the sand and gravel, you only have deep lakes or pits left.***

On the Kings River, above Pine Flat, you will notice large rocks and boulders in the river channel. Below the dam to Highway 180 you can see large boulders (1-2') and gravel in the narrow channel. Below Highway 180 the dominant size is gravel (6" and smaller). By the time the river gets to Reedley the channel is all sand. And in the Tulare Lake basin the dominant sizes are silts and clays. The number one economic, mined material in our Golden State is not gold but sand and gravel. This is used in all types and kinds of construction. As the San Joaquin River has

*(Continued on page 2)*

**Health of the River** *(Continued from page 1)*

play an increasingly dominating role in affecting nature. Resource management practices that ignore this fact will certainly fail to be effective. The El Rio Reyes Conservation Trust recognizes that low intensity rural residential and agricultural uses can be consistent with sustainable management of the Kings River environment. This organization strives to maintain the viability of these uses so that more intensive development does not compromise the biological and aesthetic quality the area.

So what uses are not acceptable? While some types of alteration to a river environment can be biologically tolerated there are those that can produce irreversible damage. Would construction of a concrete canal in which to channel all of the water be acceptable? That was done with the Los Angeles River. Should all of the oak trees be removed and the land leveled to the river's edge, replaced with pavement and houses? Or would it be good to dig huge open pits along the river from Piedra to Reedley in order to extract gravel for freeways? Shall we do whatever can produce the greatest financial profit for the current generation? If short-term economics and the idea that 'growth is always good' is the determining factor in directing land-use, these scenarios will likely become a reality.

***In the long run, the Kings River will be of more value to us alive than dead.***

Fortunately, in the long run, the Kings River will be of more value to us alive than dead. The river as a whole enriches our lives and the value of our property. Clean, plentiful water will continue to become a rare resource. Riparian habitats are unique, necessary, and of real value for people as well as many wildlife species. The human need for solitude and a connection with the natural world will be an increasingly treasured commodity. So, even those who look solely to financial economics should encourage conservation practices when forecasted future trends are considered.

Long term health of the river can only be accomplished if wise decisions are made and implemented now, and then carried out by every successive generation to come. The resource can easily be lost to exploitation at any point in time. If that does occur, its value to the health of the environment and the river's aesthetic worth to people will not likely be recovered.

The Kings River is a part of your community and is a valuable resource. You are the voice of our community. If our community spirit drives us to protect the river then the river may be a source of our community spirit. The worst thing that can happen is that no one will be involved.

**How Rivers Work** *(Continued from page 1)*

been mined out for its aggregate load the mining companies are turning there attention to the Kings River, specifically the Sanger river bottom. Currently there are two active gravel mines and more planned in this stretch of the Kings. Something to keep in mind is that the environment overlying a river's deposited aggregate (0 - 150' deep) can never be reclaimed after mining the sand and gravel, you only have deep lakes or pits left.

There is another parameter that varies down river, this is the load the river carries. This load consists of both river sediment and dissolved constituents. If the river flows into an ocean or interior lake (Great Salt Lake for instance) it is the dissolved load that makes them salty. The sediment load of the river increases down river, due to the addition of tributary river, stream and creek loads; this ability to carry a load is called the rivers capacity. As the load or capacity increases down stream the competency decreases (from gravel to clay size). The load is carried during high flows, principally during the spring runoff, and floods. For most rivers a sizable percentage of the total load is carried to the oceans where it finds its ultimate resting place. But for the Kings River, which is an interior drainage and does not flow to the sea, the load is deposited in the Tulare Lake Basin.

The Kings River below Pine Flat is now devoid of its natural sediment load. As the river flows into Pine Flat Reservoir the velocity slows and most of the sediment load drops out of the water column. This will ultimately fill the reservoir some time in the distant future. But the immediate effect is to rob the river channel below the dam of any new sediment. Any high flows since the dams installation have moved sand, silt and clay down river stripping beaches of sand leaving behind gravel banks or no beaches at all. It is also detrimental to the fishery which needs certain sediment sizes on which to spawn; this is gravel for some fish and sand for others.

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In a rivers headwaters the dominant factors are landscape erosion and transportation of the eroded load. This occurs in and is responsible for the formation of the typical "V" shaped river gorge seen in the non-glaciated portions of the Sierra Nevada. The glaciated valleys are "U" shaped with waterfalls. Yosemite Valley is a good example. But when the river reaches the plains

*(Continued on page 3)*

**How Rivers Work** *(Continued from page 2)*

below the mountains the dominating factors become transportation and deposition of the load with some very important kinds of erosion.

Below the mountains on the floodplain the river channel will typically contain the maximum discharge (volume per unit time) for the year. It is this bank full discharge and the sediment that it carries that is responsible for forming and maintaining the channel shape, its depth, width, and cross sectional shape. Downstream increases in channel width and depth are caused by in-

creasing downstream water volumes and sediment loads. On an uncontrolled river with no dams, a river typically overflows its banks every two years, this water then flows out onto the floodplain. The floodplain is part of the river channel but one that is used infrequently, but when used it can cause problems with man-made structures. The floodplain can be identified by the bounding terraces that confine the flood flows. The Sanger river bottom is all floodplain. Driving east on Highway 180 you drop down into the floodplain just east of Centerville, while driving north on Reed Ave. you drop down off the terrace just north of Jefferson Ave. and can look east and see the airport up on the terrace.

On the floodplain the Kings River is a meandering river; other river channel types include sinuous, braided, and straight. The meandering Kings channel moves back and forth across the floodplain through time, ranging from terrace to terrace. This occurs because of river hydraulics. As water flows through and around the channel meander, flow is fast on the outside of the curve and slow on the inside. This results in erosion of the outside channel bank and deposition of sediment on the inside of the curve. The result of this process is an upward fining sequence of sediment: gravel at the channel base, sand on the beach and floodplain fines on the bank above. This sequence is called a point bar deposit. Most of the sedimentary fill on the east side of the San Joaquin Valley is formed from meandering river point bar deposits.

***Another important feature of rivers is flooding. This is a natural phenomena and should be expected.***

This outside erosion and inside deposition of point bar deposition means that the river channel position moves through time across the floodplain. A great example of this today is at the intersection of Highway 180 and Rio Vista Avenue, just west of Pierce's Park. Here the outside curve of the Kings is trying to erode into the eastbound lane of Highway 180; CalTrans was continually monitoring this location during the high water flows of January 1997 hoping they would not lose the pavement. Just across the street from the aforementioned location you will notice large cobbles in the plowed field, these are rocks deposited by the Kings River when it was located there at a past time. If you compare the cobbles in the current Kings channel at Pierces Park and those in the field across the street their sizes and shapes are very similar. Channel migration is a natural river behavior but man disproves of it because property lines may be crossed and structures may be destroyed.

Another feature of meandering streams, and quite noticeable in the Kings channel at Pierces Park during low flows, is that the channel consists of a sequence of pools and riffles; these pools and riffles disappear during high flows. The pools and riffles allow the river to have a uniform rate of energy expenditure and minimum work during high river flows over the length of its channel. If man tries to straighten the channel with a smooth bottom the river will dig its own pools and riffles.

Another important feature of rivers is flooding. This is a natural phenomena and should be expected on uncontrolled, natural river channels or streams. The causes of floods include precipitation on snowmelt or precipitation on snow. The latter is responsible for the major floods of the Sierra Nevada. The largest Sierran floods occur in December and January and are due to high elevation rainfall on the snow pack. In January of 1997, it was raining in Tuolumne Meadows in Yosemite National Park. Other natural flood causes are precipitation on saturated soil due

to prior rainfall events; wide spread rapid snow melt; rainfall on frozen ground; or very high rainfall over large areas (an example is hurricane rainfall). When the river floods it overtops it bank and flows onto its adjacent floodplain where water and energy are dissipated. As the water flows onto the floodplain it slows and sediment is deposited, usually sands close to the channel and clays far from the channel. This new sediment is fertile due to its higher mineral content. The Nile delta is no longer experiencing flooding as the Aswan High Dam has controlled floods. But the fertility and crop yields of the Nile delta are declining because of the lack of new fertile sediment from flooding. Today the Mississippi delta is experiencing subsidence due to the compaction of old floodplain clays. Because the Mississippi is dammed and con-

*(Continued on page 4 Column 1)*

**How Rivers Work** *(Continued from page 3)*

fined by levees today, no natural flooding can occur in the delta. This has robbed the delta of the depositional sediment necessary to counteract the subsidence with the result that the Gulf Coast of Louisiana will continue to subside and lose ground to the ocean.

The mean annual flood on an uncontrolled river or stream has a recurrence interval of once every 2.3 years. This means that about every other year or every third year a normal river will overtop its banks and put water onto the floodplain. But what we hear more about is the 100 year flood; so what does this mean? The 100 year flood is a flood discharge that has a 1 in 100 probability (chance) of occurring in any given year. Every year has this 1 in 100 chance of occurrence, meaning that two succeeding years have the same chance of experiencing the 100 year flood. This also applies to the 50 year flood (1:50 chance), the 20 year flood (1:20 chance) and the 5 year flood (1:5 chance); each of these floods has a smaller maximum discharge volume. Dams have succeeded in controlling most floods but they may not control all floods. For instance if the reservoir is full and you have a large rainfall event you may get uncontrolled releases from the dam and flooding downstream of the dam. Most construction on floodplains, even below dams, is susceptible to flooding. To mitigate some of this, there are building codes that limit construction within the 100 year floodplain. Currently there are property owners in Madera County that are petitioning the County to build within the 100 year flood plain. They want to put houses on the banks of the Fresno and San Joaquin Rivers. Most of these locations were under water during the January 1997 flood, which was the 87 year flood, and significantly smaller than the potential discharge of the 100 year flood. Whether Madera County allows the construction or not, at some time in the future these locations will be under significant amounts of water. This is because nature knows no property lines nor does it care about building codes but nature does have enormous amounts of energy, in this case in the form of both river water flow and in the sediment it carries.

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# Park Manager at Pine Flat Dam Retires

Frank Fonseca

On January 3rd, the Pine Flat Dam and Lake staff and the U.S. Army Corps of Engineers said goodbye to Project Manager, Frank R. Fonseca. After 32 years with the Corps and more than 36 years of Federal service, he decided to retire to pursue other interests. In August 1969, Frank began his federal service in the United States Navy and served one tour in Vietnam. In 1974 he began a his career with the U.S. Army Corps of Engineers as a Laborer at New Melones Dam near Sonora while continuing his education at Columbia Junior College. Later that year he transferred to the Corps' Sacramento District Office as a Civil Engineer Technician.

After 4 years working in the District office and the same number of years in night school, Frank earned a degree in Park Resource Management from Sacramento State University. In the summer of 1978, he transferred to Pine Flat as a Park Technician and was promoted to Park Ranger in 1979.

Frank made another career move in 1984 when he went to work as a Park Ranger at Eastman Lake on the Chowchilla River. During his time there, he directed the project's resource management and interpretive programs and honed his Park Ranger skills, which prepared him for promotion to Senior Park Ranger at Pine Flat Lake in the summer of 1986.

Pine Flat Dam

As Senior Park Ranger and later Assistant Park Manager, Frank spent the next 16 years as a member of the management team at Pine Flat Lake. Significant events at Pine Flat Lake during this time include a major upgrading of the Island Park Recreation Area facilities, including the Deer Creek Point Group Campgrounds, construction of a paved parking lot at the Deer Creek Recreation Area, installation of floating restrooms on the lake, construction of a new Maintenance Shop, and extending the boat launch ramps during the drought of the late 80's and early 90's...just to list a few. In the summer of 2002, Frank was promoted to Park Manager. In addition to the day-to-day management of the project, he supervised upgrades to the dam's tainter gates, implemented the conversion of the infrequently used Sycamore Creek Campgrounds to a Wildlife Management Area, approved construction of the award winning Edison Point Multi-use Trail, and oversaw the change of ownership of longtime family owned Lakeridge Marina, now named Pine Flat Lake Marina.

***Frank's contributions to the U.S. Army Corps of Engineers over the past three plus decades have been significant.***

Frank's cooperative relationships with local agencies and organizations proved very beneficial to the Pine Flat Dam and Lake Project. They included the Kings River Conservation District, the Kings River Water Association, the American Legion, the California Department of Fish & Game, the Water Safety

*(Continued on page 5)*

**Park Manager** *(Continued from page 4)*

Council of Fresno County, Reedley College, and the El Rio de Los Reyes Conservation Trust. Under his watch, a major environmental restoration project (The Pine Flat Turbine Bypass) and several other significant land and water habitat improvement projects were completed thru cooperation and cost sharing with these local organizations.

As you can see, Frank's contributions to the U.S. Army Corps of Engineers over the past three plus decades have been significant and, more importantly, effective in achieving a very high level of project efficiency and customer service.

Frank's retirement plans include continuing his work with several non-profit organizations he belongs to including the Reedley Vietnam Veterans, the Reedley Eagles and the El Rio Reyes Conservation Trust. He also plans to continue to work with the Reedley College Forestry and Park Technology Department to aid in the development of future Foresters and Park Rangers. Puttering around the house, travel and learning to play golf are other activities he is looking forward to having time for.

# Bob Frisch Memorial Ride

**By Connie Krahn**

El Río Reyes Conservation Trust hosted its seventh annual Bob Frisch Memorial Ride on Saturday, September 10, 2005. This ride was originated as a fundraising event by Bob and it is fitting the ride be named for him.

Twenty riders from around the valley assembled at the Reedley College Horse Unit and were lead by Kent Kinney on a four-mile ride along the scenic Kings River Trail on the Reedley College campus. The ride was extended this year by about a mile and a half and included stops at the Wahtoke Creek Crossing, the Pools' Ferry monument, and at a couple of points along the Kings River. The riders picked up cards at the stops to make up their "poker hand" which would be played at the end of the ride.

Having fun in the River

Upon returning to the horse unit, the riders enjoyed a tri-tip barbecue lunch, with all the trimmings. After lunch, the riders eagerly anticipated playing their poker hand to see who had the best hand. Dawn Burnitzki was the lucky winner.

This year's *Bob Frisch Memorial Ride* will be held on September 9, 2006. Take some time out of your busy schedule and come join the ride and have a great lunch.

Visit our website at www.elrioreyestrust.org for more information about the Trust and to see additional Memorial Ride pictures.

Kent Kinney, Ride Leader

Warming up before the ride

# Kings River Conservancy (KRC)

**By Margaret Thorburn**

KRC became an official California Non Profit Organization on December 30, 2004. Its mission is to foster community involvement in protecting and enhancing environmental values, to enhance and control environmental values, to preserve agricultural lands, and to encourage sound public conservation practices along the Kings River corridor from Pine Flat Dam to Highway 99.

KRC is in many ways similar to the San Joaquin River Parkway Trust. The rivers, however, are very different and the organizations have their own unique characteristics. KRC's ideals and area involved are very similar to those of El Río de los Reyes en Reedley Conservation Trust.

JRC primarily proceeded with organizational tasks during 2005. A Strategic Planning Workshop resulted in a plan to develop a schedule of activities. A professional planning group completed a draft Vision Statement to use as a guide as the group moved forward. Upon completion of the document in September, the Conservancy was introduced to the community.

Two grants have been submitted to provide something tangible for the public to see and use. Major current goals are to increase membership and to seek volunteer support. An update of progress to date was distributed in December to people whose names came to the Board in various ways. To those who are interested in additional information or becoming a member, please call 559-787-9500.