



SIERRA VISTA

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Gauging the river

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CHARLESTON — The last free-flowing waterway in the Southwest is under constant watch by scientists, environmentalists, the Army, elected officials and the public.

Some of the main watchers are individuals who work for the U.S. Geological Survey which monitors the river's flow and temperature.

This week, a hydrological technician used a portable flume to measure the amount of water that went through it just north of the important Charleston gauge, while south of the measuring device a University of Arizona senior took the waterway's temperature.

Ever watching the happenings near the gauge is longtime anti-growth critic, Dr. Robin Silver, who contends the existence of Fort Huachuca is leading to runaway growth in the Upper San Pedro River Basin, to the detriment of the waterway.

In the past couple of years, water stopped flowing at the Charleston gauge for a few days prior to the summer monsoon — which normally starts in the area around the Fourth of July.

This year, the amount of water flowing has dwindled to almost nonexistent, even though there are

large pools of the liquid north and south of the gauge.

On Tuesday, Emmet McGuire, a USGS hydrological technician, measured the flow at 0.057 cubic feet per second, going through a portable flume he brought from Tucson.

A cfs equals about 7.5 gallons of water per second passing a specific point and McGuire's measurement meant the flow was a little less than two quarts through the flume in a second.

After a quick storm Thursday night, the flow at the Charleston gauge — according to automatic computer readings — was nearly 1 cfs, or about seven gallons per second.

Flows are decreasing

In 2005 and 2006, there was no flow registered at the gauge a few days in late June and early July, McGuire said.

"Flows have substantially decreased in recent history," he said.

McGuire took some time in preparing a site, in a rocky area of the river's bed, where pools of water slowly flowed.

McGuire was in the area Tuesday where he set up a portable flume to measure the flow.

Using a shovel, he carried dirt to the small stream, about two feet wide, to hold the metal flume in place.

Using the water, he mixed the dirt to create a mud buttress on either side of the flume.

As he leveled the flume, small minnow swam up the short cascading water, as if they were salmon heading home to spawn.

Further downstream, three children were walking through a larger pool, cap, with crayfish, while further north of them another man, a UA doctoral candidate, was tagging the crayfish as part of a science project.

When it comes to the San Pedro River, upstream is south toward Mexico and downstream is north, the direction the river flows.

While most of the flow at the Charleston gauge is monitored by instruments, McGuire and other USGS employees make trips to the river to do eyes on inspections and readings.

McGuire likened standing pools of water, some many feet wide and long, to bathtubs.

As a pool fills, it spills over into another pool, which continues, causing a flow, he said.

But if the pools do not overflow the water will stand and the pools will

eventually evaporate, causing a no-flow situation, McGuire said.

Critic blames fort

It is the contention of Silver, a Phoenix physician who owns property along the San Pedro River, that recent history indicates the stream flow of the waterway is disappearing.

In a recent news release, he noted for the third straight year the flow at the Charleston gauge has been reduced to almost nothing.

The drastically reduced flow “is the most sensitive indicator of the health of the San Pedro River and the Upper San Pedro watershed’s groundwater aquifer,” Silver said.

The causes are drought, water absorption by streamside vegetation and “excessive local groundwater pumping,” he said.

While drought and lack of winter monsoon rains cannot be controlled by humans “we can control excessive groundwater pumping,” said the physician, who is the chairman of the Center for Biological Diversity, an environmental organization that has sued Fort Huachuca many times for allegedly creating growth problems in the region.

And, Silver is not happy with the new biological opinion inked by the fort and the U.S. Fish and Wildlife Service, contending the area’s population is due to the fort existence and because the post is the economic engine in the area.

With the new opinion, the fort has been let off the hook by only being responsible for 31 percent of the deficit — the amount of water pumped from the ground to water



Emmet McGuire, a hydrologic technician with the U.S. Geological Survey, levels a portable flume earlier this week to check on the flow of the San Pedro River near the agency’s Charleston gauge. (Bill Hess-Herald/Review)

is replaced — instead of 54 percent the old opinion gave to the fort, the physician said.

While the percentage has decreased the amount of deficit the fort is responsible for increased, with the post now being responsible for 3,530 acre-feet, compared to 2,784 under the old opinion. An acre-foot consists of nearly 326,000 gallons of water.

To post officials, Silver’s complaints are a rehash of what he has said in the past.

Fort touts accomplishments

The fort has reduced its water use by 50 percent, and the post is committed to do even more during the next 10 years, a spokeswoman for the fort said.

“Fort Huachuca provides employment for approximately 13,000 people but assumes responsibility for more than

32,000 people in the Sierra Vista Subwatershed,” Tanja Linton said.

The post’s mitigation responsibility was determined using an estimated groundwater attributed to the number of people the post takes responsibility for, she said.

“The suggestion that Fort Huachuca should mitigate for the off-post population not associated with the fort is without merit,” Linton said.

The biological opinion allows the post to expand its missions — by up to an additional 3,000 people — to respond to the nation’s defense needs, she said.

Silver has expressed displeasure about the potential ability for the post to grow.

Linton said, “The allegation that this flexibility (to increase the fort’s population) means a planned massive mission expansion at Fort Huachuca is also without merit.”

The post is committed to its defense mission while “conserving environmental resources and protecting the San Pedro River,” Linton said.

Again in his Wednesday release, Silver states the fort’s increase in expenditures from \$528 million to \$955 since 2002, is an indicator the fort is growing.

However, in the past, post officials have said it is wrong to equate expenditures with population growth, noting the increases are to pay for construction and other things such as increases in utility bills.

Groundwater pumping is Silver’s major concern, and it is increasing due to more people moving into the area with most of the population increase, he contends, due to the fort.

“The San Pedro River is the last surviving wild desert river in the Southwest. During the driest time of the year, critical stream flow comes directly from underground aquifer seeping through the river’s banks,” he said.

Taking river’s temperature

And, that may be happening south of the Charleston gauge.

Elizabeth Desser, a summer student intern with USGS, takes the river’s temperature as she monitors dry and wet areas upstream of the gauge.

A little less than 1,000 feet south of the gauge she has found an area where the water temperature is stable.

It’s almost flatline, as she showed the temperature running between 73 and 76 degree Fahrenheit for a long period of time.

Part of her monitoring job is to record the information from buried thermometers in three different pools for about a mile south of the gauge.

The UA senior, who is working on a geology degree, said the temperature devices in other areas fluctuate between 65 degrees and 105.

It will take other USGS scientists to determine why the stable readings continue in the mid-70s range, Desser said.

There could be water from the underground aquifer that is close to the surface feeding the river or it could be caused by a layer of rocks which keep the water temperatures stable, she said.

The area where the measurements are done is sometimes in the shade and other times in bright sun, Desser added.