o 5 p.m. Monday, July 23
gh Wednesday, June 25.
ed access for residents of
k Avenue will be avail-
A detour route will be
d to get around the road
e. The utility work is for
Mexico Tech's new Bureau
ology building under con-
on in the area.

eting for
men veterans

women military veter-
Socorro are invited to
n a proposal for a plaque
izing women vets in
ns Park. The meeting will
ay, June 20 at noon at the
o Chamber of Commerce.
ore information contact
na Aguilar-Garcia at 915-
63.

gdalena to
t hoops camp

10th annual Mag
ng Camp is slated for
o 3:30 p.m. June 23-25
dalena High School. The
s for boys and girls in
tary through high school.
coached by Magdalena
oach Wally Sanchez and
ncho boys' coach Wally
Cost is $40. To register,
0 minutes in advance the
y of camp.

gdalena
ping day

hipper will be available
dalena for public use 9
1 p.m. Saturday, June
e BIA dorms. Residents
ing by small tree limbs
rush, but no weeds.
ers are needed to assist
e chipper. Water and a
lunch will be provided.
ipper is on loan from
corro County Firewise
n. For more informa-
ll Magdalena Fire Chief

establishment of $520 on June 11. The suspect has not been apprehended at this time, Socorro Police Department officials said.

SPD reported the man entered through a back doorway of the restaurant said the man probably had been watching the employees for some time because he seemingly entered without difficulty. The robbery was captured on video tape from various angles within the restaurant.

attempts in the past few years, Garcia said, adding those other cases had been solved successfully.

Garcia said he does not know why this Burger King location has been targeted by robbers in the past. The victims

degree felony in the state of New Mexico.

SPD is asking the public for any information in regard to the incident. To leave an anonymous tip for the police, people can call 575-835-4222.

Something IN THE WATER

Tech students developing alternative energy source

John Larson
El Defensor Chieftain reporter
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John Larson - El Defensor Chieftain

Dr. Yongming Tian holds the osmotic pressure module designed and fabricated in the Civil and Environmental Department at New Mexico Tech.

A group of Tech students may be on the verge of developing a technology that could provide an alternative source of electric energy.

Using a simple natural process, osmosis, the technology could be an enormous benefit, both environmentally and economically.

The source of the energy? The highly saline and waste water that is produced after being used for oil drilling.

The engineering students hosted a three-day workshop on the campus last week attended by scientists and students from other universities from around New Mexico for discussion sessions and hands-on demonstrations of an apparatus the students are designing and building.

Led by Dr. Frank Huang, professor of environmental engineering, the team's goal is to identify how osmotic power can be developed to reduce the carbon footprint of the oil and gas industry while offsetting operating costs.

"The objective of the osmotic power team is to investigate issues that prevent produced water-based osmotic pressure systems from becoming commercially viable sources of power," Huang said.

The petroleum industry in the southeastern part of the state generates about 22 billion gallons of produced water annually, and 28 billion gallons statewide.

"'Produced' water is the waste stream generated by oil and gas production," student researcher Kelsy Waggaman said.

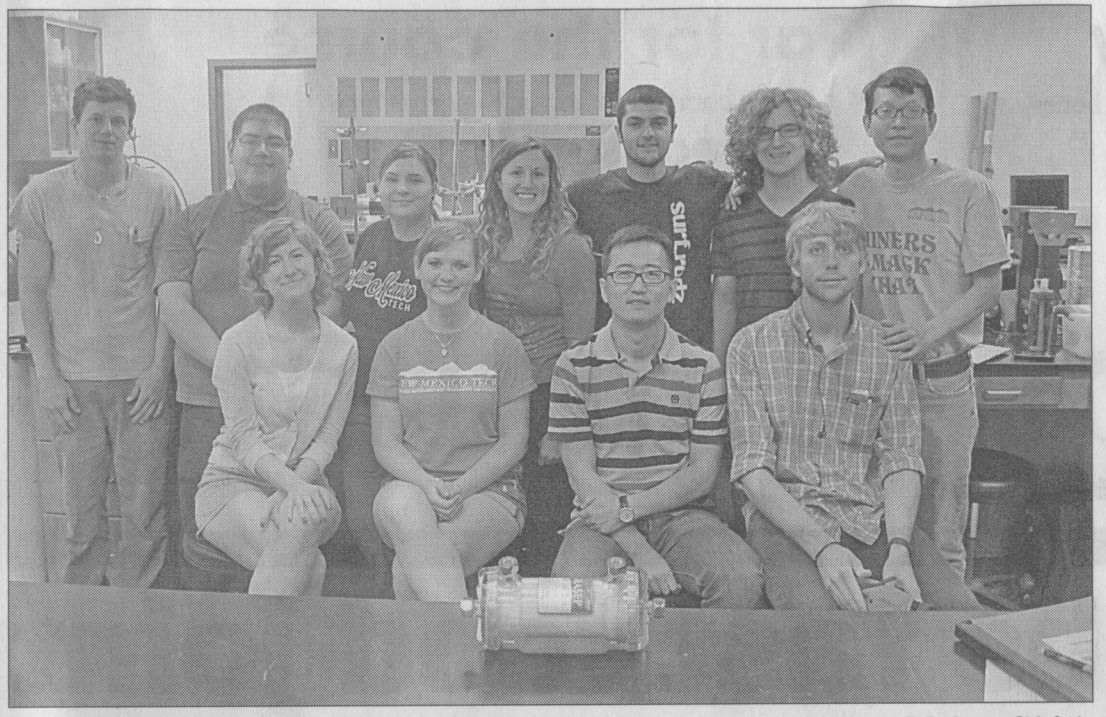
"On average, three gallons of produced water is created in the recovery of one gallon of oil."

She said the high level of salt ions present in produced water from oil recovery can create a large chemical potential when paired with fresh water, and this process can be utilized to create osmotic pressure. These components together would act to spin a turbine and generate electricity.

See **ENERGY**, Page 2

CURB CLEANUP

Bill could threaten



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Members of the New Mexico Tech civil engineering Osmotic Power Development team include (back row, from left) Brian Arko, Adam Martinez, Cassandra Sanchez, Alex Mayer, Tyler Pratt, Dr. Frank Huang and (front row) Kelsy Waggaman, Torrie Sewell, Dr. Yongming Tian and Stephen Stelly.

Energy source would benefit environment

Continued from Page 1

"Osmotic pressure is naturally created when a semipermeable membrane separates two bodies of water with different concentrations of charged ions," she said. The water on the ion-depleted side, will rush to the ion rich side of the membrane because the water molecules have a high affinity for ions, while the membrane keeps the salt ions on one side."

Waggaman said this is demonstrated by the cells in our body, which are mostly fresh water.

"The water we drink has a similar ion concentration to that of our cells. If we were to drink seawater, the water in our cells would rush out, collapsing our cells, and severely dehydrating us," she said. "Similarly, the water molecules will inherently move to the ion rich side of the membrane, creating a flow."

In simple terms, extremely salty water and less-salty produced water are fed into separate pipes through filters that remove particles and then fed into the membrane system, which consists of hollow fiber membranes. Less-salty produced water water is drawn across the membrane to the extremely water by osmosis. The increase in water volume creates a pressure which forces the water through the turbine and generates electricity.

The team is designing and fabricating the fiber membranes.

"Rarely will you find a university that is able to make membranes. We can develop a process to make membranes that fit our need," Huang said. "The students are excited to put it all together."

With support from New Mexico's Experimental Program to Stimulate Competitive Research and the National Science Foundation, a collaborative team from Los Alamos National Labs, Eastern New Mexico University, New Mexico Highlands University, New Mexico State University, and New Mexico Institute of Mining and Technology will be researching osmotic power for the next four years.

Bill to address biologists, farmers concerns

Continued from Page 1

"We can't remove it," Sichler said. "That's how we get water when the upstream arroyos run. They're all below Isleta, and the only place to divert it is at San Acacia. If they took San Acacia out, we'd be up a creek."

Effects of sediment drop from upstream arroyos and flow changes caused by Elephant Butte reservoir have created flow problems that removing the dam won't solve.

"If it weren't for the gradient problem in the river, fish could pass," Gensler said.

they hit that diversion dam."

Bardwell points out the bill calls for a plan that addresses the goals of both biologists and farmers.

"It's not dictating any outcome; it's talking about developing a plan that balances those goals, in particular when we get to San Acacia Diversion Dam — balancing the needs of irrigators with that physical impediment to Rio Grande fish habitat," she said.

2014 Primary Election Official Results

Republican

United States Senator
Allen E. Weh 681
David Kale Clements 436

United States Representative District 2
Steve Pearce 1123

Governor
Susana Martinez 1100

Lt. Governor
John A. Sanchez 1040

Secretary of State
Dianna J. Duran 995

State Auditor
Robert J. Aragon 969

State Treasurer
Rick J. Lopez 980

Attorney General
Susan M. Riedel 969

Commissioner of Public Lands
Aubrey Dunn 985

Judge of the Court of Appeals
J. Miles Hanisee 928

State Representative District 49
Don Tripp 1117

Public Regulation Commissioner District 5
Ben L. Hall 904

Magistrate Judge
Lesmen L. Torres 498
Richard J. Sanchez 718

County Commissioner District 1
Pauline Jaramillo 200

County Commissioner District 3
Anthony Baca 192

County Sheriff
Edmond Barton Sweeney 610
Ray Spurgin 137
Angel A. Garcia 565

Probate Judge
Richard T. Ritter 995