

ENVIRONMENT

# Bolstering the Elkhorn Slough



PHOTOS BY NICOLETTA LANESE — SPECIAL TO THE HERALD

About 200,000 cubic yards of soil excavated from the Pajaro River is being moved into Hester's Marsh at the Elkhorn Slough National Estuarine Research Reserve.

## Restoration project bringing in tons of earth

**By Nicoletta Lanese**  
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**MOSSLANDING »** Trucks and excavators are dumping tons of dirt over the Elkhorn Slough National Estuarine Research Reserve — and it might just save the salt marshes.

“Go much of the restoration work that we do with shovels, and we have volunteers that are planting plants by hand,” said Monique Fountain, director of the reserve’s Tidal Wetland Program, looking over the towering equipment dumping dirt at the edge of the marshland. “To see something working on this scale, it’s going to accomplish something that we couldn’t do ourselves.”

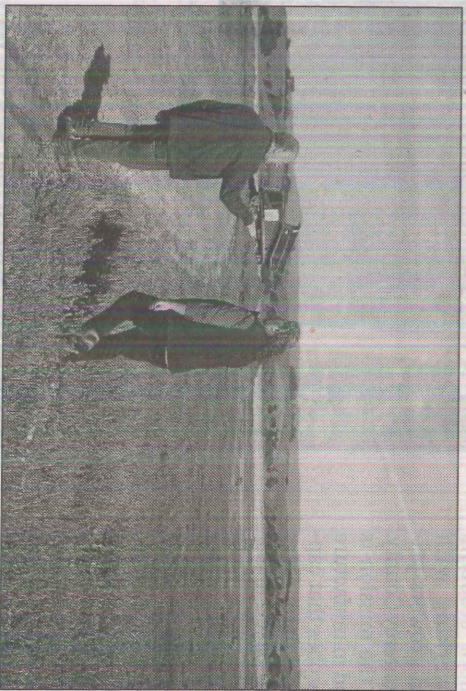
Elkhorn Slough is home to the largest tract of tidal salt marsh in the state outside of San Francisco Bay. But its marshes are sinking. In the 1930s, the wetland was diked, drained and used for farming, cattle grazing and duck hunting. The drained marsh was so dry it became vulnerable to erosion by wind and trampling by cows. The soft soil collapsed and the area’s elevation dropped by 2 to 3 feet — enough to make it uninhabitable to much of its native veg-

etation. Tide waters wet the land once more when the dikes failed in the 1970s, but its elevation was too low to sustain a healthy marsh.

With rising sea levels, the problem has only gotten worse. Healthy marshes can usually keep up with sea level rise, said Mark Silberstein, executive director of the Elkhorn Slough Foundation. “As sea level rises, the marsh plants trap all the particles of sediment and they’ll keep growing above it, above it, above it,” he said. But when the land is too low, and the sea is rising, these important plants drown beneath the incoming tide, noted Fountain. The tide has to hit a sweet spot within a 1.5-foot range for the plants to thrive.

Over the last century, Elkhorn Slough’s salt marshes have shrunk from 2,000 acres to 1,000, and falling. Research suggests the rest could be gone in just 50 years if they aren’t restored now. The current restoration project aims to raise the marsh up once more and make the ecosystem viable again.

“What the tractors are doing now is bringing the elevation of this area up just a couple of feet,



Mark Silberstein, executive director of the Elkhorn Slough Foundation, and Monique Fountain, the tidal wetland program director, look over work being done at Elkhorn Slough.

so that it’ll be enough to sustain healthy plants,” explained Fountain.

Some 200,000 cubic yards of soil — imagine the Lincoln Memorial reflecting pool filled with dirt, six times — excavated from the Pajaro River is now being moved into Hester’s Marsh at the Reserve. The soil was scooped as part of a flood control project and destined to be dumped at a landfill. The Tidal Wetland Program stepped in to put the dig to good use.

Plans to restore the marsh began back in 2011. To guide the project, 60 scientists took

stock of the ecosystem’s current condition. Environmental regulators and additional scientific advisors weighed in, too. Data in hand, the team spent the next four years permitting the project, mapping its exact details and finding funds. As the \$3 million construction phase — funded by a number of grants, including from the California Department of Fish and Wildlife, State Coastal Conservancy and Wildlife Conservation Board — broke ground this month, the team saw their effort pay off, said Fountain.

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## CRIME

# Powell sentenced for 35-year-old murder.

Sandra Steppuhn disappeared in 1982, listed as missing for 32 years

**By Jim Johnson**  
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**SALINAS »** A state prison inmate and former Monterey resident was sentenced to 15 years to life on Friday for the 32-year-old murder of a Seaside mother of three.

Alfred Powell, 62, was sentenced by Monterey County Superior Court Judge Julie Culver for second degree murder in the slaying of Sandra Steppuhn, who was killed on Dec. 9, 1982.

Powell, currently an inmate at Solano state prison in Yacaville, pleaded guilty to Steppuhn’s murder on Jan. 5, just days before his jury trial was set to begin. He has been in custody since 1983 for the murder of Pebble Beach resident Suzanne Kay Nixon, who was slain in March 1983. The sentences will run consecutively. During sentencing, Steppuhn’s former husband and three daughters, all pre-teens at the time of their mother’s death, told Powell he had permanently changed their lives but had not broken them, according to a District Attorney’s release.

In issuing her sentence, Culver called Powell “intensely egocentric” and said he had “psychopathic and sociopathic traits,” and that she had never seen anyone as “depraved” as him, according to the release. Culver told Powell she intended for him to spend the rest of his life in prison, the release said.

Steppuhn disappeared the night she was killed after giving a ride to a hitchhiker later identified as Powell, and she was reported missing two days later. The car she was driving the night she disappeared was found abandoned in February 1983 but investigators found no evidence indicating her fate, and she remained listed a missing person for 32 years.

Retired Salinas police detective Mark Clark re-opened the Steppuhn investigation in 2009, and her skeletal remains were found in September 2015 buried in a makeshift grave in a yard on Third Street in Monterey where Powell had lived in a detached garage and where Nixon’s body was found.

Powell was formally charged with Steppuhn’s murder in June 2016 after Steppuhn’s former roommates identified her as the hitchhiker who had accompanied her the night of her disappearance.

*Jim Johnson can be reached at 831-726-4348.*



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## Education

FROM PAGE 1

and Premier Raspberries in Watsonville.

"And the cool part about the farms is that each different farm you go to is a different experience for everyone because not every farm is the same," Arreola said.

Arreola, who joined the program two years ago, said it's unbelievable to be part of a program that can be beneficial for the future of the ag industry.

"I never imagined myself being here and actually being part of something that can one day be really, really big," Arreola said. "If we keep doing this, maybe more farms will want us to build probes for them and travel to other places to put them in and install them."

Vahid Motazedian, the co-founder and executive director of Wings of Knowledge, said the program is aimed to help cultivate local science and engineering talent within the students, while helping growers operate more efficiently.

"(The program) evolved really naturally," Motazedian said. "Finally it came down to 'Why don't we develop soil sensors' and we can actually do that technology and we did that."

But Motazedian, 43, said once that was done then other questions from farmers popped up like "How much water does celery need?"

"And then we realized we don't know much about plants and we don't know much about soil. Suddenly that became a new area for study," he said.

That's when Motazedian recruited more students who were interested in studying soil, plants along with water and weather conditions.

"As we do stuff and as



VERN FISHER — MONTEREY HERALD

Gonzales High School students Pablo Mendoza, 16, Elizabeth Alreola, 15, work in a broccoli field at Pisoni Farms. The kids go out, new questions are asked," he said. "As we answer one question like 'How do we measure moisture level of soil?' We answer that question but then that'll open up three or four new questions."

Motazedian, who previously worked at several firms in the Silicon Valley, runs the technology area that deals with system, software and hardware development. The students can also join the agriculture group where they go out to work on the farms and sustainability group, which deals with water studies and climatology in collaboration with NOAA.

Last year, 38 high school students helped lead the program that included teaching about 180 younger students at La Gloria Elementary School. Pisoni Farms ranch manager Jesus Camacho said he was a bit surprised that a group of high school kids would try to tackle such a big project.

"People always learn new things from people they least expect. It doesn't matter if they're young or older, it doesn't matter," Camacho said. "A person might not say anything, but that's because they're paying close attention to what's going on. At the end of the day, you take in whatever you think was useful."

Camacho said he's passionate about the agriculture industry and everything he does comes from the heart. So, he also likes the fact that kids are getting involved with projects that take place out in the field and not behind a desk.

"A young person who's interested in doing something different like a project that can help other people or serve as something for the future is good," Camacho said.

Jazmin Lopez, who is the Pisoni Farms compliance manager, said she's excited to have students as being the ones to collaborate with and actually help improve water regulation on the ranch.

"They're learning from us and they've learned a lot from Jessie (Camacho) because he knows what the plants need," Lopez said. "In return, we've learned a lot from them about this new technology and how to apply it on the ranch, as well as how to improve water usage."

As the group of Gonzales High students wrapped things up for the day, Mendoza said he really enjoys the experience and it's one of the positives of being in the program.

"You're seeing the work professionals do and most importantly there's the possibility that you can also help them out. You're being part of this bigger project for them," he said.

## Restoration

FROM PAGE 2

"When you talk about restoration, some people are always asking, 'well, what are you restoring it to?'" she said. "The restoration aspect of it is to take the system and bump it back into something that's self-sustaining."

The 60 acres under restoration are next to Yampah Marsh, 60 acres of healthy marshland currently occupied by about 50 sea otters. After sea otters were hunted to near extinction in the 1960s, they slowly recovered and eventually found their way to Elkhorn Slough. Most of Elkhorn's otters are mothers and pups, who are able to feed on worms, crabs and clams in the slough.

Though maybe not as cute as the sea otters, a shrubby succulent called pickleweed is the marsh's unsung hero. In summer,

it swaths the wetland in bright green. "It grows sort of like a bathtub ring around the tidal marshes," said Silberstein. He picked the stem from a plant at his feet and popped it in his mouth. "Like salty celery."

Pickleweed provides habitat for sea otters and filters water in the marsh. It also plays a vital role in greenhouse gas reduction by capturing carbon from the atmosphere and storing it in its roots.

"When you have a tree that grows in a forest, it will capture a lot of carbon, create a big tree and will eventually die and fall over. And that carbon gets released," said Fountain. It's different in the slough, she said.

Pickleweed sends carbon into its roots, and as the tides bring in sediment, those roots catch it. As pickleweed continues to grow, the carbon it collects stays trapped beneath the soil. All the while, more carbon is

collected and stored in layer upon layer of sediment.

"Here at Elkhorn Slough, the marshes are over 100 feet thick," said Silberstein. "They go back thousands of years."

Layers of soil in the marsh act like pages of a history book. Reserve scientists recently took soil samples and were able to see how much carbon the marsh captured 4,000 years ago, Silberstein said. Bottom-line: pickleweed is a carbon-capturing machine.

Restoration on the 60 acres of Hester's Marsh will conclude in November, after which the Tidal Wetlands Program plans to restore 40 additional acres elsewhere on the Reserve.

"I have to think of more adjectives — I keep saying, 'It's so wonderful, it's cool, it's exciting,'" said Fountain, laughing. "I'm just in awe when I see this equipment moving," she said, watching on as another scoop of soil poured out over the marsh.

## Workers

FROM PAGE 2

advantages for companies that hire an illegal workforce, and strengthening public safety and national security."

The inspections follow last month's ICE employment audits at about 100 7-Eleven stores in 17 states and the District of Columbia and come as the Trump administration revamps immigration compliance checks aimed at employers.

California Attorney General Xavier Becerra has warned business owners they could face fines of up to \$10,000 if they violate a new state law that bars them from turning over workers' records to federal authorities. ICE Acting Director Thomas Homan has reportedly lambasted California over the so-called



CHRIS CARLSON — THE ASSOCIATED PRESS FILE

U.S. Immigration and Customs Enforcement agents serve an employment audit notice at a 7-Eleven convenience store in Los Angeles.

"sanctuary state" law that strictly limits the cooperation of local law enforcement with federal immigration authorities when they are booked into jail for other reasons. A day after the law took effect, he said ICE will "vastly increase our enforcement footprint in the state of California."

"California better hold on tight," he told Fox News

## Memo

FROM PAGE 1

Adam Schiff, the committee's top Democrat, said the GOP document "mischaracterizes highly sensitive classified information" and its release "will do long-term damage to the intelligence community and our law enforcement agencies."

The memo's central premise is that the FBI relied excessively on anti-Trump research funded by Democrats in seeking a warrant to monitor the communications of a Trump campaign associate and that federal authorities concealed the full details of who was paying for the information.

The disclosure of the document is extraordinary since it involves details about surveillance of Americans, national security information the government regards as among its most highly classified. Its release is likely to further escalate an intra-government conflict that has divided the White House and his hand-picked law enforcement leaders.

Trump, who lashed out at the FBI and Justice Department Friday morning, refused to express confidence in Deputy Attorney General Rod Rosenstein, who appointed Mueller and is mentioned by name in the memo.

Asked if he was more likely to fire Rosenstein, and if he still had confi-



EVAN VUCCI — THE ASSOCIATED PRESS

President Donald Trump listens during a meeting with North Korean defectors where he talked with reporters about allowing the release of a secret memo on the FBI's role in the Russia inquiry, in the Oval Office of the White House, on Friday.

gressional Republicans to discredit the investigation by Mueller that focuses not only on whether the Trump campaign coordinated with Russia but also on whether the president sought to obstruct justice. Republicans seized on the memo's allegations to argue that the FBI's investigation was politically tainted from the start.

But the memo does nothing to address obstruction questions that have led Mueller to express interest in interviewing Trump. It also reveals the FBI investigation actually began in July 2016 months before

have been unthinkable just a short time ago. Rank & File are great people."

The memo offered the first government confirmation that the FBI in October 2016 obtained a secret surveillance warrant on a Trump campaign associate, Carter Page, on the basis that agents believed he might be an agent of a foreign power — Russia. That warrant was signed off on multiple times, including by Rosenstein.

In a statement, Page, who served as a foreign policy adviser and came on the FBI radar in 2013 as part of a separate coun-

ple sources of information when it obtains surveillance warrants. And the memo makes clear that the FBI believed there was probable cause that Page was acting as an agent of a foreign power and a judge agreed — four times over.

Steele's opposition research effort was initially funded by the conservative Washington Free Beacon. It was later picked up by the Hillary Clinton presidential campaign and the Democratic National Committee through a Washington law firm. The memo says the FBI cut ties with

Attorney General Jeff Sessions speaks with Deputy Attorney General Rod Rosenstein, during the opening of the summit on Efforts to Combat Human Trafficking at Department of Justice in Washington, on Friday.



JOSE LUIS MAGANA — THE ASSOCIATED PRESS

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dangerous precedent. Comey weighed in on Twitter, calling the memo "dishonest and misleading" and saying it had "interfering James Comey as agency director. Wray had warned the White House that the declassification and release could set a

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**PHANTOM THREAD (R):** 11:10, 2:10, 5:10, 8:10