



Energy Technology Engineering Center
Area IV, Santa Susana Field Laboratory

CleanUpdate



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AUGUST 2024

Summer marks a time of transition at SSFL

The days getting shorter after the summer solstice marks another time of transition at the Santa Susana Field Laboratory (SSFL). This includes changes in the environment on site, such as Braunton’s milk-vetch and other flowering plants going to seed, as well as transitions for the DOE.

In June, DOE welcomed Candice Robertson as the new head of the Office of Environmental Management (EM), replacing Ike White (see story below). I want to express my gratitude to Ike for his years of leadership across EM and for being an integral part in achieving recent successes at SSFL. Candice is poised to be the next great leader for EM and with her deep commitment to working with Congress, states, the tribes, communities and stakeholders in executing the EM cleanup mission safely and effectively, I am confident that she is the right person to lead DOE through the next phases of the cleanup at SSFL.

DOE also just completed the transition to a new contract at the end of July to continue performing our cleanup activities. Most of the changes were purely administrative. Our contractors, North Wind Portage and CDM Smith, will stay the same. I wanted to thank everyone on the team for all their hard work getting this new contract in place to prepare us for the next phase of cleanup at SSFL.



Other news at DOE includes a new website for the Energy Technology Engineering Center, where you can stay up to date with activities going on at the site, learn about historical operations and read the latest issue of *CleanUpdate*. Visit www.energy.gov/etec or scan the QR code.

In this issue of *CleanUpdate* read about:

- Western spadefoot toads that haven't been seen at SSFL in more than a decade
- A new solar-powered automated groundwater pump system
- A recap on the DOE's participation in Groundwater U, a community educational workshop series on groundwater at SSFL

Despite these many changes, DOE’s team at SSFL remains committed to transparency and collaboration. By working together and maintaining open lines of communication, we believe we can achieve our shared goals as we navigate the challenges ahead. Using the best science available, DOE is making progress toward remediating the site balancing rigorous cleanup standards with public safety, protecting surrounding communities, and the environment.

Sincerely,
Dr. Josh Mengers

New Leader at Environmental Management



Candice Robertson has taken over as the new head of the Department of Energy’s (DOE) Office of Environmental Management (EM). In June 2024, Robertson stepped into the role to replace Ike White, who was nominated by President Joe Biden to serve on the Defense Nuclear Facilities Safety Board.

With more than 20 years of experience in radioactive waste management, Robertson is well versed in EM’s mission, previously serving as the EM Principal Deputy Assistant Secretary and as an Associate Principal Deputy Assistant Secretary, as well as DOE’s Chief Human Capital Officer, and as a Chief of Staff at the Nuclear Regulatory Commission. Prior to federal service, Robertson served as an elected Nye County Commissioner, which hosts the Nevada National Security Site.



Spotted at SSFL!

Elusive Western Spadefoot Toad Seen Near FSDF for First Time in 12 Years

By Melissa Simon

About 150 western spadefoot tadpoles were recently found near the Former Sodium Disposal Facility (FSDF) in Area IV at the Santa Susana Field Lab (SSFL).

Known as *Spea hammondi*, the western spadefoot toad is not a true toad but rather a frog that has vertical pupils and teeth in its upper jaw, according to the U.S. Fish and Wildlife Service (USFWS). The amphibians also have sharp black spades on their hind feet that help them dig burrows, where they live for eight to 10 months out of the year. They emerge from their burrows to breed and feed in nearby ponds and creeks.

Dr. Tara Schoenwetter, a biologist who has worked at SSFL since 2011, discovered the tadpoles in April while conducting biological monitoring at the site. She said the last time the toads were seen at SSFL was in 2012.

“These toads are pretty elusive, so we don’t know a lot about them, like where they go when they aren’t in water, how far they burrow and even where [this group] came from,” Schoenwetter said.

(continued p.6)



Western spadefoot toads were spotted at the Santa Susana Field Laboratory recently. In April, Dr. Tara Schoenwetter, a biologist working at SSFL, discovered about 150 tadpoles while conducting biological monitoring at the site. *Photo courtesy of Tara Schoenwetter.*

ETEC Installs Automated Well Pumping System to Protect Groundwater

By Melissa Simon

A new automated pumping system is up and running at the Former Sodium Disposal Facility (FSDF) on the U.S. Department of Energy (DOE) [Office of Environmental Management](#)’s (EM) [Energy Technology Engineering Center](#) (ETEC) site at the Santa Susana Field Laboratory (SSFL).

Located northwest of Los Angeles, California, SSFL is a 2,850-acre former rocket engine testing and energy research facility. DOE conducted research and development in Area IV, a 290-acre portion of [SSFL](#), and EM is charged with cleanup of residual contamination that remains at the site.

Pumping water manually has taken place at FSDF since 2017 as part of interim cleanup measures “to protect groundwater by capturing and removing contaminated material, keeping it away from the deeper bedrock groundwater,” said Ian Lo, project engineer at the ETEC site.

When ETEC was in use as a nuclear energy and liquid metals research facility in the 1950s through 1980s, test equipment was placed in ponds at FSDF in Area IV for cleaning.

The design, development and installation of the new solar-powered automated system began in 2023 and was completed in May.

“The automation of the [well system] allows for more frequent [and] greater pumping volumes at the site,” Lo said. “Using solar power reduces the site’s energy needs, making it a more sustainable cleanup solution.”

The system automatically turns on as the sun rises and turns off when the sun sets, Lo said. It also has remote viewing and data collection capabilities, as well as built-in sensors that will shut it down and alert operators in the event of a system issue.

In the months since automation began in May, more than 15,000 gallons have been pumped through the system. In comparison, a total of 2,344 gallons were pumped manually from the same four wells between January and March 2024.

“It is exciting to see this new automated groundwater extraction system come online to accelerate the DOE’s cleanup efforts at SSFL,” said Josh Mengers, EM’s federal project director at ETEC. “As we work with the state on final groundwater and soil cleanup plans, we’ll continue to innovate with safety and sustainability in mind, and use the latest science to complete this remediation.”

Since 2017, EM has removed more than 45,000 gallons of contaminated groundwater as part of its remediation work and due to efforts to ensure the site is ready to implement the proposed corrective measures.

In November 2020, DOE published a [record of decision](#) for groundwater cleanup at SSFL that describes monitoring and treatment approaches to addressing contaminants and potential areas affected at ETEC, as well as interim actions.

The [California Department of Toxic Substances Control](#) (DTSC), which regulates cleanup at the site, released a [programmatic environmental impact report](#) in June 2023 highlighting possible impacts of remediating contaminated soil and groundwater at Santa Susana. EM is also working with Boeing and NASA, which are responsible for remediating other portions of the site.

DOE is currently working with the state on final groundwater and soil treatment approaches that will be implemented once final plans have gone through the proper environmental process. After the DTSC approves the final groundwater and soil remediation plans, the next step will be a public comment period.



Song Chen with DOE contractor CDM Smith checks the solar skid panel and reviews data on the human-machine interface software used for the automated GWIM project in Area IV at SSFL. *Photo courtesy of Sandra Ramos Hernandez.*



Sandra Ramos Hernandez with DOE contractor CDM Smith adjusts the control valve for automated groundwater extraction well C-24 in Area IV at SSFL. *Photo courtesy of Song Chen.*



Sandra Ramos Hernandez with DOE contractor CDM Smith adjusts the ball valve on piping manifold located at the 5,000-gallon double-walled groundwater storage tank that was installed as part of the automated GWIM project in Area IV at SSFL. *Photo courtesy of Song Chen.*

DIY SEED BALL

Take Action for Earth! Plant native wildflowers to support pollinators in your neighborhood or backyard. Encasing seeds in clay and soil protects them, especially from hungry animals. Seed balls offer an easy and fun, no-till planting method.



MATERIALS

MIXTURE

Makes 1 seed ball

- 2 spoonfuls of potting soil
- 3 spoonfuls of clay only cat litter
- Water in spray bottle
- 5-7 native seeds
- Cup
- Popsicle stick

Only use native plant seeds. Spreading exotic or invasive seeds could harm the natural environment. Consult the local nursery for native seed mixes.

INSTRUCTIONS

- 1 MIX SOIL IN A CONTAINER**
2 spoonfuls of potting soil
3 spoonfuls of clay pieces
- 2 MIX WITH WATER**
Using a spray bottle, squirt enough water until the mixture sticks together, forming a ball. *Hint: if ball is too wet, add more soil or clay*
- 3 ADD SEEDS AND RE-ROLL**
Using finger, poke 5 to 7 small holes in the seed ball and place a seed inside of each hole, then re-roll.
- 4 TAKE HOME AND LET DRY**
Take seed ball home, and let dry for a day before planting.
- 5 WASH HANDS**
Please pre-rinse hands in the bucket of water before washing in the sink.

Make a Batch of **SEED BALLS** at Home

MATERIALS

MIXTURE

Makes 12-16 seed balls:

1 cup potting soil

1 1/2 cups clay-only cat litter

3/4 cups water

About 60 native wildflower seeds

Mixing spoon or stick

Cardboard egg carton (optional)

INSTRUCTIONS

- 1 MIX IN BOWL**
Potting soil, clay only cat litter, and seeds.
- 2 MOISTEN THE MIXTURE**
Pour water evenly over mixture.
- 3 STIR**
Stir until moist (not runny) mixture clumps together.

- 4 MAKE BALL**
Compact one handful of mixture to form a ball and repeat until all mixture is gone.

- 5 LET DRY**
Allow seed balls to dry in egg carton or flat container, for a day before planting.

- 6 PLANT SEED BALL**
Plant in spring depending on climate. Place seed ball in bare soil that receives dsunlight and rain. Push seed ball halfway into soil (if planting more than one seed ball, place 6-12 inches apart).



Only use native plant seeds. Spreading exotic or invasive seeds could harm the natural environment.

Activity courtesy of U.S. DOE Office of Legacy Management

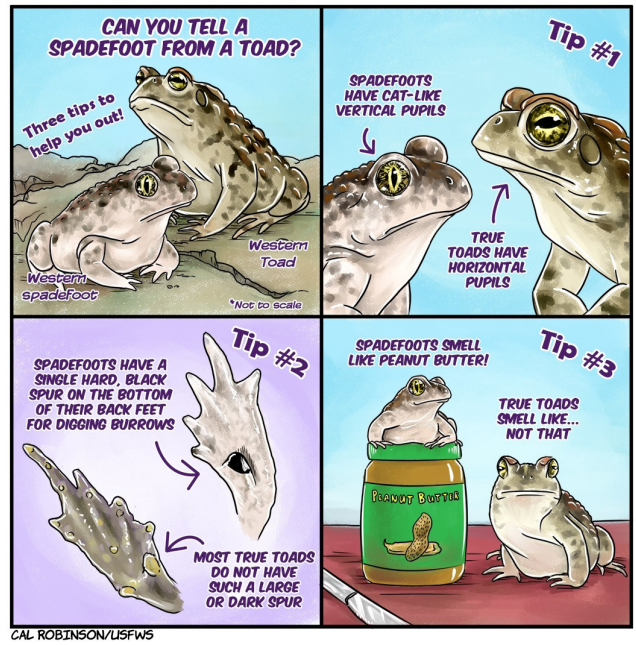
(Spadefoot Toad continued from p.2)

“I was so excited to find them because it’s something new we haven’t seen a lot of for some time and it also exemplifies the diversity of species at SSFL, which shows that the site is doing well.”

Not knowing where the toads came from is one of the big questions, she added. It could mean the creatures have site fidelity, meaning that they return to locations they have previously been.

The growth cycle for spadefoot toads is about three to 11 weeks, depending on the weather. If conditions are hot, they will metamorphize from tadpoles into adults much faster, Schoenwetter said.

Since spotting the spadefoot toads at SSFL again this spring, Schoenwetter said she has observed many moving away from the pond where they were discovered, with some going as far as 250 feet to burrow.



In December 2023, [USFWS issued a proposal](#) to list the spadefoot toads as threatened on the Endangered Species List due to habitat loss, predation by non-native species and climate change. A rule on the listing is anticipated soon.

Spadefoot toads are currently listed as a species of special concern by the California Fish and Wildlife Service (CDFW). Being designated as a threatened species would be a federal listing.

“If that does happen, we would continue to work with USFWS on the best approaches for protecting the toads during any work done onsite,” she said.

The spadefoot toads were not addressed in the biological assessment the Department of Energy (DOE) conducted for SSFL. If the toads are added to the federal Endangered Species List, then DOE will continue to coordinate with the wildlife services on next steps.

“This is just one of many examples why continued consultation with USFWS and CDFW is so important as we continue our cleanup mission at SSFL,” said Josh Mengers, DOE’s site manager and project director at SSFL.

Learn more about the western spadefoot toad on [CDFW](#) or [USFWS](#).

‘Groundwater U’ Prepares Community to Weigh in on ETEC Cleanup

By Melissa Simon

Community members gathered at the Santa Susana Field Laboratory (SSFL) in April for a public site tour, the final event of the 2024 Groundwater University series.

The California Department of Toxic Substances Control ([DTSC](#)), in cooperation with the Boeing Company, [NASA](#), and the Department of Energy’s (DOE’s) Office of Environmental Management ([EM](#)), hosted the education workshop series called Groundwater U. The goal of the workshops and tour was to educate stakeholders about groundwater at SSFL and prepare community members to review and comment on future groundwater decision documents from the laboratory.

SSFL is a 2,850-acre former rocket engine testing and energy research facility located in southeastern Ventura County, California. DOE conducted research and development, including leading-edge nuclear, solar and sodium reactor technology, on a 290-acre portion of the SSFL known as the Energy Technology Engineering Center ([ETEC](#)) in Area IV.

EM is charged with cleanup of residual contamination that remains in DOE's portion of the ETEC site. The cleanup program [completed demolition](#) of buildings there in 2022 and is currently working with DTSC on final groundwater and soil cleanup plans.

Research into the nature and extent of groundwater contamination at SSFL started in 1987. It involves analyzing groundwater from more than 600 wells, investigating the nature of the groundwater system through a series of aquifer tests, mapping of the geology of Simi Hills, and identifying and sampling seeps and springs.

During the Groundwater U site tour on April 6, Josh Mengers, EM's federal project director for [EETEC](#), and Ryan Wymore of EM contractor CDM Smith met with about 50 community members to discuss some of the new investigation techniques being used to collect data on the fractured bedrock and groundwater at Santa Susana.



Josh Mengers, right, EM's federal project director for the Energy Technology Engineering Center, and Ryan Wymore of EM contractor CDM Smith show an educational model using rice and purple water, dyed from boiled cabbage leaves, to demonstrate the movement of contaminants in the groundwater and explain how in-situ treatment would work at the April 6 Groundwater U site tour at SSFL. *Photo courtesy of Melissa Simon.*

Standing where the Hazardous Materials Storage Area used to be, the tour group talked about some of EM's cleanup activities and groundwater interim measures, including the installation of a solar-powered automated pumping system and a pilot study on an in-situ biological and chemical oxidation treatment. Mengers showed an educational model using rice and purple water, dyed from boiled cabbage leaves, to demonstrate the movement of contaminants in the groundwater and explain how in-situ treatment would work.



Josh Mengers, right, EM's federal project director for the Energy Technology Engineering Center (EETEC), answers questions from community members about rock core samples excavated from EM's portion of the Santa Susana Field Laboratory, known as ETEC, during an April 6 site tour as part of Groundwater University. *Photo courtesy of Karen Edson.*

Boeing and NASA also participated in the site tour, taking the community members to a handful of stops on each of their portions of SSFL to discuss groundwater and their treatment and pilot studies.

Groundwater U kicked off January 23 with a community listening session focused on groundwater at [SSFL](#). The session helped [DTSC](#) ensure the series content was tailored to community interests.

Matt Becker, a professor and Conrey Endowed chair of hydrogeology in the Earth Science Department at California State University, Long Beach, presented an overview of groundwater and hydrogeology, including what groundwater is and how it moves, during the first session on February 20.

The second session on March 12 built on the first workshop, with Beth Parker and John Cherry discussing where groundwater contamination is at SSFL, a geologic formation called the Chatsworth formation and the transport of contaminants. More than 100 people attended the workshop to listen to the presentation and ask questions of DTSC, Boeing, and Parker and Cherry, who are professors at the University of Guelph in Canada and part of the SSFL groundwater advisory panels.

At the final workshop on April 4, representatives from DTSC, EM, NASA and Boeing discussed groundwater treatment options studied at SSFL, as well as groundwater interim measures, and pilot tests and treatability studies. More than 60 people attended the third workshop.

More information about Groundwater U, including recordings of past sessions and materials, can be found at [DTSC's SSFL webpage](#). And click [here](#) for information about EM's work at Santa Susana.



Looking Ahead

The U.S. Department of Energy will be attending the Simi Valley Street Fair on Oct. 26. Look for a recap on our time at the fair and some photos from the event in the December issue of *CleanUpdate*.

To stay up to date on activities going on at Santa Susana Field Laboratory, email etec@emcbc.doe.gov to subscribe to the digital CleanUpdate newsletter. You can also request to be added to the mailing list to receive the newsletter in the mail or be removed from the list if you no longer want to receive it.

Visit www.energy.gov/etec or scan the QR code for more information.



Photo courtesy of Josh Mengers.



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