MAY 2020

FieldNOTE

An Update on NASA's Cleanup Efforts at the Santa Susana Field Laboratory

NASA decides to retain the Alfa Test Stands and Control House and proceed with demolition of Bravo and Coca

NASA has made the decision to retain and preserve the two remaining Alfa Test Stands and the associated control house. The remaining structures in the Bravo and Coca Test Areas will be dismantled in accordance with NASA's 2014 Programmatic Agreement (PA), the document that guides how NASA will protect and preserve cultural and historical resources as it prepares for and conducts SSFL cleanup activities.

Alfa Test Stand III (right) is one of the two test stands that NASA will retain for historic preservation. The Alfa Control House (left) will also be retained.

While the PA stipulates the retention of only one test stand and control house, NASA determined it is feasible and desirable to retain all three structures within the Alfa Test Area Historic District. The Alfa Test Area is the most accessible of the test areas and is the location of both the first and last engine tests conducted at SSFL—the first in 1955 and the last in 2006.

NASA's decision comes in response to a 2019 NASA Office of Inspector General (OIG) audit report that recommended NASA make a decision on preservation or demolition of the test stands before beginning soil remediation activities. In accordance with the 2014 PA, NASA consulted with the PA signatories—which include the California State Historic Preservation Officer, the Advisory Council on Historic Preservation, and the Santa Ynez Band of Chumash Indians—as well as the Department of Toxic Substances Control, during the decision-making process.

The Alfa Control House was the central operations and viewing area during engine tests at the Alfa Test Stands. ■

The 2014 PA stated that NASA would demolish the Coca Test Area Historic District and retain at least one test stand and control house in the Alfa or Bravo Test Area Historic District. However, in 2015, in response to community and stakeholder interest, NASA agreed to defer the demolition of all the test stands for as long as possible, a decision it re-affirmed in 2017. The 2019 OIG report that led to NASA's decision to end the deferral cited concerns with increased liability and escalating costs resulting from delaying a decision about demolition.

"The decision to end the deferral and proceed with preservation and demolition activities allows NASA to maintain our commitment to responsible stewardship of taxpayer dollars and maximize our time as federal and state regulatory processes continue," said Peter Zorba, NASA SSFL Project Director. ■

Update on NASA's Supplemental Environmental Impact Statement for Soils

In October 2019, NASA published a ***Draft Supplemental Environmental Impact Statement (EIS)*** for soil cleanup at SSFL. Per the National Environmental Policy Act (NEPA) requirements, the Supplemental EIS evaluates and compares the likely impacts that soil cleanup in NASA-administered areas would have on the community and the environment. Public meetings were held November 20 and 21, 2019 and the public comment period for the Draft Supplemental EIS ended on January 8, 2020.

NASA is currently reviewing and responding to written and oral public comments and anticipates releasing a ***Final Supplemental EIS*** in June. A ***Record of Decision (ROD) for Soil Cleanup*** is expected to follow later this summer. ■

Plans underway to test enhanced bioremediation technology for groundwater cleanup at SSFL

Bioremediation refers to the use of very small, naturally occurring organisms called microbes to degrade environmental contaminants into harmless byproducts. NASA is planning a pilot study to test the effectiveness a specific type of bioremediation – enhanced in situ bioremediation (EISB) – to remove trichloroethylene (TCE) and other volatile organic compounds (VOCs) from the groundwater beneath NASA-administered areas at SSFL.

objective

EISB can be an effective method for removing chlorinated solvents such as TCE from groundwater. NASA's pilot study will determine whether it will be effective at SSFL, given the unique site conditions where the groundwater—and the contaminants—have seeped into fractures deep within the bedrock.

"NASA is eager to get this pilot test underway," said Peter Zorba, NASA SSFL Project Director. "EISB is not only a proven and reliable cleanup technology, it's also a green solution that really harnesses and enhances the natural process, while also minimizing the impacts of our remedial footprint on the ecosystem."

If the pilot study is successful, NASA will consider expanding it for larger scale application in other NASA groundwater cleanup areas at SSFL.

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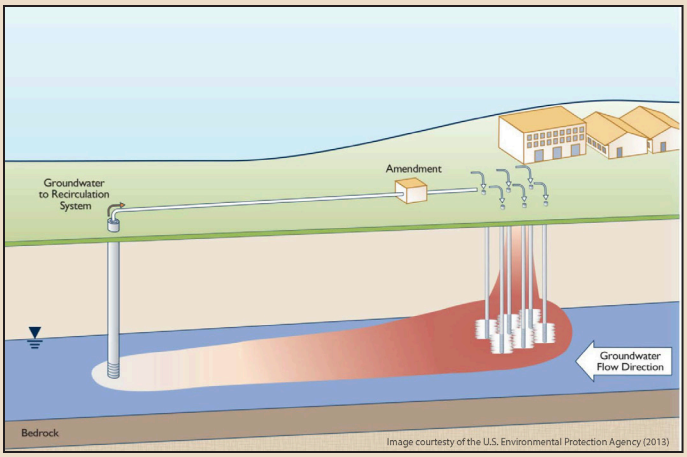
-- Peter Zorba, NASA SSFL Project Director

process

EISB uses "amendments" to create conditions necessary for microbes to grow and thrive and "eat" more contaminants. NASA's study will stimulate microbes that occur naturally in the subsurface and groundwater using food grade emulsified vegetable oil (EVO) as a nutrient amendment to create optimal conditions for the microbes to break down the contaminants into harmless byproducts.

The pilot study will take place in the groundwater beneath an Alfa Test Stand spillway. The study design involves a small closed-loop extraction-recirculation system in the aquifer below the ground surface. Groundwater will be extracted from the aquifer and the EVO amendment will be added to the water. This water will then be piped to one of three injection wells and injected back into the aquifer (see diagram, left). The recirculation loop will help distribute the water containing the amendment and focus in situ treatment of the groundwater within the area between the injection wells and extraction well. A dye tracer will allow a better understanding of how the groundwater recirculates. The entire system and focused treatment area will take up an area approximately the size of a basketball court. A robust monitoring plan will be followed to track how the contaminants, amendments, and tracers are moving within the system, and how effectively the microbes are metabolizing and degrading groundwater contaminants.



The diagram above provides a cross-section view of an in situ groundwater bioremediation system similar to the design for NASA's pilot study.

next steps

NASA has submitted a work plan for the EISB pilot study to the Department of Toxic Substances Control (DTSC) and has been working closely with the agency to address their comments. Once DTSC approves the work plan, NASA can further develop engineering plans and begin the injection permitting process through the Regional Water Quality Control Board. NASA anticipates it will begin preparation work this summer, and to begin the pilot study in earnest in 2021. ■

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