



FieldNOTE

NOVEMBER 2015

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

Understanding the North Fault

NASA continues to conduct groundwater investigations and perform treatability studies to evaluate technologies and the degree of their effectiveness in site conditions at Santa Susana Field Laboratory (SSFL). A number of remediation technologies involve pumping and extracting groundwater as part of the treatment process. It is important in planning for cleanup to understand how the groundwater reacts to pumping and extraction activities. In August NASA completed an aquifer test on a complex underground network of the North Fault Zone. The test involved



The North
Fault Zone
sampling
work site

monitoring wells, electronic measuring equipment, and various trials to determine optimal injection rates that would put sufficient stress on the aquifer system. By injecting water in one well, NASA wanted to see if there were measurable responses in groundwater levels in surrounding wells. The objective of the study was to gain insight into the characteristics of the fault and to evaluate the degree of hydraulic connection

between it and other underground formations. Think of it as mapping the underground highway and exit ramps that groundwater could travel through rock if pressure were exerted. NASA is evaluating the data and is pleased with the preliminary findings. This study was part of NASA's investigation in the Liquid Oxygen (LOX) Area. It is one of four Areas of Impacted Groundwater (AIGs) under investigation on NASA-administered property as part of planning for the overall groundwater cleanup at the Santa Susana Field Laboratory. ■

Public Health Matters

Continuing to protect public health is NASA's priority when it comes to planning and implementing cleanup at Santa Susana Field Laboratory. "It's why we are here," says NASA's SSFL Program Director Allen Elliott. "We are taking action on many fronts – preventing releases off site from stormwater, soil, groundwater, and air." These ongoing efforts by NASA have been effective in preventing pathways of exposure to contamination by neighbors in nearby communities. The preventative measures in place include:

Air

Dust suppression is an important part of demolition activities. Wetting down the demolition site, inspecting and covering trucks prior to leaving the site, and hydroseeding after demolition are some of the many work practices that help prevent the emission of dust into the air.

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SHOWING PROGRESS WITH DEMOLITION

“Less remains on the site, and **more progress** is being made toward **final cleanup**.”

Allen Elliott
NASA's SSFL
Program Director

What a difference a few months have made. Demolition activities in the Northern Service Area that began in February really started to show during the summer months to the point where only some concrete remains. “This is a case where less is more,” said NASA’s SSFL Program Director Allen Elliott.

“Less remains on the site, and more progress is being made toward final cleanup.” NASA safely removed obsolete office buildings, support structures, and roadways. The demolition debris was carefully inspected. (See Demo At A Glance chart.) Some items determined to be clean were recycled, other debris were safely transported to a licensed off-site disposal facilities. The photos (below) provide a glimpse of the visual progress achieved. This includes hydroseeding that was done after



Demolition At A Glance

Northern Service Area

| TOTAL IN TONS | MATERIAL REMOVED as of October |
|------------------|--------------------------------------|
| 558 | General Construction Debris |
| 1,404 | Steel |
| 4,510 | Asphalt |
| 3,758 | Concrete |
| 220 | ACM (Asbestos Containing Material) |
| 52 | Green Waste (Brush) |



Northern Service Area site Before.... and After demolition

Northern Service Area

By the end of the year NASA will have completed demolition in this area.

STRUCTURE

2201

EL

Engineering offices

2207

SSFL

fire station

2206

ELV

Assembly

2509

EL

Electrical Substation

2202, 2203,
2206, 2232

EL

Laboratories

2204, 2233

Maintenance and service buildings

2205, 2796

Workshops and paint shops

2211, 2231,
2233, 2204A,
2760

Supply buildings and sheds

demolition to promote re-vegetation to restore the area with native plants and minimize potential for erosion and dust migration. The majority of structures in the Northern Service Area are now gone (see chart at left) and NASA anticipates completion of all demolition in this area by the end of the year. In the August edition of FieldNOTE, we reported that demolition work would continue into the Delta Area. Much of the planned demolition work in that area consists of removing concrete surfaces (the test stands were removed years ago and very few structures remain).

To maximize the progress that can be made in the coming months, NASA is pressing forward and getting as much work done as possible in areas where structures and facilities can be readily removed. Starting in February, NASA will be conducting demolition in the Skyline Tank Area, the former Sewage Treatment Plant (STP), and Storable Propellant Areas (SPA). Be sure to check the Demolition Updates section of the NASA SSFL website for photos of the progress being made in those locations. ■

Public Health Matters

Continuing to protect public health is NASA's priority.

Stormwater

NASA has taken proactive steps to support Boeing's National Pollutant Discharge Elimination System (NPDES) permit, to help ensure stormwater leaving the site meets strict discharge limits. These steps include implementing various erosion and sediment control measures, constructing an above ground stormwater filtration system, and completing drainage improvements to outfalls. While the area has experienced extreme drought conditions in recent years, there is much talk about El Niño bringing rain to the region this winter. NASA has evaluated historical records of rainfall during past El Niño events to help anticipate the timing of storm events and prepare for heavy rains that may result. In addition to the measures already in place, NASA has pre-staged extra sediment control and erosion control materials and has heavy equipment ready to move and place materials as the weather dictates.

Groundwater

The inclusion of additional extraction wells along with pipeline improvements recently completed by NASA will enhance the capacity of the Groundwater Extraction Treatment System. The treatment facility will operate again once pump testing that is part of groundwater investigations is complete. An extensive groundwater monitoring network, greatly expanded over the years, continues to provide NASA with information about site conditions and whether controls are working properly.

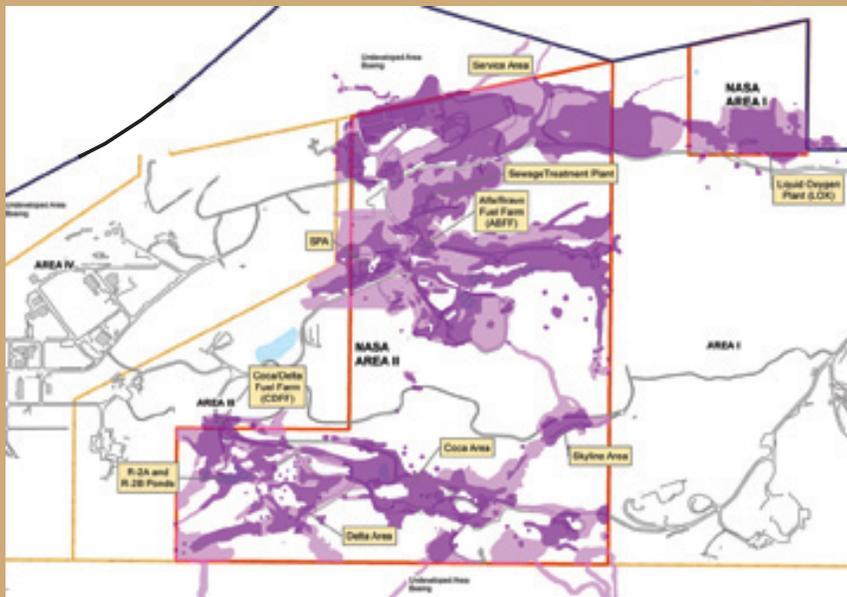
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AN UPDATE ON SOIL SAMPLING

As the late baseball Hall of Famer Yogi Berra once said, "It ain't over till it's over." That could be said for NASA's soil sampling work at the Santa Susana Field Laboratory. NASA has conducted soil investigations for over three decades and sampling remains an iterative process today. Soil investigations have included surface soil, subsurface soil, sediment, and soil vapor sampling. Additionally, in January of last year NASA completed six Field Sampling Plans to fill identified data gaps. (For more information on the Plans see FieldNOTE/May 2012, http://ssfl.msfc.nasa.gov/documents/factsheets/ISRA_Final_Nov_11_09.pdf). This extensive collection of soil investigation data was compiled in a Draft Soil Data Summary Report. The report summarizes the nature of chemicals in the soils as well as the vertical and horizontal extent of the contamination at 16 sites within the 450 acres of NASA-administered property at SSFL. NASA submitted the report in May 2015 for review by the Department of Toxic Substances Control, the agency overseeing cleanup, and is currently addressing comments received.

NASA remains committed to implementing soil cleanup actions that meet the cleanup level requirements outlined in the 2010 Administrative Order on Consent (AOC). NASA recently completed "step-out sampling" both in the horizontal (surface soil) and vertical direction (subsurface soil, if present) to estimate the maximum volume of soil that would be remediated or removed to achieve the cleanup goal. Step-out sampling involved evaluating existing sampling data along with site features such as topography, rock outcrops, drainage ditches, and roads. Results provide an updated footprint that shows the estimated area of soil remediation and the extended boundaries where additional soil cleanup may be needed to meet cleanup values required by the AOC.

NASA now estimates the total volume of soil that will need to be remediated or removed is approximately 600,000 cubic yards. The extended remediation areas have the potential to add up to 225,000 cubic yards of additional soil to the estimated remediation areas. This information was shared with the State of California Department of Toxic Substances Control (DTSC) to aid in the



Estimated (dark purple) and Extended (light purple) Soil Remediation Areas.

preparation of their Environmental Impact Report. Once a final cleanup remedy is selected by the state and implemented by NASA, additional sampling referred to as confirmation sampling will be performed to aid in refining the extended remediation areas and to verify that cleanup goals have been met. ■

Public Health Matters

These ongoing efforts by NASA have been effective in protecting public health.

Soil

NASA is conducting demolition with an approved stormwater pollution prevention management plan. Wetting down work site surfaces during demolition and hydroseeding to prevent erosion after demolition are examples of the controls already in place. NASA's successful completion of an interim source removal action (ISRA) in 2013 eliminated contaminated soil that could be taken up by stormwater runoff. (See fact sheet, http://ssfl.msfc.nasa.gov/documents/newsletters/FieldNote_201205.pdf). ■

FOR MORE INFORMATION CONTACT

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Photos and demolition updates are available at <http://ssfl.msfc.nasa.gov/news/demolition-updates.aspx>

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