

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
White Sands Test Facility
P.O. Box 20
Las Cruces, NM 88004-0020



February 8, 2022

Reply to Attn of: RE-22-020

Mr. Rick Shean, Bureau Chief
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505

Subject: NASA White Sands Test Facility (WSTF) Monthly Environmental Activity Report
for January 2022

Enclosed is the NASA White Sands Test Facility (WSTF) Monthly Environmental Activity Report for January 2022. This reporting format includes an Executive Summary that provides important events/observations as Enclosure 1, a paper copy of the report as Enclosure 2, and a CD-ROM with the report in PDF as Enclosure 3.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions or comments concerning this submittal, please contact Amanda Skarsgard of my staff at 575-571-9668.

**TIMOTHY
DAVIS**

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TIMOTHY DAVIS
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Timothy J. Davis
Chief, Environmental Office

3 Enclosures

cc:

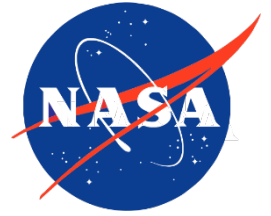
Mr. Gabriel Acevedo
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505

Executive Summary

The following summarizes important information associated with NASA White Sands Test Facility (WSTF) environmental program activities in January 2022:

- NASA completed shipments of hazardous waste in January 2022.
- NASA sampled 38 of 39 groundwater monitoring wells scheduled for January 2022 and scheduled 32 groundwater monitoring wells for sampling in February 2022.
- NASA operated the Mid-plume Interception and Treatment System on 31 of 31 days in January 2022 and treated 1.25 acre-feet of contaminated groundwater and 104 gallons of investigation-derived waste (IDW).
- NASA operated the Plume Front Treatment System on 31 of 31 days in January 2022 and treated 75.1 acre-feet of contaminated groundwater.
- NASA completed the installation of six soil borings as part of the 600 Area perched groundwater investigation. NASA installed groundwater wells in two of the borings. NASA also continued extraction of perched groundwater at monitoring well 600-G-138.
- NASA continued revising the disapproved investigation report for the 200 Area Hazardous Waste Transmission Lines (SWMU 10).
- NASA began initial planning for the NMED-required investigation work plan for the newly identified SWMU in the 500 Area (former oxidizer burner).
- NASA continued preparing the pilot test report for the Targeted Mobile Remediation Process Pilot Test initiated in August 2019.
- NASA continued project planning for several monitoring well projects.
- NASA initiated a large-scale passive seismic study in the WSTF Plume Front area.
- NASA submitted one document to the NMED Hazardous Waste Bureau in January 2022.
- There were no reportable non-compliance issues in January 2022.

National Aeronautics and Space Administration



Monthly Environmental Activity Report
January 2022

Report Deadline: February 15, 2022

NASA Johnson Space Center White Sands Test Facility
Monthly Environmental Activity Report

January 2022

NM8800019434

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

TIMOTHY DAVIS Digitally signed by TIMOTHY DAVIS
Date: 2022.02.08 07:31:56 -07'00'

Timothy J. Davis
Chief, Environmental Office

See Electronic Signature

Date

National Aeronautics and Space Administration

Johnson Space Center
White Sands Test Facility
12600 NASA Road
Las Cruces, NM 88012
www.nasa.gov/centers/wstf

www.nasa.gov

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- NASA continued project planning for several monitoring well projects.
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- There were no reportable non-compliance issues in January 2022.

1.0 Waste Management Activities

1.1 NASA completed the following waste shipments in January 2022.

Date	Shipped To	Type of Waste	No. of Containers	Amount of Waste	Disposition
1/25/22	Clean Harbors, Aragonite, LLC, Aragonite, UT	Hazardous	12	1,000 kg	Incineration
1/25/22	US Ecology, Beatty, NV	Hazardous	5	182 kg	Macroencapsulation, Solidification, or Off-site Management

- NMED is reviewing the Response to Approval with Modifications Closure Certification Report for the NASA WSTF Fuel Treatment Unit (FTU) (August 31, 2020).

2.0 Environmental Monitoring

2.1 NASA performed sampling at 38 of 39 groundwater monitoring wells or zones scheduled for sampling in January 2022, in accordance with the approved Groundwater Monitoring Plan (GMP). NASA was unable to sample well 400-IV-123 because the water level was inadequate for sample collection. Previous deviations from the planned sampling schedule are described below and have been reported to NMED in previous monthly reports:

- Wells BLM-1-435 (scheduled for sampling in April 2021), PL-3-453 (scheduled for sampling in December 2020), and 400-C-118 (scheduled for sampling in November 2020) have not been sampled because the water levels are not sufficient for sampling.
- Well NASA 9, scheduled for sampling in October 2020, cannot be sampled because access to the screened interval was prevented by the intrusion of roots into the well casing and screen. NASA evaluated the monitoring well and has determined that it should be abandoned. NMED approved the 2021 GMP with a modification that required submittal of a work plan to replace well NASA 9 no later than April 29, 2022.
- Well BLM-28-515, scheduled for sampling in July 2019, cannot be sampled because of sampling system issues described in previous monthly reports. NASA plans to plug and abandon this well (Section 3.17) and remove it from the GMP.
- The Water FLUTE sampling system was removed from well WW-4 to support the collection of groundwater samples in accordance with the *Abbreviated Investigation Work Plan Groundwater Data Representativeness Phase 1: Water FLUTE Well Evaluation* (July 30, 2019; revised). NASA will resume routine groundwater sampling required by the GMP following reinstallation of the Water FLUTE liner, which is scheduled for early 2022 based on subcontractor availability.

2.2 NASA performed other regulatory groundwater sampling requirements as scheduled and as allowed by operational status. NASA did not sample wells PFE-1 and PFE-3 because they were not operational due to equipment failure.

2.3 NASA developed the February 2022 groundwater sampling schedule and plans to sample 32 groundwater monitoring wells or zones based on GMP requirements.

3.0 Corrective Actions/Investigations

3.1 Mid-plume Interception and Treatment System Operations

Days Operated	Average Flow Rate (gpm)	Volume Extracted and Treated (acre-feet)	Volume of Groundwater Discharged to Infiltration Basin (acre-feet)	Volume of IDW Treated and Discharged to the Infiltration Basin (gallons)
31 of 31	9.1	1.25	1.23	104

Shutdown Date	Restart Date	Shutdown Status	Discussion
NA	NA	NA	NA

3.2 Plume Front Treatment System Operations

Days Operated	Average Flow Rate (gpm)	Volume Extracted/ Treated (acre-feet)	Volume Injected (acre-feet)	Volume Discharged to Grade (acre-feet)	Volume Discharged to Modu-Tank (acre-feet)
31 of 31	776	75.8	75.1	0.23	0.002

Shutdown Date	Restart Date	Shutdown Status	Discussion
1/20/22	1/20/22	Planned	NASA shut the system down to support a planned power outage for an arc-flash upgrade project.

3.3 200 Area Investigation

- NMED is reviewing the *NMED Disapproval Response for 200 Area and 600 Area Vapor Intrusion Assessment Report* (January 30, 2020).

3.4 400 Area

- NMED is reviewing the *Response to Disapproval of 400 Area Supplemental Groundwater and Soil Vapor Monitoring Plan* (July 14, 2021), the *NASA WSTF 400 Area Closure Investigation Report – NMED Third Disapproval Response* (July 27, 2021), and the *Response to Disapproval of 300 Area Supplemental Abbreviated Drilling Work Plan* (July 14, 2021).

3.5 600 Area Perched Groundwater Extraction Pilot Test and Investigation

- NASA suspended perched groundwater extraction fieldwork during most of January 2022 to reduce the impact on the perched groundwater aquifer and maximize the potential of locating perched groundwater during the perched groundwater investigation. In January 2022, NASA

extracted approximately 27 gallons of perched groundwater from monitoring well 600-G-138 in accordance with NMED's March 1, 2013 *Approval Time Extension for Implementation of the Perched Groundwater Extraction Pilot Test at the 600 Area*. Extracted groundwater was containerized for treatment at the Mid-plume Interception and Treatment System (MPITS) and discharged in accordance with DP-1255.

- NASA completed soil boring installation field activities for the perched groundwater investigation in accordance with NMED's December 22, 2020 approval with modifications of the *Synopsis of the Findings of the 600 Area Closure Geophysical Seismic Refraction Tomography and Reflection Surveys with Revised Soil Boring Locations Submitted for NMED Approval*. The off-site subcontract drilling company installed all six soil borings between January 4 and January 27, 2022 in the vicinity of the 600 Area Closure to depths of approximately 145 to 180 feet bgs. The soil borings were located in potential bedrock lows identified using the geophysical seismic survey performed previously as part of the investigation. The soil borings transcended the alluvial overburden into the top of the andesite bedrock in search of perched groundwater on the alluvial-bedrock interface. NASA identified perched groundwater at one location adjacent to the north corner of the Closure and installed groundwater well 600A-001-GW. NASA also installed a conventional monitoring well 600A-002-GW downgradient to the west of the Closure in andesite bedrock. This boring encountered the deeper fractured bedrock aquifer at the projected total depth of the soil boring and was subsequently drilled deeper than the planned depth to facilitate installation of the groundwater monitoring well. The remaining four soil borings did not encounter perched groundwater and were plugged and abandoned in accordance with the NMED-approved work plan. The final investigation report is due to NMED by May 31, 2022.

3.6 SWMUs 2, 8, and 34 and AOC 51 (Wastewater Lagoons)

- NMED is reviewing the *NASA White Sands Test Facility (WSTF) 200 Area Wastewater Lagoons Closure (SWMU 8) Investigation Report* (November 25, 2019), the *NASA White Sands Test Facility (WSTF) 600 Area Wastewater Lagoons Closure (SWMU 34) Investigation Report* (November 26, 2019), the *NASA White Sands Test Facility (WSTF) 100 Area Wastewater Lagoons Closure (SWMU 2) Investigation Report* (August 3, 2020), and the *NASA White Sands Test Facility (WSTF) STGT Wastewater Lagoons Closure (AOC 51) Investigation Report* (October 13, 2020).

3.7 SWMU 10 (200 Area Hazardous Waste Transmission Lines [HWTL])

- NASA continued revising the *NASA WSTF 200 Area HWTL (SWMU 10) Investigation Report* (July 30, 2019) to address 16 NMED comments from the November 16, 2020 disapproval.
- Recognizing the need to address recent revisions to the NMED Risk Assessment Guidance, NASA submitted a request for extension of time for submittal of the revised investigation report on January 11, 2022. NMED approved the request on January 25, 2022, extending the report due date to February 28, 2022.

3.8 SWMU 16 (600 Area BLM Off-site Soil Pile)

- NMED is reviewing the *Accelerated Corrective Measures Work Plan for the NASA WSTF SWMU 16 (600 Area BLM Off-Site Soil Pile)* (September 28, 2021).

3.9 SWMUs 21-27 (Septic Tanks)

- NMED is reviewing the *Response to Second Disapproval of NASA White Sands Test Facility (WSTF) Septic Tanks (SWMUs 21-27) Investigation Report* (May 18, 2021).

- 3.10 SWMUs 29-31 (Small Arms Firing Ranges)
- NMED is reviewing the *Response to Second Disapproval Small Arms Firing Ranges (SWMUs 29-31) Remedy Completion Report and Risk Assessment Report* (August 3, 2020).
- 3.11 SWMU 33 (Test Stand 302 Cooling Water Pond)
- NMED is reviewing the revised *SWMU 33 Historical Investigation Summary and Investigation Work Plan* (August 17, 2020).
- 3.12 SWMU 47 (500 Area Fuel Storage)
- NMED is reviewing the *Response to Second Disapproval of 500 Area Fuel Storage (SWMU 47) Investigation Work Plan* (June 29, 2021).
- 3.13 SWMU 49 (700 Area Landfill)
- NASA continued preparation of the required Phase I investigation report, which is due to NMED by April 29, 2022.
 - NMED is reviewing the *Revised Discussion Relative to the Phase 1A and Phase 1B Soil Vapor Survey (SVS) Component of the Ongoing 700 Area Landfill Phase I Investigation* (December 21, 2021).
- 3.14 SWMU 50 (TDRS Diesel Release)
- NMED is reviewing the *Response to Disapproval of First Tracking Data Relay Satellite System (TDRSS) Diesel Release (SWMU 50) Investigation Report and Risk Screen Evaluation Report* (November 9, 2020).
- 3.15 SWMU 52 (Second TDRS UST)
- The NMED Hazardous Waste Bureau is reviewing the *Second TDRSS Underground Storage Tank (SWMU 52) Release Assessment Report* (February 18, 2021).
- 3.16 Newly Identified SWMU Near 500 Area (Former Oxidizer Burner)
- In accordance with NMED's December 20, 2021 approval of the *500 Area Newly Identified SMWU Release Assessment Report* (June 22, 2020), NASA began work on an investigation work plan for the unit, which is due to NMED no later than August 31, 2022. The unit will be identified as a SWMU in the Permit at an appropriate time.
- 3.17 Groundwater Monitoring Well Abandonment, Installation, and Reconfiguration
- NMED is reviewing the *NASA WSTF Westbay Well Reconfiguration Work Plan for Wells PL-7, PL-8, PL-10, ST-5, and WW-3* (April 29, 2021).
 - On January 10, 2022, NMED approved the *Well Abandonment Work Plan for Well BLM-28* (April 29, 2021). NASA began planning for well abandonment.
 - On January 18, 2022, NMED approved the *NASA WSTF Well Reconfiguration Work Plan for Well BW-4* (June 29, 2021) with modifications. NASA is developing the required response to the approval and planning well reconfiguration.
 - NMED is reviewing the *NASA WSTF Work Plan for Drilling and Installation of Monitoring Well 600B-001-GW* (BLM-28 replacement; August 31, 2021).
 - NMED is reviewing the *Work Plan for Drilling and Installation of Monitoring Well 600C-001-GW at the NASA White Sands Test Facility (WSTF)* (deeper well adjacent to BLM-10-517; August 31, 2021).

- On January 10, 2022, NMED approved the *Well Plugging Plan of Operations for Multiport Soil Vapor Groundwater Monitoring Wells 200-SG-2 and 200-SG-3* (November 30, 2021). NASA began planning for well abandonment.

3.18 Targeted Mobile Remediation Process (TMRP)

- NASA continued developing the pilot test report.
- NMED is reviewing the *Request for Extension of Time for Submittal of Targeted Mobile Remediation Process (TMRP) Final Report* (December 14, 2021).
- NMED is reviewing the *NASA White Sands Test Facility Monitoring Well ST-1-541 Contaminated Groundwater Release Abbreviated Investigation Work Plan* (June 3, 2021).

3.19 Groundwater Data Representativeness Evaluation

- NMED is reviewing the *Abbreviated Investigation Work Plan for Groundwater Data Representativeness, Phase 2: FLUTE Well Evaluation* (November 2, 2021).

3.20 Dye Tracer Test Investigation

- NMED is reviewing the *Report on Tracer Testing in the 200/600 Areas and Mid-plume Constriction Area* (August 31, 2020).

3.21 Site-wide Geophysics Investigation

- During the week of January 18, 2022, NASA and the off-site geophysics subcontractor deployed 381 passive seismic geophones within the designated passive seismic study area. The geophones were deployed across a 1 x 2-mile rectangular grid striking northwest at the Plume Front in an area that incorporates the Plume Front remediation wells, footprint of the westernmost groundwater plume, and the Western Boundary Fault Zone. The geophones will remain in the ground and record data for approximately 30 days. Supplemental energy (ground vibrations) was conveniently provided to the passive geophones by soil boring drilling operations active at the 600 Area Closure approximately 2 miles to the east between January 21 and January 27, 2022.

4.0 Non-compliance Issues

The NASA Hazardous Waste Permit requires that other non-compliance conditions be reported to NMED. There were no instances of other non-compliance conditions during this reporting period that require notification under the Permit. The criteria for non-compliance reporting in this report (as defined by 40 CFR 270.30 (l)(10) and EPA interpretations at RCRA Faxbacks 13142 and 13686) would be any non-compliance with permit conditions that is not classified as minor recordkeeping, reporting, and similar oversights that were corrected once discovered. Additionally, there were no issues meeting the previously defined criteria (minor items immediately corrected) that were part of a repeating pattern of non-compliance.

5.0 Documents Submitted

5.1 Documents submitted to the Hazardous Waste Bureau in January 2022

- NASA submitted *Request for Third Extension of Time for Submittal of Response to Disapproval of Hazardous Waste Transmission Lines (SWMU 10) Investigation Report* on January 11, 2022.

5.2 Pertinent documents submitted to other NMED bureaus in January 2022

- NASA submitted the *NASA White Sands Test Facility (WSTF) Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units – 40 CFR Part 60, Subpart Dc (NSPS Dc) Semi-annual Report for Period July 1 through December 31, 2021* to the Air Quality Bureau on January 13, 2022.
- NASA submitted the *NASA White Sands Test Facility (WSTF) Discharge Permit Renewal and Modification Application for Discharge Plan (DP)-1255* to the Ground Water Pollution Prevention Section on January 13, 2022.
- NASA submitted the *National Emission Standards for Hazardous Air Pollutants: Stationary Reciprocating Internal Combustion Engines 40 CFR Part 63, Subpart ZZZZ* to the Air Quality Bureau on January 20, 2022.
- NASA submitted the *2022 Air Quality Bureau Annual Minor Source Permit Fee* for the NASA White Sands Test Facility (WSTF) to the Air Quality Bureau on January 25, 2022.
- NASA submitted the *Analytical Results for Discharge Permit DP-392 (NASA White Sands Test Facility 100 Area, 200 Area, and 600 Area Sewage Lagoons)* to the Ground Water Pollution Prevention Section on January 25, 2022.
- NASA submitted the *NASA White Sands Test Facility (WSTF) Discharge Permit DP-1170 Semi-Annual Monitoring Report* to the Ground Water Pollution Prevention Section on January 25, 2022.

5.3 Status of documents previously submitted to the NMED Hazardous Waste Bureau for which additional correspondence was recorded in January 2022

- Due to delays created by NASA's response to the coronavirus pandemic, NASA submitted the *Request for Extension of Time for Submittal of Hazardous Waste Transmission Lines (SWMU 10) Investigation Report* on May 19, 2021. NMED approved the request on July 6, 2021, extending the due date for submittal of the revised report to November 30, 2021. Some of NASA's off-site service providers are experiencing heavy workloads related to easing COVID-19 work restrictions, resulting in delays in NASA's ongoing fieldwork. To accommodate these schedule impacts, NASA submitted the *Request for Extension of Time for Submittal of Response to Disapproval of Hazardous Waste Transmission Lines (SWMU 10) Investigation Report* on September 14, 2021. NASA requested that the due date for submittal of the investigation report be extended from November 30, 2021 to January 31, 2022. NMED approved the request on October 27, 2021. Recognizing the need to address revisions to the NMED Risk Assessment Guidance published in November 2021, NASA submitted *Request for Third Extension of Time for Submittal of Response to Disapproval of Hazardous Waste Transmission Lines (SWMU 10) Investigation Report* on January 11, 2022. NMED approved the request on January 25, 2022, extending the report due date to February 28, 2022.
- NASA submitted the *Well Reconfiguration Report for Well BLM-28 and Notice of Intent to Plug and Abandon* on May 4, 2020. NMED responded to the notice and directed NASA submit a work plan for abandonment of well BLM-28 no later than April 30, 2021 and a subsequent work plan for well replacement, or notification that the well will not be replaced, no later than January 31, 2022. NASA submitted the *Well Abandonment Work Plan for Well BLM-28* on April 29, 2021. NASA received NMED's June 15, 2021 assessment and invoice for review of the work plan and provided the \$2,000 review fee on July 14, 2021. NMED approved the work plan on January 10, 2022.

- NASA submitted the *NASA WSTF Well Reconfiguration Work Plan for Well BW-4* on June 29, 2021. NASA received NMED's August 5, 2021 assessment and invoice for review of the work plan and provided the \$2,000 review fee on August 17, 2021. NMED approved the work plan with modifications on January 18, 2022 and directed NASA to provide a revised work plan no later than March 11, 2022 and a well reconfiguration report no later than March 30, 2023.
- NASA submitted the *Well Plugging Plan of Operations for Multiport Soil Vapor Groundwater Monitoring Wells 200-SG-2 and 200-SG-3* on November 30, 2021. Following email communication between NASA and NMED on December 7, 2021, NMED approved the plugging plan on January 10, 2022.