August 17, 2021

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


Enclosed is the NASA White Sands Test Facility (WSTF) Monthly Environmental Activity Report for July 2021. 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 at 575-571-9668.

TIMOTHY DAVIS
Digitally signed by TIMOTHY DAVIS
Date: 2021.08.17 07:54:19 -06'00'

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 July 2021:

- NASA completed shipments of hazardous waste and scrap metal in July 2021.
- NASA sampled 33 of 34 groundwater monitoring wells scheduled for July 2021 and scheduled 30 groundwater monitoring wells for sampling in August 2021.
- NASA operated the Plume Front Treatment System on 28 of 31 days in July 2021 and treated 93.4 acre-feet of contaminated groundwater.
- NASA operated the Mid-plume Interception and Treatment System on 31 of 31 days in July 2021 and treated 1.10 acre-feet of contaminated groundwater and 49,286 gallons of investigation-derived waste.
- NASA completed and submitted responses to NMED’s disapproval of three documents associated with the 300/400 Area HWMU investigations.
- NASA initiated fieldwork required to address NMED comments on the disapproved investigation report for the 200 Area Hazardous Waste Transmission Lines (SWMU 10).
- NASA addressed NMED comments included in the approval with modifications of the 600 Area BLM Off-site Soil Pile (SWMU 16) Investigation Report and submitted the revised report.
- NASA continued extraction of perched groundwater at monitoring well 600-G-138 and performed quarterly groundwater and soil vapor sampling. NASA also continued project planning for the additional 600 Area perched groundwater investigation.
- NASA extracted groundwater from five wells as part of the Targeted Mobile Remediation Process Pilot Test initiated in August 2019.
- NASA continued project planning for several monitoring well projects.
- There were no reportable non-compliance issues in July 2021.
Monthly Environmental Activity Report
July 2021

Report Deadline: August 15, 2021
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TIMOTHY DAVIS
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Date

Timothy J. Davis
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National Aeronautics and Space Administration

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www.nasa.gov
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- NASA extracted groundwater from five wells as part of the Targeted Mobile Remediation Process Pilot Test initiated in August 2019.
- NASA continued project planning for several monitoring well projects.
- There were no reportable non-compliance issues in July 2021.
1.0 Waste Management Activities

1.1 NASA completed the following waste shipments in July 2021.

<table>
<thead>
<tr>
<th>Date</th>
<th>Shipped To</th>
<th>Type of Waste</th>
<th>No. of Containers</th>
<th>Amount of Waste</th>
<th>Disposition</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/14/21</td>
<td>W. Silver, Santa Teresa, NM</td>
<td>Scrap Metal</td>
<td>1 Roll-off</td>
<td>20 CY</td>
<td>Recycle</td>
</tr>
<tr>
<td>7/28/21</td>
<td>Veolia ES Technology Solutions, Port Arthur, TX</td>
<td>Hazardous</td>
<td>1 Tanker</td>
<td>11,050 kg</td>
<td>Incineration</td>
</tr>
</tbody>
</table>

- 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 33 of 34 groundwater monitoring wells or zones scheduled for sampling in July 2021, in accordance with the approved Groundwater Monitoring Plan (GMP). NASA postponed sampling of well 700-E-458 because of access restrictions resulting from road damage caused by significant rainfall in the area. NASA is working to repair the road and regain access. Previous deviations from the planned sampling schedule are described below and have been reported to NMED in previous monthly reports:

- Wells 400-C-143 and BLM-1-435 (scheduled for sampling in April 2021), well PL-3-453 (scheduled for sampling in December 2020), wells 400-C-118 and 400-IV-123 (scheduled for sampling in November 2020), and well 300-C-128 (scheduled for sampling in August 2020) cannot be sampled because the water levels are insufficient for sampling. NASA monitors the water levels in these wells and will sample the wells if the water levels recover enough to allow for the collection of representative samples.
- In November 2020, NASA postponed monitoring at groundwater well ST-1-541 because the well is being used as an extraction location for the ongoing Targeted Mobile Remediation Process Pilot Test and is not equipped with groundwater sampling equipment. NASA plans to continue groundwater extraction and monitoring at well ST-1-541 and will collect routine groundwater samples when the well reverts to monitoring status.
- 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 is evaluating potential future use of this monitoring well.
- Well 200-LV-150, scheduled for sampling in November 2019, failed to recharge adequately to collect representative groundwater samples. The proposed no-purge sampling method was not approved by NMED, so further evaluation and potential replacement of the well is required.
- 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 in the autumn of 2021.

2.2 NASA performed other regulatory groundwater sampling requirements as scheduled and as allowed by operational status. NASA did not sample wells PFE-1 or PFE-5 because they were not operational due to equipment failure.

2.3 NASA developed the August 2021 groundwater sampling schedule and plans to sample 30 groundwater monitoring wells or zones based on GMP requirements.

3.0 Corrective Actions/Investigations

3.1 Plume Front Treatment System Operations

<table>
<thead>
<tr>
<th>Days Operated</th>
<th>Average Flow Rate (gpm)</th>
<th>Volume Extracted/ Treated (acre-feet)</th>
<th>Volume Injected (acre-feet)</th>
<th>Volume Discharged to Grade (acre-feet)</th>
<th>Volume Discharged to Modu-Tank (acre-feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 of 31</td>
<td>675</td>
<td>93.4</td>
<td>92.5</td>
<td>0.21</td>
<td>0.002</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shutdown Date</th>
<th>Restart Date</th>
<th>Shutdown Status</th>
<th>Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/10/21</td>
<td>7/14/21</td>
<td>Unplanned</td>
<td>The system shut down automatically because of a disruption in the electrical power supply caused by a thunderstorm. Subsequent stormwater flooding delayed restart.</td>
</tr>
<tr>
<td>7/26/21</td>
<td>7/26/21</td>
<td>Unplanned</td>
<td>The system shut down automatically because of a communication loss.</td>
</tr>
</tbody>
</table>

3.2 Mid-plume Interception and Treatment System Operations

<table>
<thead>
<tr>
<th>Days Operated</th>
<th>Average Flow Rate (gpm)</th>
<th>Volume Extracted and Treated (acre-feet)</th>
<th>Volume of Groundwater Discharged to Infiltration Basin (acre-feet)</th>
<th>Volume of IDW Treated and Discharged to the Infiltration Basin (gallons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>31 of 31</td>
<td>9.5</td>
<td>1.10</td>
<td>1.23</td>
<td>49,286</td>
</tr>
<tr>
<td>Shutdown Date</td>
<td>Restart Date</td>
<td>Shutdown Status</td>
<td>Discussion</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>--------------</td>
<td>-----------------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>7/10/21</td>
<td>7/10/21</td>
<td>Unplanned</td>
<td>The system shut down automatically because of a disruption in the electrical power supply caused by a thunderstorm.</td>
<td></td>
</tr>
<tr>
<td>7/11/21</td>
<td>7/11/21</td>
<td>Unplanned</td>
<td>The system shut down automatically because of a disruption in the electrical power supply caused by a thunderstorm.</td>
<td></td>
</tr>
</tbody>
</table>

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

- NASA addressed the three comments in NMED’s March 15, 2021 disapproval of the *400 Area Supplemental Groundwater and Soil Vapor Monitoring Plan* (5/28/19) and submitted the *Response to Disapproval of 400 Area Supplemental Groundwater and Soil Vapor Monitoring Plan* on July 14, 2021.
- NASA addressed the 17 comments in NMED’s March 19, 2021 disapproval of the *400 Area Closure Investigation Report* (12/30/19; revised) and submitted the *NASA WSTF 400 Area Closure Investigation Report – NMED Third Disapproval Response* on July 27, 2021.
- NASA addressed the four comments in NMED’s March 19, 2021 disapproval of the *300 Area Supplemental Abbreviated Drilling Work Plan* (5/30/19) and submitted the *Response to Disapproval of 300 Area Supplemental Abbreviated Drilling Work Plan* on July 14, 2021.

3.5 600 Area Perched Groundwater Extraction Pilot Test and Investigation

- In July 2021, NASA extracted approximately 182 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 performed quarterly groundwater and soil vapor sampling in accordance with the approved work plan.
- NMED is reviewing the *600 Area Perched Groundwater Extraction Pilot Test Interim Status Report – Project Year 8* (April 29, 2021).
- NASA continued project planning and procurement 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 perched groundwater investigation report is due to NMED no later than December 31, 2021.

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

- NASA initiated the collection of replacement soil samples for the analysis of volatile organic compounds along the HWTL on July 21, 2021. NASA collected samples at 23 of the original 48 sample locations and submitted samples to the off-site laboratory for analysis.

- 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.

- Due to negative schedule impacts resulting from the coronavirus pandemic, additional time is required to complete investigation fieldwork and project reporting. On July 6, 2021, NMED approved the *Request for Extension of Time for Submittal of Hazardous Waste Transmission Lines (SWMU 10) Investigation Report* (May 19, 2021). The revised report is now due to NMED no later than November 30, 2021.

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


- The NASA-recommended Accelerated Corrective Measures Work Plan is due to NMED no later than September 30, 2021.

3.9 SWMUs 21-27 (Septic Tanks)


3.10 SWMUs 29-31 (Small Arms Firing Ranges)


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 received the contractor’s report for the Active Multi-channel Analysis of Surface Waves (AMASW) and Passive Seismic Survey (PSS) performed at the 700 Area Landfill in June 2021. The results of the surveys will be combined with the results of prior geophysical and soil vapor surveys performed across the 700 Area landfill in 2019 and incorporated into the required investigation report.

- The Phase I investigation report is due to NMED by April 29, 2022.
3.14 SWMU 50 (TDRS Diesel Release)

3.15 SWMU 52 (Second TDRS UST)
- The NMED Petroleum Storage Tank Bureau is reviewing the *Second TDRS UST Minimum Site Assessment Report* (June 28, 2021).
- 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
- NMED is reviewing the *500 Area Newly Identified SMWU Release Assessment Report* (June 22, 2020).

3.17 Groundwater Monitoring Well Abandonment, Installation, and Reconfiguration
- NASA continued planning for monitoring well work described in the NMED-approved *Work Plan for Abandonment of NASA WSTF Well BLM-30 and Replacement with Monitoring Well BLM-43* (February 3, 2021; revised).
- NMED is reviewing the *Well Abandonment Work Plan for Well BLM-28* (April 29, 2021). In prior correspondence, NMED directed NASA to develop a subsequent work plan for well replacement or notification that the well will not be replaced, no later than January 31, 2022.
- NMED is reviewing the *NASA WSTF Well Reconfiguration Work Plan for Well BW-4* (June 29, 2021).

3.18 Targeted Mobile Remediation Process (TMRP)
- During July 2021, NASA continued TMRP fieldwork in accordance with the *Targeted Mobile Remediation Process Pilot Test Work Plan* (April 26, 2019; updated). NASA extracted 42,402 gallons of contaminated groundwater in July 2021. NASA evaluated well performance data to support reporting requirements as the pilot test nears completion.
- NASA continued the second episode of groundwater extraction at well MPE-3 through July 2021. NASA extracted 11,900 gallons from this well, for a total of 175,900 gallons since beginning extraction on July 9, 2020. NASA expects to continue groundwater extraction at well MPE-3 in August 2021.
- NASA continued the second episode of groundwater extraction at well ST-1-541 through July 2021, removing an additional 10,600 gallons from the well. NASA has extracted a total of 174,100 gallons from the well since beginning extraction on June 24, 2020. NASA expects to continue groundwater extraction at well ST-1-541 in August 2021.
- NASA continued the second episode of groundwater extraction at well MPE-4 through July 2021, removing an additional 6,700 gallons of groundwater from the well. NASA has extracted a total of 30,987 gallons from the well since beginning extraction on March 17, 2021. NASA expects to continue groundwater extraction at well MPE-4 in August 2021.
- NASA continued the second episode of groundwater extraction at well 400-A-151 through July 2021, removing an additional 1,402 gallons of groundwater from this well. NASA has extracted...
a total of 5,537 gallons from this well since beginning extraction on March 30, 2021. NASA expects to continue groundwater extraction at this well in August 2021.

- NASA continued the second episode of groundwater extraction at well ST-1-473 through July 2021, removing an additional 11,800 gallons from this well. NASA has extracted a total of 50,400 gallons from this well since beginning extraction on April 21, 2021. NASA expects to continue groundwater extraction at this well in August 2021.

- NASA transported extracted groundwater to the MPITS for treatment and discharge in accordance with the approved work plan and DP-1255.

- NMED is reviewing the NASA White Sands Test Facility Monitoring Well ST-1-541 Contaminated Groundwater Release Abbreviated Investigation Work Plan (June 3, 2021).

- NMED is reviewing the Targeted Mobile Remediation Process Interim Status Report – Project Year 2 (August 17, 2020).

### 3.19 Groundwater Data Representativeness Evaluation

- NASA continued addressing NMED’s comments in the approval with modifications of the Groundwater Data Representativeness Phase 1: Water FLUTe Well Evaluation Abbreviated Investigation Report (February 27, 2020) with modifications.

- The revised report is due to NMED no later than August 13, 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).

### 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 July 2021

- NASA submitted the Fee Assessment for 600 Area Perched Groundwater Extraction Pilot Test Project Year 8 on July 14, 2021.


• NASA submitted the Response to Disapproval of 400 Area Supplemental Groundwater and Soil Vapor Monitoring Plan on July 14, 2021.

• NASA submitted the Response to Disapproval of 300 Area Supplemental Abbreviated Drilling Work Plan on July 14, 2021.


• On December 22, 2020, NMED approved the *600 Area Closure Geophysical Survey Status Report* with modifications and provided three comments for NASA consideration. NASA submitted the *Response to NMED Approval with Modifications for 600 Area Closure Geophysics Survey Status Report – Comment 2 (Further Investigation)* on May 18, 2021. In the response, NASA recommended proceeding with the planned perched groundwater borings and the ongoing site-wide geophysical survey in lieu of expanding the 600 Area Closure geophysical survey. NMED concurred with the recommendation and directed NASA to proceed with the remaining 600 Area Closure perched groundwater investigation project work in accordance with NASA’s December 2016 Revised Abbreviated Investigation Work Plan for the 600 Area Perched Groundwater (RAIWP) and subsequent NMED direction to proceed from December 2020.

• 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.

• NASA submitted the *NASA White Sands Test Facility (WSTF) Five-Day Written Release Notification* on February 19, 2021. NASA followed that submittal with the *NASA White Sands Test Facility (WSTF) Fifteen-Day Corrective Action Report* on March 2, 2021. On April 6, 2021, NMED responded to that report with direction to perform the recommended investigation fieldwork. NMED indicated that the work plan did not provide sufficient detail and directed NASA to revise the work plan and submit the revised work plan no later than June 4, 2021. NASA submitted the *Request for a “Contained-in” Determination for Contaminated Media Associated with the February 16, 2021 ST-1-541 Contaminated Groundwater Release* on April 21, 2021. NMED approved the request on May 10, 2021. To respond to NMED’s April 6, 2021 direction, NASA submitted the *NASA White Sands Test Facility Monitoring Well ST-1-541 Contaminated Groundwater Release Abbreviated Investigation Work Plan* on June 3, 2021. NASA received NMED’s July 15, 2021 assessment and invoice for review of the plan and is processing the review fee payment.

• NASA submitted the *600 Area Perched Groundwater Extraction Pilot Test Interim Status Report – Project Year 8* on April 29, 2021. NASA received NMED’s June 15, 2021 assessment and invoice for review of the report and provided the $8,000 review fee on July 14, 2021.

• NASA submitted the *NASA WSTF Westbay Well Reconfiguration Work Plan for Wells PL-7, PL-8, PL-10, ST-5, and WW-3* on April 29, 2021. NASA received NMED’s June 15, 2021...
assessment and invoice for review of the work plan and provided the $10,000 review fee on July 14, 2021.