

National Aeronautics and  
Space Administration

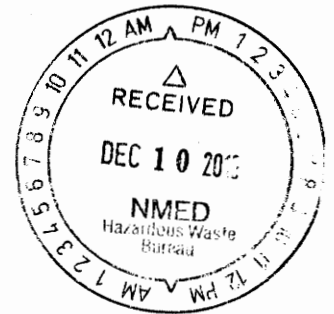
Lyndon B. Johnson Space Center  
**White Sands Test Facility**  
P.O. Box 20  
Las Cruces, NM 88004-0020



December 9, 2019

Reply to Attn of: RE-19-180

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



Subject: WSTF Monthly Environmental Activity Report for November 2019

Enclosed is the WSTF Monthly Environmental Activity Report for November 2019. 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 575-524-5460.

A handwritten signature in black ink, appearing to read "T. J. Davis".

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

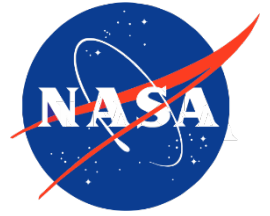
## Executive Summary

---

The following summarizes important information associated with NASA White Sands Test Facility (WSTF) environmental program activities in November 2019:

- NASA completed a shipment of TSCA waste, a shipment of bulk fuel waste, a shipment of universal waste, and three shipments of hazardous waste in November 2019.
- NASA sampled 45 of 46 groundwater monitoring wells scheduled for November 2019.
- The Plume Front Treatment System was operated on 29 of 30 days in November 2019 and treated 98.3 acre-feet of contaminated groundwater.
- The Mid-plume Interception and Treatment System was operated on 30 of 30 days in November 2019 and treated 0.980 acre-feet of contaminated groundwater and 14,341 gallons investigation-derived waste.
- NASA completed and submitted two investigation reports associated with the WSTF wastewater lagoons investigation and closure (SWMUs 2, 8, 34, and AOC 51).
- NASA continued developing the responses to NMED disapprovals of the 200/600 Area Vapor Intrusion Assessment Report, the 400 Area Closure Investigation Report, and the 600 Area BLM Off-site Soil Pile Investigation Report. NASA submitted a response to the disapproval of the 500 Area Fuel Storage Area Investigation Work Plan.
- NASA continued fieldwork and additional project planning for Phase I of the investigation of the 700 Area Landfill (SWMU 49).
- NASA continued additional corrective measures fieldwork at the three closed small arms firing ranges (SWMUs 29-31).
- NASA continued groundwater extraction in accordance with the *Targeted Mobile Remediation Process Pilot Test Work Plan*.
- NASA completed investigation fieldwork for the geophysical survey in the 600 Area, continued project planning and preparations for the proposed site-wide airborne gravity-magnetic geophysical survey, and continued addressing NMED comments on the related work plan.
- NASA resumed extraction of perched groundwater at monitoring well 600-G-138.
- NASA submitted several documents in November 2019: the annual fee payment; response to disapproval of the SMWU 47 IWP; investigation reports for two wastewater lagoons; and, the annual waste minimization plan.
- There were no reportable non-compliance issues in November 2019.

National Aeronautics and Space Administration



Monthly Environmental Activity Report  
November 2019

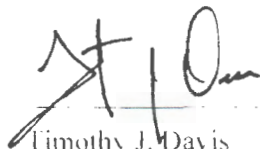
Report Deadline: December 15, 2019

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

November 2019

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 J. Davis  
Chief, Environmental Office

12/09/19

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](http://www.nasa.gov/centers/wstf)

[www.nasa.gov](http://www.nasa.gov)

### Executive Summary

The following summarizes important information associated with NASA White Sands Test Facility (WSTF) environmental program activities in November 2019:

- NASA completed a shipment of TSCA waste, a shipment of bulk fuel waste, a shipment of universal waste, and three shipments of hazardous waste in November 2019.
- NASA sampled 45 of 46 groundwater monitoring wells scheduled for November 2019.
- The Plume Front Treatment System was operated on 29 of 30 days in November 2019 and treated 98.3 acre-feet of contaminated groundwater.
- The Mid-plume Interception and Treatment System was operated on 30 of 30 days in November 2019 and treated 0.980 acre-feet of contaminated groundwater and 14,341 gallons investigation-derived waste.
- NASA completed and submitted two investigation reports associated with the WSTF wastewater lagoons investigation and closure (SWMUs 2, 8, 34, and AOC 51).
- NASA continued developing the responses to NMED disapprovals of the 200/600 Area Vapor Intrusion Assessment Report, the 400 Area Closure Investigation Report, and the 600 Area BLM Off-site Soil Pile Investigation Report. NASA submitted a response to the disapproval of the 500 Area Fuel Storage Area Investigation Work Plan.
- NASA continued fieldwork and additional project planning for Phase I of the investigation of the 700 Area Landfill (SWMU 49).
- NASA continued additional corrective measures fieldwork at the three closed small arms firing ranges (SWMUs 29-31).
- NASA continued groundwater extraction in accordance with the *Targeted Mobile Remediation Process Pilot Test Work Plan*.
- NASA completed investigation fieldwork for the geophysical survey in the 600 Area, continued project planning and preparations for the proposed site-wide airborne gravity-magnetic geophysical survey, and continued addressing NMED comments on the related work plan.
- NASA resumed extraction of perched groundwater at monitoring well 600-G-138.
- NASA submitted several documents in November 2019: the annual fee payment; response to disapproval of the SMWU 47 IWP; investigation reports for two wastewater lagoons; and, the annual waste minimization plan.
- There were no reportable non-compliance issues in November 2019.

## 1.0 Waste Management Activities

1.1 NASA completed the following waste shipments in November 2019.

Date	Shipped To	Type of Waste	No. of Containers	Amount of Waste	Disposition
11/18/19	Veolia, Phoenix, AZ	TSCA	1	58 kg	Recycle
11/18/19	Veolia, Phoenix, AZ	Universal/ Hazardous	2	3 kg of each waste type	Recycle
11/21/19	Veolia, Henderson, CO	Hazardous	21	942 kg	Incineration
11/21/19	Clean Harbors, Aragonite, UT	Bulk Fuel	1 Tanker	10,150 kg	Incineration
11/21/19	ACT, Albuquerque, NM	Hazardous	9	1,685 kg	Stored/bulked for transport to other TSDF

1.2 NMED is reviewing the *Closure Certification Report for the NASA WSTF FTU (Fuel Treatment Unit)* (August 6, 2019).

## 2.0 Environmental Monitoring

2.1 NASA performed sampling at 45 of 46 groundwater monitoring wells or zones scheduled for sampling in November 2019, in accordance with the *Groundwater Monitoring Plan*. This includes two wells (BLM-17-493 and BLM-2-630) that were sampled following installation of new dedicated low-flow sampling systems. Deviations from the planned sampling schedule are described below:

- Well 200-LV-150, scheduled for sampling in November 2019, failed to recharge adequately to collect representative groundwater samples. This well may also be a candidate for no purge sampling methods.
- Well BLM-28-515, which was reconfigured with a dedicated packer and bladder pump and scheduled for initial sampling in July 2019, cannot be sampled because of sampling system issues. See also Section 3.18.
- The Water FLUTE sampling system was removed from well 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). Routine groundwater sampling required by the *Groundwater Monitoring Plan* is not possible at this time.
- Well 200-KV-150, scheduled for sampling in December 2018, failed to recharge adequately to collect representative samples. NASA previously recommended no purge sampling for this well.

2.2 NASA performed other regulatory groundwater sampling requirements (such as those included in the Remediation System Monitoring Plan, landfill post-closure care, and discharge plans) as scheduled and as allowed by operational status. NASA did not sample well PFE-2 because the well

## NASA White Sands Test Facility

was not operational due to a previous equipment failure. During November 2019, NASA and the equipment vendor continued troubleshooting to determine the cause of pump failure.

- 2.3 NASA developed the December 2019 groundwater sampling schedule and plans to sample 34 groundwater monitoring wells or zones based on *Groundwater Monitoring Plan* requirements.

### 3.0 Corrective Actions/Investigations

#### 3.1 Plume Front Treatment System Operations

Days Operated	Average Flow Rate (gpm)	Volume Extracted/Treated (acre-feet)	Volume Injected	Volume Discharged to Grade (acre-feet)	Volume Discharged to Modu-tank (acre-feet)
29 of 30	731	98.3	98.5	1.12	0.001

Shutdown Date	Restart Date	Shutdown Status	Discussion
11/2/19	11/3/19	Planned	The system was shut down to troubleshoot communications issues.
11/4/19	11/5/19	Planned	The system was shut down to troubleshoot communications issues.
11/6/19	11/6/19	Planned	The system was shut down to troubleshoot communications issues.
11/7/19	11/7/19	Planned	The system was shut down to troubleshoot communications issues.
11/8/19	11/8/19	Planned	The system was shut down to troubleshoot communications issues.
11/12/19	11/12/19	Planned	The system was shut down to troubleshoot communications issues.
11/26/19	11/26/19	Planned	The system was shut down to install new fiber optic connections.

#### 3.2 Mid-plume Interception and Treatment System Operations

Days Operated	Average Flow Rate (gpm)	Volume of Groundwater 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)
30 of 30	8.2	0.980	1.02	14,341

Shutdown Date	Restart Date	Shutdown Status	Discussion
11/13/19	11/13/19	Planned	The system was manually shut down to support the Facilities operator with a water system repair.

## NASA White Sands Test Facility

---

Shutdown Date	Restart Date	Shutdown Status	Discussion
11/18/19	11/18/19	Planned	The system was shut down to inspect lamp connections in the UV reactor.

### 3.3 200 Area Investigation

- NASA continued developing the required response to the 12 comments in NMED's June 5, 2019 disapproval of the *200 Area and 600 Area Vapor Intrusion Assessment Report* (June 18, 2018).
- In accordance with NMED's approval of NASA's request for additional time (September 17, 2019), the response and revised report is due to NMED by December 20, 2019.

### 3.4 Test Stand 301A Release Assessment

- NMED is reviewing the *Response to Disapproval of NASA WSTF Test Stand 301A Abbreviated Investigation Report* (September 24, 2019).

### 3.5 400 Area

- NASA continued developing the required response to the 14 comments in NMED's September 16, 2019 disapproval of the revised *NASA WSTF 400 Area Closure Investigation Report* (November 29, 2018).
- The response and revised report is due to NMED by December 31, 2019.
- NMED is reviewing the *400 Area Supplemental Groundwater and Soil Vapor Monitoring Plan* (May 28, 2019) and related *300 Area Supplemental Abbreviated Drilling Work Plan* for two additional multiport soil vapor and groundwater monitoring wells in the 300 Area (May 30, 2019).

### 3.6 600 Area Perched Groundwater Extraction Pilot Test and Investigation

- On November 15, 2019, NASA deployed the replacement non-dedicated purge pump at monitoring well 600-G-138 and resumed perched groundwater extraction in accordance with the *600 Area Perched Groundwater Extraction Pilot Test Work Plan* (November 13, 2012). NASA extracted 68.5 gallons of contaminated perched groundwater in November 2019 and transported the water to the MPITS for treatment.
- On October 21, 2019, NASA and the selected geophysics subcontractor initiated fieldwork for the geophysical survey at the 600 Area Closure, consisting of seismic reflection and reflection in accordance with the *Abbreviated Investigation Work Plan for 600 Area Perched Groundwater* (December 22, 2019; revised) and NMED's *Work Scope Modification Request Abbreviated Investigation Work Plan for 600 Area Perched Groundwater* (August 23, 2019). The seismic refraction and reflection field surveys were completed on November 4, 2019. The subcontractor completed processing seismic refraction data on November 14, 2019 and seismic reflection data on November 26, 2019 and provided data for NASA review. NASA is reviewing the data for incorporation into the report due to NMED by December 31, 2019.

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

- NASA completed and submitted the required investigation reports for the 200 Area Wastewater Lagoons (SWMU 8) and the 600 Area Wastewater Lagoons (SWMU 34) on November 25, 2019 and November 26, 2019, respectively.



- NASA continued addressing three NMED comments in the October 8, 2019 Approval with Modifications of the *NASA WSTF STGT Wastewater Lagoons Liner Management Plan Addendum* (July 11, 2019). A revised Addendum is due to NMED no later than December 20, 2019. NASA continued planning for further subsurface investigation as authorized by NMED in Comment 1 of the Approval with Modifications.
  - NMED is reviewing the *NASA WSTF 100 Area Wastewater Lagoons Closure (SWMU 2) Interim Status Report* (May 29, 2019).
- 3.8 SWMU 10 (200 Area Hazardous Waste Transmission Lines)
- NMED is reviewing the *Response to Disapproval of the NASA WSTF 200 Area HWTL (SWMU 10) Investigation Report* (July 30, 2019).
- 3.9 SWMU 16 (600 Area BLM Off-site Soil Pile)
- NASA continued developing the required response to NMED's October 8, 2019 Disapproval of the *Response to Third Disapproval of NASA WSTF SWMU 16 (600 Area BLM Off-Site Soil Pile) Investigation Report* (December 21, 2018). NMED directed NASA to address eight comments, revise the investigation report, and submit the response to comments and the revised investigation report no later than December 31, 2019.
- 3.10 SWMU 19 (800 Area Below Grade Storage Tank)
- NMED is reviewing the *Response to Disapproval of Revised SWMU 19 (800 Area Below Grade Storage Tank) Investigation Report* (June 27, 2019).
- 3.11 SWMUs 21-27 (Septic Tanks)
- NMED is reviewing the *Response to Disapproval of NASA WSTF Septic Tanks (SWMUs 21-27) Investigation Report* (July 23, 2019).
- 3.12 SWMUs 29-31 (Small Arms Firing Ranges)
- NASA continued additional fieldwork required to respond to NMED's February 21, 2019, *Second Disapproval of Small Arms Firing Ranges (SWMUs 29-31) Remedy Completion Report* (March 30, 2018).
  - As provided for in the *NASA WSTF STGT Wastewater Lagoons Liner Management Plan Addendum*, NASA initiated discrete soil sampling and additional corrective measures fieldwork at the STGT firing range (SWMU 29). NASA manually collected ammunition scraps and fragments from previously unsearched portions of the range that are now accessible. Manual recovery was completed on November 18, 2019. NASA then collected discrete soil samples from all sampling grid cells at the STGT firing range and shipped samples to the off-site laboratory for analysis.
  - During discrete soil sampling at the WB-2 firing range (SWMU 31) in October 2019, NASA observed several residual ammunition fragments near the impact berm where soil was dug back by heavy equipment during soil excavation. NASA is evaluating these fragments to determine if manual recovery or additional soil excavation is required. Additional field screening or discrete sampling may be required to confirm removal.
  - On October 28, 2019, NASA submitted the *Request for Extension of Time for NASA WSTF Small Arms Firing Ranges (SWMUs 29 – 31) Response to Second Disapproval Remedy Completion Report*. NMED approved the request on November 13, 2019, extending the due date for submittal of the disapproval response and revised remedy completion report from December 31, 2019 to February 28, 2020.

3.13 SWMU 47 (500 Area Fuel Storage)

- NASA developed responses to the 14 comments in NMED’s August 9, 2019 disapproval the *500 Area Fuel Storage (SWMU 47) Investigation Work Plan* (September 26, 2018) and submitted the *Response to Disapproval of 500 Area Fuel Storage Area (SWMU 47) Investigation Work Plan* on November 21, 2019.

3.14 SWMU 49 (700 Area Landfill)

- NASA systematically deployed 159 passive soil vapor samplers at within previously installed conduits, landfill methane monitoring wells, and groundwater monitoring wells (investigation Phase 1A) as described in the *SWMU 49 (700 Area Landfill) Phase I Investigation Work Plan* (August 8, 2019; revised). The passive soil samplers are expected to reside within their sampling locations for 14 days, after which they will be removed and shipped to the off-site laboratory for analysis.
- NASA continued working on several additional procurements for other geophysical investigation components (electromagnetic induction, ground penetrating radar, magnetic gradient, and passive seismic) of the NMED-approved landfill investigation. NASA combined the requirements for electromagnetic induction and magnetic gradient surveys and is identifying potential vendors prior to solicitation of services.

3.15 SWMU 50 (TDRSS Diesel Release)

- NMED is reviewing the *First Tracking and Data Relay Satellite System (TDRSS) Diesel Release (SWMU 50) Investigation Report* (March 14, 2019).

3.16 Augmented Soil Background Study

- NMED is reviewing the *Response to Disapproval of Augmented Soil Background Study Abbreviated Investigation Work Plan* (June 24, 2019).

3.17 Monitoring Well Installation and Decommissioning

- NASA awaits delivery of the groundwater sampling systems for installation in new groundwater monitoring wells BLM-42 and PL-12 as described in the *Work Plan for Abandonment of NASA WSTF Monitoring Well BLM-37 and Replacement with Monitoring Well BLM-42* (January 30, 2018) and the *NASA WSTF Drilling Work Plan for Groundwater Monitoring Well PL-12* (December 27, 2017). The off-site vendor initiated fabrication of the sampling systems and expects to deliver them to WSTF in December 2019. Well completion reports are due to NMED no later than February 28, 2020.
- NASA continued managing investigation derived waste generated during the installation and development of new monitoring well PL-12 in accordance with the approved work plan and requests for “contained-in” determinations, approved by NMED on October 8, October 22, and October 22, 2019. During November 2019, NASA continued removing free liquids from the environmental media to facilitate disposal at an appropriate waste disposal facility.
- NMED is reviewing the *Work Plan for Abandonment of NASA WSTF Well BLM-30 and Replacement with Monitoring Well BLM-43* (August 29, 2019), which was submitted following NASA’s determination that the reconfiguration of previous Westbay monitoring well BLM-30 was not feasible.

3.18 Westbay Monitoring Well Reconfiguration

- Using a hydraulic hoist (cherry picker), NASA attempted to recover the dedicated sampling system from well BLM-28, which had become lodged in the borehole after a portion of the borehole is believed to have collapsed on top of the system. NASA applied gradually increasing

upward pressure on the steel cable supporting the sampling system. The complete sampling system appears to be irrecoverable, as only the steel support cable, dedicated bladder pump, and tubing were removed from the borehole. The inflatable packer and pump intake remained lodged in the borehole. NASA is evaluating further options for use of the borehole.

### 3.19 Targeted Mobile Remediation Process (TMRP)

- During November 2019, NASA continued TMRP fieldwork in accordance with the *Targeted Mobile Remediation Process Pilot Test Work Plan* to NMED (April 26, 2019; updated). NASA completed Episode 2 at monitoring well ST-1-541 on October 31, 2019 and relocated the pumping system to monitoring well ST-1-473. NASA initiated pumping at the well on November 6, 2019 and extracted 19,201 gallons of contaminated groundwater during the month. The extracted groundwater was transported to the MPITS in accordance with the approved work plan and Discharge Plan DP-1255.
- NASA continued the procurement of two additional mobile pumping systems.

### 3.20 Groundwater Data Representativeness Evaluation

- NASA continued reviewing chemical analytical data from groundwater samples collected at monitoring well WW-4 in accordance with the *Abbreviated Investigation Work Plan Groundwater Data Representativeness Phase 1: Water FLUTe Well Evaluation* (July 30, 2019; revised).
- The investigation report is due to NMED no later than February 28, 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 November 2019

- NASA submitted the *NASA JSC WSTF (White Sands Test Facility) 2019 Annual Fee Payment* on November 4, 2019.
- NASA submitted the *Response to Disapproval of 500 Area Fuel Storage Area (SWMU 47) Investigation Work Plan* on November 21, 2019.
- NASA submitted the *NASA White Sands Test Facility (WSTF) 200 Area Wastewater Lagoons Closure (SWMU 8) Investigation Report* on November 25, 2019.
- NASA submitted the *NASA White Sands Test Facility (WSTF) 2019 Waste Minimization Program Certification and Plan* on November 26, 2019.
- NASA submitted the *NASA White Sands Test Facility (WSTF) 600 Area Wastewater Lagoons Closure (SWMU 34) Investigation Report* on November 26, 2019.

5.2 Pertinent documents submitted to other NMED bureaus or entities in November 2019

- NASA submitted the *NASA JSC White Sands Test Facility – FF Asbestos Waiver Questionnaire for 2020-2022 Compliance Monitoring Period* to the NMED Drinking Water Bureau on November 12, 2019.
- NASA submitted the *Start of Construction of Water System Improvements – NASA JSC White Sands Test Facility NM3590607* to the NMED Drinking Water Bureau on November 14, 2019.
- NASA submitted the *Notice of Intent to Discharge Drinking Water at Three Locations Along a Drinking Water Transmission Pipeline Installation at the NASA-JSC White Sands Test Facility (WSTF)* to the NMED Ground Water Quality Bureau on November 25, 2019.

5.3 Status of documents previously submitted to the NMED Hazardous Waste Bureau for which activity was recorded in November 2019

- NASA submitted the *Fifteen-Day Notification of a Newly Identified SWMU within the WSTF 500 Area* on October 16, 2019. NMED responded on November 13, 2019 with direction for NASA to provide additional information on the new identified SWMU in a Release Assessment Report, which must be submitted to NMED no later than May 29, 2019.
- NASA submitted the *NASA WSTF Small Arms Firing Ranges (SWMUs 29-31) Remedy Completion Report* on March 30, 2017. NASA received NMED's April 28, 2017 fee assessment for review of the report and submitted the \$6,500 review fee to NMED on May 31, 2017. NASA received NMED's September 7, 2017 disapproval of the report. NASA submitted the *Request for Extension of Time for Response to Small Arms Firing Ranges (SWMUs 29-31)* on November 8, 2017. NMED approved the request for extension on December 1, 2017, extending the due date from December 29, 2017 to March 30, 2018. NASA submitted the *Response to Disapproval Small Arms Firing Ranges (SWMUs 29-31) Remedy Completion Report* on March 30, 2018. NMED disapproved the report on February 21, 2019 and directed NASA to address seven NMED comments and submit a revised report no later than December 31, 2019. NASA submitted the *Request for Extension of Time for NASA WSTF Small Arms Firing Ranges (SWMUs 29 – 31) Response to Second Disapproval Remedy Completion Report* on October 28, 2019. NMED approved the request on November 13, 2019, extending the due date for the revised report from December 31, 2019 to February 28, 2019.
- NASA submitted the *500 Area Fuel Storage (SWMU 47) Investigation Work Plan* on September 26, 2018. NASA received NMED's October 15, 2018 fee assessment for review of the work plan on December 12, 2018 and provided the \$10,000 review fee to NMED on December 19, 2018. NMED disapproved the work plan on August 8, 2019 and directed NASA to address 14 comments and submit a revised work plan no later than November 25, 2019. NASA submitted the *Response to Disapproval of 500 Area Fuel Storage Area (SWMU 47) Investigation Work Plan* on November 21, 2019.
- NASA submitted the *200 Area Wastewater Lagoons Liner Management Plan Addendum* on October 4, 2018. NASA received NMED's February 28, 2019 comments for the *200 Area Wastewater Lagoons Liner Management Plan Addendum* and incorporated the comments into the November 25, 2019 *NASA White Sands Test Facility (WSTF) 200 Area Wastewater Lagoons Closure (SWMU 8) Investigation Report* in lieu of the status report. In the IR, NASA provided a full investigation report including results of all field investigation and analytical data. NASA elected to submit the risk assessment in accordance with Permit Attachment 20, separately, following NMED approval of investigative data provided in the IR.
- NASA submitted the *600 Area Wastewater Lagoons Liner Management Plan Addendum* on October 30, 2018. NASA received NMED's February 25, 2019 comments for the *600 Area*

*Wastewater Lagoons Liner Management Plan Addendum* and incorporated the comments into the November 26, 2019 *NASA White Sands Test Facility (WSTF) 600 Area Wastewater Lagoons Closure (SWMU 34) Investigation Report* in lieu of the status report. In the IR, NASA provided a full investigation report including results of all field investigation and analytical data. NASA elected to submit the risk assessment in accordance with Permit Attachment 20, separately, following NMED approval of investigative data provided in the IR.