National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
White Sands Test Facility
P.O. Box 20
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November 26, 2024

Reply to Attn of: RE-24-175

Mr. JohnDavid Nance, 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) 2024 Waste Minimization Program Certification and Plan

Through this submittal, NASA is certifying that a program is in place to reduce the volume and toxicity of hazardous waste generated at WSTF to the degree determined to be economically practicable. NASA also certifies that the treatment, storage, and disposal methods of waste generated at WSTF minimize present and future threats to human health and the environment. This certification is provided in accordance with 40 CFR 264.73(b)(9) and Section 2.5.8 of the WSTF RCRA Permit (No. NM8800019434). The enclosed report was prepared for federal fiscal year 2024 (October 1, 2023 – September 30, 2024) in accordance with Permit requirements. Enclosure 1 provides a bound copy of the WSTF 2024 Waste Minimization Plan. Enclosure 2 provides an electronic copy of the document on CD-ROM.

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.

ANTONETTE Doherty
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For: Timothy J. Davis
Chief, Environmental Office

2 Enclosures

cc:
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National Aeronautics and Space Administration



Hazardous and Solid Waste Amendments (HSWA)
Waste Minimization Plan

October 1, 2023 to September 30, 2024

NM8800019434

NASA Johnson Space Center White Sands Test Facility

Hazardous and Solid Waste Amendments (HSWA)
Waste Minimization Plan

October 1, 2023 to September 30, 2024

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ANTONETTE Doherty

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Date

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List of Acronyms and Abbreviations

B	Building
CSO	Center Sustainability Officer
DWB	NMED Drinking Water Bureau
EMP	Environmental Management Program
EMS	ISO 14001 Environmental Management System
EO	Executive Order
EPA	Environmental Protection Agency
Freon 11	Trichlorofluoromethane
Freon 113	1,1,2-Trichloro-1,2,2-trifluoroethane
FY	Fiscal Year
HFE	Hydrofluoroether
HSWA	Hazardous and Solid Waste Amendments
ISO	International Organization for Standardization
kg	Kilogram(s)
LED	Light-emitting Diode
MMH	Monomethylhydrazine
NASA	National Aeronautics and Space Administration
NETS	NASA Environmental Tracking System
NMED	New Mexico Environment Department
NMRC	New Mexico Recycling Coalition
RCRA	Resource Conservation and Recovery Act
ReMaP	Reuse Market Place
S2WG	Site-wide Sustainability Working Group
SCSWA	South Central Solid Waste Authority
WSTF	White Sands Test Facility

1.0 Introduction

The New Mexico Environment Department (NMED) Resource Conservation and Recovery Act (RCRA) Permit (Permit) was issued to the National Aeronautics and Space Administration (NASA) Johnson Space Center for White Sands Test Facility (WSTF) on April 27, 2023. The Permit requires that WSTF continue the current waste minimization program to reduce the volume and toxicity of hazardous wastes generated by the facility's operation to the degree determined by NASA to be economically practicable.

2.0 Objectives and Scope

The Permit requires that NASA submit a copy of the annual certified statement regarding the WSTF waste minimization program to NMED by December 1st for the previous 12-month period ending September 30. The reporting period included in this document is October 1, 2023 through September 30, 2024, or the 2024 NASA fiscal year (FY). Source reduction, recycling, and planning activities for this reporting period are addressed below. Each Permit requirement and NASA response is listed below.

3.0 Waste Minimization Program Plan Components (Permit-specified)

3.1 Policies and Programs

The Permit specifies inclusion of the following in the Waste Minimization Program Plan: *Any written policy or statement that outlines goals, objectives, and methods for source reduction and recycling of hazardous waste at the Facility.* This section includes descriptions of existing policies and ongoing programs that support waste minimization at WSTF.

3.1.1 Environmental Management System

The International Organization for Standardization (ISO) 14001:2015 Environmental Management System (EMS) is incorporated into the WSTF Integrated Management System. NASA uses EMS procedures to evaluate environmental aspects of WSTF activities, products, and services to determine their environmental impacts. Stakeholders annually rank environmental impacts of each aspect and identify those with significant impacts as "significant aspects." Once the significant aspects are identified, NASA establishes an Environmental Management Program (EMP) for each significant aspect. Each EMP outlines objectives and targets developed to lessen the environmental impact and reduce the consumption of natural resources at WSTF. Actions taken to meet EMP objectives and targets are specified by tasks that may be directed toward regulatory compliance, pollution prevention, waste reduction and diversion, and resource conservation (materials, energy, water, and fuel). If warranted, EMPs may be carried over two or more years.

The FY 2024 significant aspects and associated EMPs were:

- Drinking Water System Improvements
- Resource Conservation Measures
- Environmental Improvement and Outreach Initiatives

Objectives and accomplishments for each EMP are discussed below.

3.1.1.1 Drinking Water System Improvements

The objective of this EMP is to maintain the quality of WSTF drinking water by upgrading and improving the overall system components. The following steps were completed in FY 2024.

- NASA received the Certificate of Project Completion from the NMED Drinking Water Bureau (DWB) for installing totalizing meters and water lines in the 300 and 400 Areas on June 4, 2024. Potable water tank inspection was certified in January 2024.
- NASA completed final construction for the Gardner Springs Arroyo Waterline Project to connect the 200 Area to the 100 Area waterlines in March 2024. NASA received the Certificate of Project Completion from the NMED DWB on September 3, 2024.
- NASA installed a water loop with two fire hydrants around Building (B)650 to address fire suppression.

3.1.1.2 Resource Conservation Measures

The objective of this EMP is to reduce WSTF energy and water consumption. FY 2024 accomplishment activities are listed below.

- Completed installation of three electric vehicle charging stations with two ports at each station.
- Replaced transformers at B104.
- Replaced generators in 300 Area and B101 uninterruptible power supply.
- Continuing heating, ventilation, and air conditioning system upgrades at Building 111.
- Conduit runs and existing wiring runs were repurposed as value engineering for Test Cell 843/844, saving approximately $10K.
- Completed installation of oil and sand separator for fleet vehicles in early 2024.
- New low-voltage flowmeter installed at Mid-plume Infiltration and Treatment System, saving energy from previous high-voltage flowmeter.
- Removed underground storage tanks: one unleaded gasoline and one E-85 fuel. This results in cost savings on labor for maintenance and inspection and minimizes the future risk of petroleum releases to the environment.
- Purchased additional panels for White Sands photovoltaic system.
- Replaced aged variable frequency drive unit at B200, saving energy.
- Reused power poles.
- Monomethylhydrazine (MMH) Distillation Project completed and certified. This unit distills off-spec MMH so that it meets Department of Defense specifications.
- Lighting improvements, switching to light-emitting diode (LED) lamps at B107, B328, and B400.
- Energy and water usage was down 14% and 23%, respectively, from last year.
- Completed solar-powered lighting in parking lots near B463 and B108.
- Completed third-party energy and water physical inspection and evaluation of 35 major buildings, looking for conservation opportunities. The next evaluation will be conducted in four years.

- Future Power Microgrid for Resilience project to power the potable water system at the 600 Area feeder using emissions-free power microgrid is in complete.
- Natural gas distribution upgrade and metering design is complete. This project will monitor natural gas usage and replace 60-year-old gas line, which will increase safety and reliability. Design is expected to be completed in early FY 2025.

3.1.1.3 Environmental Improvement and Outreach Initiatives

This EMP emphasizes employee awareness and outreach initiatives for continual improvement in pollution prevention, resource conservation and reuse for waste reduction and environmental stewardship. The Site-wide Sustainability Working Group (S2WG) is a forum for WSTF employees across all departments to identify resource conservation and waste minimization opportunities to further reduce WSTF's environmental impact. Management approved the continuation of the group in FY 2024. A list of S2WG accomplishments and initiatives is below:

- The S2WG supports WSTF Stakeholders to raise awareness for continual improvement toward NASA Sustainability Goals.
- The S2WG connected with South Central Solid Waste Authority, Las Cruces' recycling authority, on site-wide recycling efforts during Health and Safety Day and visited the facility to better understand the recycling process.
- S2WG members are now part of weekly safety walkarounds in areas around WSTF. This inclusion not only allows members to see actual or lacking recycling efforts but validates the importance of sustainability efforts to employees.
- The S2WG vets and reviews Green Project Proposals for funding consideration. The approved projects are funded by recycling funds and must meet criteria outlined in Public Law 103-329 Section 608. Project categories include sustainable acquisition, waste reduction and prevention, recycling programs, hazardous waste management, and pollution prevention.

3.1.2 WSTF Sustainability Program

The site Environmental Department administers the WSTF Sustainability Program in accordance with federal laws, executive orders, and NASA procedural requirements. Recycling and waste minimization, pollution prevention, sustainable acquisition, and resource conservation initiatives fall under the umbrella of sustainability. Sustainability Program Personnel manage the EMP, *Environmental Improvement and Outreach Initiatives,* and facilitate S2WG meetings.

Goals for federal agencies are outlined in the 2021 Executive Order (EO) 14057, *Catalyzing clean Energy Industries and Jobs Through Federal Sustainability*. EO goals are based on statutory requirements in the following areas: carbon pollution-free electricity, zero emission vehicle fleet, net-zero emissions buildings and installations, waste and pollution reduction, sustainable procurement, climate- and Sustainability-focused workforce, incorporating environmental justice, and accelerating progress through partnerships. Federal agencies are required to track and report progress and performance measures toward the goals in the EO.

The WSTF Environmental Department maintains records of sustainable actions categorized according to NASA sustainability goals. As applicable, metrics from each FY are entered into the NASA Environmental Tracking System (NETS). NETS information is gathered for required NASA-wide reporting to the Office of Management and Budget and the Council on Environmental Quality.

3.2 Training and Incentive Programs

The Permit specifies that the following be included in the Waste Minimization Program Plan: *Any employee training or incentive programs designed to identify and implement source reduction and recycling opportunities.*

EMS awareness training is included in the environmental briefing section of the new hire orientation. The training content emphasizes sustainability, pollution prevention, continuous improvement, and compliance with environmental laws. All WSTF employees are required to attend annual Environmental Compliance Awareness Training which includes specific content related to waste source reduction and recycling program elements. Annual sustainable acquisition training specific to the WSTF procurement systems is mandatory for all employees that order goods and services for the site.

WSTF Sustainability Program personnel and the S2WG determine content and maintain the site-wide awareness campaign to strengthen the sustainability culture at the site. Information is circulated to site employees through various forms of communication, such as WSTF Today emails, the WSTF LED entry sign, and articles posted in the two WSTF newsletters; the bi-weekly "Porcelain Press" and the monthly "What's Going On at WSTF." Topics such as new sustainability initiatives, environmental awareness, process reminders, site accomplishments, and employee awards for sustainable actions are shared using the site newsletters, emails, sign postings, and WSTF internal webpage. Earth Day (April 22) America Recycles Day (November 15) are celebrated with various activities, awareness updates, and site-wide events.

3.3 Source Reduction and Recycling Measures

The Permit specifies inclusion of the following in the Waste Minimization Program Plan: *Any source reduction and/or recycling measures implemented in the last five years or planned for the near future.*

The Sustainability Program software application is used by WSTF employees to access sustainable acquisition references and metrics, recycling metrics, sustainable actions, and resource conservation tools. This application also provides resources for identifying less toxic and sustainable products during the procurement process. Identifying and procuring non-hazardous replacement products reduces the amount of toxic chemical products on-site. The application is also used to collect, share, and compile data for annual sustainability reporting requirements.

NASA centers are directed to purchase environmentally preferable products and services to reduce negative environmental impacts of resource consumption. Federal requirements for environmentally responsible products (and services) are listed on the Green Products Compilation website. This site lists 27 product categories and specifies biobased, less toxic, energy saving, water conserving, recycled/recovered content, environmentally preferable, and non-ozone depleting requirements for hundreds of products. The General Services Administration maintains and updates the database continually. Services with green requirements and guidance for contract language is available. The WSTF Sustainable Acquisition Program requires that requestors identify any green requirements prior to submitting procurement requests for products or services. The WSTF Environmental, Procurement, and Logistics Departments make an effort to replace conventional products with environmentally preferable products wherever feasible.

Sustainable acquisition waivers are used to document the justification for continued use of conventional products when specific green products do not meet project specifications or exceed budget constraints.

WSTF's Reuse Market Place (ReMaP) is an award-winning application that was developed as a tool for employees to share excess resources across WSTF. If resources, including office supplies, furniture, consumables, and chemicals, cannot be used by the department that purchased them, the commodity can be posted in ReMaP for other departments to claim for use on-site. Employees are encouraged to check the ReMaP inventory prior to placing orders for new materials.

Single-stream recycling is included in the solid waste contract for WSTF. Single-stream materials include: office paper, shiny paper (catalogs and magazines), newspaper, paper board, paper bags, books, junk mail, clean plastic containers numbered 1-7, and tin and aluminum cans. One or more recycling stations are located inside each building and 8 cubic yard single-stream recycling containers are located outside buildings in each area. Custodians empty recycling bins in the buildings regularly and transfer the materials to exterior recycling containers. The solid waste contractor empties these containers monthly and hauls the materials to the county's recycling facility. A large roll-off container for accumulating cardboard at the warehouse is also serviced as needed.

The WSTF solid waste and recycling contract also includes construction and demolition debris recycling for wood. Due to fires at the wood recycling facility in 2024, WSTF will seek an alternative recycling avenue for pallet wood. WSTF's Maintenance and Operations Department transports green waste to the city's yard waste facility for composting. Concrete is hauled to the same facility where it is used for clean fill.

Every effort is made to divert materials from the landfill through reuse, repurposing, or recycling. In addition to traditional recyclables, the Sustainability Program personnel work to divert usable excessed material to other federal agencies, schools, and non-profit agencies through a partnership with the South Central Solid Waste Authority (SCSWA) which manages the Doña Ana County Recycling Program.

In FY 2024, notable recycling efforts included the following: recycling 141 pounds of glass, recycling 210 pounds of high-density polyethylene and nylon shreds and cylinder ends through a New Mexico Recycling Coalition (NMRC) partner, sending plastic film through Albertson's grocery stores for the NexTrex program to make 95% recycled content decking, and sending 100 pounds of Hewlett Packard and Samsung printer cartridges back to the manufacturer for recycling.

Sustainability Program personnel work with the WSTF Logistics Department to determine the best method of disposition for site materials to achieve landfill diversion. The average WSTF recycling/waste diversion rate since over the last three years is approximately 77%. WSTF tracks all recycling and solid waste diversion metrics for annual reporting purposes. Specific hazardous waste source reduction and recycling measures for the current reporting period are presented in Appendix A. Approximately 1,400 kilograms (kg) of potentially hazardous waste was recycled as universal waste.

3.4 Operating Costs

The Permit specifies that the following information be included in the Waste Minimization Program Plan: *An itemized list of the dollar amounts of capital expenditures (plant and equipment) and operating costs devoted to source reduction and recycling of hazardous waste.*

Capital expenditures and operating costs associated with source reduction and recycling are not specifically tracked, however, activities initiated or continuing during the reporting period reflect significant investments and cost avoidances. Approximately $43,500 in service and labor were spent in FY 2024 recycling routine hazardous waste. As part of the WSTF property management process, approximately 193 tons (385,650 pounds) of scrap metal were recycled in FY 2024. NASA also continued to fund the Sustainability Program as part of the overall Environmental Department compliance

budget. Approximately $185,000 of the total WSTF Environmental Department compliance budget was devoted to the Sustainability Program during the reporting period.

3.5 Limiting Factors

The Permit specifies inclusion of the following in the Waste Minimization Program Plan: *Factors that have prevented implementation of source reduction and/or recycling.*

NASA tests and evaluates spacecraft materials, components, and propulsion systems to enable safe space exploration and utilization. Federal and industry funding supports NASA test programs often on a program-by-program basis. One-time, short-term, and inconsistent testing schedules generate dynamic and variable waste streams that are difficult to manage for source reduction and recycling. Customer/test requirements, military specifications, original equipment manufacturer specifications, and program timelines limit the use and feasibility of recycling test materials. Future NASA programs, National Defense System rocket engine testing, commercial industry contracts, missile demilitarization, and decommissioning and decontamination of antiquated aerospace equipment will increase customer-testing requirements and limit the feasibility of source reduction. However, the WSTF Environmental Department works closely with the Testing and Laboratory Departments to identify and implement any opportunities for source reduction and recycling.

3.6 Information Sources

The Permit specifies inclusion of the following in the Waste Minimization Program Plan: *Sources of information on source reduction and/or recycling received at the facility (e.g., local government, trade associations, suppliers, etc.).*

The NASA Principal Center for Regulatory Risk Analysis and Communication reviews the federal register and issues weekly emails with specific information pertaining to changing regulations. The reviews compel WSTF Environmental Department personnel to develop white papers or perform regulatory reviews to evaluate impacts to WSTF operations.

Sustainability Program personnel participate in the NASA Center Sustainability Officer's (CSO) quarterly Teams meetings and virtual workshops sponsored by the CSO community. These forums facilitate the sharing of information about recycling, sustainability, and pollution prevention strategies between NASA centers.

WSTF Sustainability Program personnel work with the SCSWA to align the WSTF recycling program with similar efforts in the community. The WSTF Environmental Department is a member of the NMRC which sponsors a website, training opportunities, and conferences on waste reduction and recycling opportunities in New Mexico. Two Sustainability Program personnel are certified both as Recycling Facility Operators by the NMRC and the New Mexico Solid Waste Bureau and as national Sustainable Resource Management Certified Professionals through the NMRC in association with Pennsylvania State Altoona.

WSTF personnel also use online resources, including webinars, that continually offer information related to source reduction and recycling. Online resources include the NMED, the NMRC, Keep America Beautiful (America Recycles Day Initiative), the Environmental Protection Agency (EPA), the Office of Federal Sustainability and the Council for Environmental Quality, the United States Department of Agriculture, the General Services Administration, other NASA centers, other federal agencies and organizations from the recycling and waste management industry.

3.7 Additional Waste Minimization Efforts

The Permit specifies inclusion of the following in the Waste Minimization Program Plan: *An investigation of additional waste minimization efforts which could be implemented at the facility. This investigation shall analyze the potential for reducing the quantity and toxicity of each waste stream through production reformulation, recycling, and all other appropriate means. The analysis shall include an assessment of the technical feasibility, cost, and potential waste reduction for each option.*

The Permit requires frequent review and characterization of waste streams. These activities have promoted a closer look at waste generation and minimization at WSTF, modification of the hazardous waste generation process, improvement of waste determinations, and generator attention to waste stream constituents and concentrations.

WSTF Sustainability Program personnel have actively supported and encouraged the replacement of toxic products used at WSTF. Since FY 2020, WSTF employees tested biobased lubricants, cleaners and polishes, detergents, solvents and degreasers, motor oil, a gun cleaner, and ear plugs. As a result, toxic chemicals were replaced with biobased, biodegradable, or Safer Choice products.

In FY 2024, reuse savings of previously purchased and unwanted items totaled approximately $26,000. These items consisted of office supplies and furniture, computer equipment, and boiler panel board.

3.8 Hazardous Waste Matrix

The Permit specifies inclusion of the following in the Waste Minimization Program Plan: *The Permittee shall submit a flow chart or matrix detailing all hazardous wastes it produces by quantity, type, and building/area.*

The Hazardous Waste Matrix (Appendix B) identifies the FY 2024 WSTF hazardous waste streams by waste name, WSTF area designation, accumulation site identification number, waste code, WSTF Individual Waste Profile Sheet number, and quantity. The table is sorted by WSTF area first, accumulation site identification number second, and waste code third.

3.9 Limitations to Waste Reduction

The Permit specifies inclusion of the following in the Waste Minimization Program Plan: *The Permittee shall demonstrate the need to use those processes which produce a particular hazardous waste due to a lack of alternative processes or available technology that would produce less hazardous waste.*

WSTF test programs support the federal and commercial aerospace industry. The wastes generated in association with this testing are derived from the following processes: engine firings; developmental research; equipment cleaning/repair; missile demilitarization; aerospace equipment decommissioning and decontamination; facility construction/maintenance; laboratory work and analyses; and computer and electrical support. The products used and resultant wastes are often dependent upon contractor test requirements, military specifications, program timelines, and additional conditions mandated by contracts.

Appendix A
Source Reduction and Recycling Tables

Table A-1 WSTF Hazardous Waste Source Reduction (Oct. 1, 2023 – Sept. 30, 2024)

YEAR	SOURCE REDUCTION EFFORT	NET REDUCTION
Since 2010	Contamination control continued emptying cleaning tanks with corrosive solutions (Oakite®[1]) on a yearly schedule, rather than weekly (as previously done), with tank recharge as needed.	Approximately 360 gallons annually
Since 2010	Molecular Desorption Analysis Lab replaced organic solvents with hydrofluoroether (HFE) 7100 for the cleaning of collector plate used in Volatile Condensable Materials process.	3 to 5 gallons of hazardous waste organics (spent toluene, chloroform, and ethanol) annually. Also 80 to 90% of the HFE 7100 goes to Component Services for cleanup and reuse.
Since 2019	NASA continued to use a portable molecular sieve during the reporting period to reclaim off-specification oxidizer. Reclaiming off-specification oxidizer reduces the need to purchase new product and reduces the amount of acute hazardous waste that would have been generated from discarding the off-specification oxidizer.	3,000 gallons
Since 2011	Working to meet federal requirements for sustainable acquisition: https://sftool.gov/greenprocurement. Some examples include 1) Replacing ozone depleting substances with products that meet the Significant New Alternatives Policy: (http://www.epa.gov/ozone/snap/lists/index.html), 2) Replace toxic products with less toxic (Safer Choice; https://www.epa.gov/saferchoice/products) alternatives, 3) Substitute cleaning products, lubricants, and other materials with USDA Biopreferred alternatives.	NA

[1] Oakite is a registered trademark of Chemetall US, Inc.

Table A-2 WSTF Waste Recycling for October 1, 2023 – September 30, 2024

HAZARDOUS AND NON-HAZARDOUS WASTE RECYCLED	NET REDUCTION
Used Antifreeze, recycled	113 kg
Used Oil, recycled	2,940 kg
Used Transformer Oil, recycled	0 kg
Used Oil Filters, recycled	48 kg
Non-PCB Ballasts	271 kg
The following materials were collected and shipped off site for recycling as universal waste rather than disposed of as hazardous waste.	
Lithium and lithium-ion batteries	43 kg
Lead acid batteries	1,342 kg
Spent dry cell batteries	190 kg
Spent fluorescent lamps (including odd shaped)	189 kg
Spent UV mercury containing lamps	74 kg
Mercury-Containing Equipment	1 kg

Table A-3 WSTF Hazardous Waste Source Reduction/Recycling Future Plans

TIME FRAME	PLANNED SOURCE REDUCTION/RECYCLING	NET REDUCTION
Ongoing	The NASA Plume Front Treatment System and Mid-plume Interception and Treatment System continue to treat groundwater contaminated with trichloroethene, tetrachloroethene, 1,1,2-Trichloro-1,2,2-trifluoroethane (Freon® 113), Trichlorofluoromethane (Freon 11), and N-nitrosodimethylamine.	> 99.9 %
Ongoing	NASA continues to use a portable molecular sieve during the reporting period to reclaim off-specification oxidizer. Reclaiming off-specification reduces the need to purchase new product and reduces the amount of hazardous waste that would have been generated from discarding the off-specification oxidizer.	2,000 to 3,000 gallons
Ongoing	WSTF continues to provide integral support for government and private space efforts. WSTF operations are a critical component of NASA's core ability to test rocket engines at simulated altitudes. The WSTF Propulsion Test Office will continue to test systems that use methanol, liquid oxygen, and other propellants instead of hydrazine(s) and nitrogen tetroxide to reduce the generation of highly toxic hazardous wastes.	TBD
Ongoing	Unused commercial chemical products are added to ReMaP to increase reuse opportunities for these items at WSTF. This activity will reduce the amount of new hazardous materials brought onto WSTF and reduce the amount of hazardous waste that would have been generated through disposal of these products if they were not reused. New process. Data are under evaluation.	TBD
In progress	NASA personnel have chosen the technology and are cold flow testing a distillation system that has the capability of reclaiming off-specification hydrazine fuel. Using reclaimed hydrazine fuel from this distillation system will reduce the need to purchase new product and will reduce the need to dispose of off-specification fuel as hazardous waste. The fuel from this project is planned for use in 2025.	TBD.
Ongoing	1.64-MW Photovoltaic System is complete and online This system is reducing the amounts of natural resources and emissions required to provide electricity to WSTF. Additional 624 kW solar panels are being purchased to increase current capacity to 100%.	TBD
In progress	Battery safety and dynamic control features project is 90% complete. This project was awarded Department of Energy AFFECT funding, which will offset 100% of its electrical use by the water system adding a 2-MW/hour battery energy storage system to the current site system and a dynamic output control system for the battery.	100%

Table A-3 WSTF Hazardous Waste Source Reduction/Recycling Future Plans

TIME FRAME	PLANNED SOURCE REDUCTION/RECYCLING	NET REDUCTION
In Progress	The battery energy storage system is ready for installation, after transformer is built. Energy savings expected by end of FY 2025.	TBD
In progress	The Government Services Administration has signed a memorandum of understanding with El Paso Electric that will allow net metering at WSTF. An additional 300 acres of solar panels can be installed, which will bring WSTF close to net zero energy. WSTF will be able to produce all the energy it consumes.	TBD

Appendix B
Hazardous Waste Matrix

Waste Stream	Area	Area Assigned	WIWPS	EPA Codes	Weight (kg)
Unused Commercial Chemical Products	100	1003	102023121-99, 20202434-99	D001	41
Aerosol Cans, Empty	100	1003	1020244-99	D001, D003, D005	20
Waste Paint Related Materials	100	1003	102023120-99	D001, D005, D018, D035	4
Passivation Solution, Waste	100	1003	20202410-99, 2020246-99, 20202412-99, 20202411-99	D002, D003, D007	50
Mercury Contaminated Debris	100	1003	10202468-99	D004, D005, D006, D007, D008, D009, D010, D011, P082	1
Debris	100	1003	10202377-99	D005, D018	35
Contaminated Debris	100	1003	8020242-99, 10202444-99, 10202422-99, 10202462-99	D006, D007, D008, D011, D018, D035	115
Mercury Contaminated Debris	100	1003	10202420-99	D009	3
Contaminated Debris, Fuel	100	1003	10202379-99, 10202382-99, 10202391-99, 10202399-99, 10202398-99,1020245-99, 1020246-99, 10202413-99, 10202414-99, 10202429-99, 10202428-99, 10202438-99, 10202439-99, 10202456-99, 10202457-99, 10202464-99, 10202463-99	P068, U098, U133	389
Dilute Fuel Contaminated Sample Vials	100	1003	20202421-99	P068, U098, U133	5
Contaminated Debris, OX	100	1003	10202380-99, 10202381-99, 10202393-99, 102023101-99, 102023100-99, 1020248-99, 10202415-99, 10202416-99, 10202431-99, 10202441-99, 10202440-99, 10202458-99, 10202459-99, 10202466-99, 10202465-99	P078	197
Contaminated Debris	100	1006	10202445-99, 10202448-99, 10-02-09	D005, D007, D008, D018	495
Spent Machine Shop Cutting Fluid	100	1007	10202389-99	D007, D008	430
Contaminated Debris	100	1018	10-01-18, 10202446-99	D004, D005, D006, D007, D008, D018, D039, F002, F005	100
Spent Solvents	100	1025	10202419-99	D001, D018	17
Aerosol Cans, Empty	100	1033	10202443-99, 1020244-99, 10-20-43	D001, D003, D005, D018, D035	96
Contaminated Debris And Waste Paint Related Materials	100	1034	10202396-99, 102023104-99	D001, D018	271
Spent Machine Shop Coolant With Cleaner	100	1058	1020249-99, 10202389-99	D007, D008	3677
Contaminated Debris	200	2001	35-01-39	D004, D005, D006, D007, D018, D035	19
Organic Acid Waste	200	2006	20202423-99	D002, D007	3
Unused Commercial Product	200	2007	20202355-99, 20202358-99	D001, D002, D018, D019, D022, D035, F003, F005	6
Off- Spec Analytical Standards	200	2007	20-04-12, 20-04-13, 20202416-99	D001, D019, D022, D039, D040, F003, P082	6
Metal Solutions, Waste	200	2007	2020248-99	D002, D004, D005, D006, D007, D008, D009, D010, D011	7
Unused Commercial Chemical Products	200	2012	20202417-99, 2020236-99, 20202368-99, 2020235-99, 20202314-99, 2020232-99, 20202364-99, 20202371-99, 2020233-99, 20202330-99, 20202426-99, 20202347-99, 20202326-99, 20202343-99, 20202339-99, 20202413-99, 20202331-99	D001, D001 EXCEPT HIGH TOC, D003, D005, D006, D007, D010, D011	62
Organic Liquids, Waste	200	2013	20202350-99	D001 (HIGH TOC SUBCATEGORY), D018, F003	7
Spent Silver Nitrate Solution	200	2013	20202428-99	D011	4

Waste Stream	Area	Area Assigned	WIWPS	EPA Codes	Weight (kg)
Isopropyl Alcohol (IPA), Spent	200	2025	20202427-99	D001	310
Spent Citric Acid Cleaning Solution	200	2030	20202361-99, 20-01-38	D002, D008	325
Hydrolyzed Oxidizer	200	2038	20-04-74	P078	23
Fixer Solution, Spent	200	2043	20202353-99	D011	20
Unused Commercial Chemical Products	270	2032	20202432-99, 20202433-99	D001, D002	10
Contaminated Debris	270	2032	27-01-23, 20202422-99, 20202431-99	D005, D007, D018	254
Contaminated Debris, IDW	300	3023	30-07-18	F001, F002	194
Contaminated Water (Hydrazines)	400	4004	50202310-99, 5020245-99	P068, U098, U133	320
Decon Water With Ox	400	4004	5020242-99	P078	215
Contaminated Debris	400	4007	10202467-99	D004, D006, D007, D008, D018	163
Contaminated Debris, IDW	400	4024	60202415-99	F001, F002	27
Contaminated Water (Hydrazines)	500	5002	50202310-99, 50202313-99, 5020243-99, 5020245-99, 5020247-99, 50202411-99	P068, U098, U133	842
P078 ADGAS Treatment Residual (Water)	500	5002	50202314-99, 5020242-99, 5020244-99, 5020246-99, 5020248-99, 50202410-99	P078	855
Contaminated Water (Hydrazines)	500	5002	5020249-99	U133, P068	167
Contaminated Water (Hydrazines)	500	5004	5020245-99	P068, U098, U133	186
Contaminated Debris	600	6001	10202411-99	D007	18
Contaminated Debris, IDW	600	6001	60202345-99, 60202341-99, 60202349-99, 6020243-99, 6020247-99, 60202417-99	F001, F002	48
Broken UV Mercury Lamp	600	6003	6020242-99	D009 (HIGH MERCURY-ORGANIC SUBCATEGORY).	3
Mercury Contaminated Debris	600	6004	60202344-99, 60202348-99	D009	8
Remediation System Water Filters And Debris, IDW	600	6004	60-04-07	F001, F002	306
P078 ADGAS Treatment Residual (Water)	800	8001	50201911-99	P078	214
Igniter Waste	800	8005	80-04-36	D001	6
Contaminated Debris	800	8005	8020233-99, 8020234-99, 8020242-99	D005, D006, D007, D008, D011, D018, D035	112