

FOURTH QUARTER / ANNUAL TRANSPORTATION REPORT FISCAL YEAR 2022

**Waste Shipments to and from the Nevada National Security Site,
Radioactive Waste Management Complex**

This report was prepared for:
**U.S. Department of Energy,
Office of Environmental Management
Nevada Program**

By:
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Las Vegas, Nevada**

October 2022



Work performed under contract number:
DE-NA0003624

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ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
CNR	Classified Non-Radioactive
CNRH	Classified Non-Radioactive Hazardous
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EM	Environmental Management
ft ³	Cubic Foot (Feet)
FY	Fiscal Year
LLW	Low-Level Radioactive Waste
MCEP	Motor Carrier Evaluation Program
MLLW	Mixed Low-Level Radioactive Waste
MSTS	Mission Support and Test Services, LLC
NNSA/NFO	U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office
NNSS	Nevada National Security Site
NNSSWAC	Nevada National Security Site Waste Acceptance Criteria
RWAP	Radioactive Waste Acceptance Program
RWMC	Radioactive Waste Management Complex

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1.0 INTRODUCTION

This report satisfies the U.S. Department of Energy (DOE) commitment to prepare a quarterly summary of waste shipments to the Nevada National Security Site (NNSS) Radioactive Waste Management Complex (RWMC) in Area 5. This report summarizes the fourth quarter of fiscal year (FY) 2022 and serves as quarterly/FY 2022 annual report for the following types of shipments:

- Low-Level Radioactive Waste (LLW)
- Mixed Low-Level Radioactive Waste (MLLW)
- Classified Non-Radioactive (CNR) Waste
- Classified Non-Radioactive Hazardous (CNRH) Waste

Tabular summaries are provided that include the following:

- Number and external volume of LLW, MLLW, and CNR/CNRH waste shipments
- Waste generators for LLW, MLLW, and CNR/CNRH waste shipments to and on the NNSS
- Carriers for LLW, MLLW, and CNR/CNRH waste shipments to and on the NNSS
- Waste generator shipments by quarter
- Shipment routes used by carriers
- Incident and accident data applicable to LLW, MLLW, and CNR/CNRH waste shipments

Volume reports using the Low-Level Waste Information System showing cubic feet (ft³) of waste generated may vary slightly due to rounding conventions for conversions from cubic meters to ft³.

Displayed waste volumes summations may vary between tables due to rounding to whole numbers.

Commercial motor carriers transporting waste to the NNSS must be identified on the DOE Motor Carrier Evaluation Program (MCEP) Evaluated Carrier List or be evaluated in a manner similar to the MCEP process. DOE contractors who transport waste to the NNSS as private motor carriers have their motor carrier operations evaluated by DOE as part of the Transportation Safety and Operations Compliance Assurance Program. In addition, periodic self-assessments are required per DOE Order 460.2B, *Departmental Materials Transportation and Packaging Management* and the NNSS Radioactive Waste Acceptance Program (RWAP) routinely reviews motor carrier safety and performance to verify compliance with NNSS Waste Acceptance Criteria (NNSSWAC). Because commercial motor carriers and DOE contractors are commercial entities, their operations are also subject to periodic facility and over-the-road inspection by the U.S. Department of Transportation (DOT).

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2.0 SUMMARY OF WASTE SHIPMENTS AND VOLUMES DISPOSED FOR THE FOURTH QUARTER OF FY 2022

Total LLW and MLLW Received from Offsite Generators

A total of 119,659 ft³ of LLW and MLLW was disposed at the NNSS by 18 approved radioactive waste generators in 129 shipments. These shipments were transported using 12 MCEP-approved motor carriers.

Total LLW and MLLW Received from Onsite NNSS Generators

A total of 200 ft³ of LLW was disposed in three onsite transfers by one approved NNSS onsite radioactive waste generator. Onsite government vehicles were used for these transfers.

Total CNR/CNRH Waste Received from Offsite Generators

A total of 1,348 ft³ of CNR/CNRH waste was disposed at the NNSS by four approved waste generators in four shipments. These shipments were transported using three MCEP-approved motor carriers.

Table 1 provides a summary of waste shipments. Table 2 provides a list of approved waste generators that shipped to or on the NNSS in the fourth quarter of FY 2022.

TABLE 1. NNSS INBOUND SHIPMENT SUMMARY FOR THE FOURTH QUARTER OF FY 2022

INBOUND	OFFSITE GENERATORS	NNSS GENERATORS	CARRIERS	SHIPMENTS	VOLUME (ft ³)
LLW/MLLW (offsite)	17	1	12 ^c	129 ^b	119,659
LLW/MLLW (onsite)	N/A	1	N/A ^a	3	200
CNR/CNRH	3	1	3 ^c	4 ^b	1,348

^a Government vehicles were used for the three Mission Support and Test Services, LLC (MSTS) onsite transfers.

^b The 129 LLW/MLLW and four CNR/CNRH shipments included 20 classified shipments (15 LLW, one MLLW, two CNR and two CNRH).

^c A total of 12 motor carriers (listed in table 3) were utilized between these two shipment categories.

TABLE 2. APPROVED GENERATORS SHIPPING WASTE IN THE FOURTH QUARTER OF FY 2022

	GENERATOR	GENERATOR CODE
1	Aberdeen Proving Ground	AP
2	DUF6 Conversion Project	DU
3	EnergySolutions	DR
4	Idaho National Laboratory – Advanced Mixed Waste Treatment Project	AM
5	Idaho National Laboratory – Battelle Energy Alliance	NE
6	Idaho National Laboratory – Fluor Idaho	IN
7	Lawrence Livermore National Laboratory	LL
8	Los Alamos National Laboratory	LA
9	Mission Support and Test Services, LLC	DP
10	Oak Ridge National Laboratory – UT-Battelle	OL
11	Oak Ridge Reservation (UCOR)	OR
12	Pantex Plant	PX
13	PermaFix	PF
14	Portsmouth Gaseous Diffusion Plant	PO
15	Sandia National Laboratory	SA
16	TRU Waste Processing Center	FW
17	West Valley	WV
18	Y-12 National Security Complex	BW

2.1 WASTE TRANSPORTERS (MOTOR CARRIERS)

Motor carriers operate in compliance with Title 49 Code of Federal Regulations (CFR), “Transportation,” and are selected by the waste generator. Generators may use multiple motor carriers during the year to facilitate their shipments. Table 3 provides a list of the approved carriers used to transport LLW, MLLW, and CNR/CNRH waste shipments to the NNSS.

TABLE 3. APPROVED MOTOR CARRIERS USED IN THE FOURTH QUARTER OF FY 2022

	APPROVED MOTOR CARRIER	CARRIER CODE
1	Bennett Heavy & Specialized, LLC	BHAV
2	Buffalo Fuel Corporation	BUFI
3	CAST Transportation	COLO
4	Hittman Transport	HITT
5	Hubbard Trucking, Inc.	HTAL
6	Interstate Ventures	ITSV
7	M.P. Environmental Services, Inc.	MPES
8	RSB Logistics	RSBJ
9	Specialty Transport, Inc.	MAJH
10	TMC, Inc.	TMLJ
11	Tri-State Motor Transit	TSMT
12	Turnkey Technical Services, LLC	TNKA
	Government Vehicle*	GT+

* Government vehicles transporting waste shipments are fully compliant with DOT.

2.2 SHIPMENTS

Table 4 provides a summary of all offsite shipments of LLW and MLLW received at the NNSS in FY 2022. Table 5 provides a summary of NNSS onsite transfers of LLW and MLLW in FY

2022. Table 6 provides a summary of all CNR and CNRH waste shipments received at the NNSS in FY 2022. The three tables include a summary for FY 2022 in the “Total” column.

TABLE 4. OFFSITE SHIPMENTS OF LLW AND MLLW TRANSPORTED TO THE NNSS IN FY 2022

OFFSITE INBOUND SHIPMENTS	SHIPMENTS BY QUARTER				
Generator, State(s)	1 st	2 nd	3 rd	4 th	Total
Aberdeen Proving Ground, MD	2	2	2	1	7
DUF6 Conversion Project, Energy Solutions, TN	0	2	0	2	4
Idaho National Laboratory – Advanced Mixed Waste Treatment Project, ID	4	0	5	3	12
Idaho National Laboratory – Battelle Energy Alliance, ID	7	9	9	11	36
Idaho National Laboratory – Idaho Environmental Coalition/Fluor Idaho, ID	13	38	26	5	82
Lawrence Livermore National Laboratory, CA	3	1	5	4	13
Los Alamos National Laboratory, NM	1	4	18	4	27
Mission Support and Test Services, NV	24	8	10	15	57
Navarro, NV	0	0	0	1	1
Oak Ridge National Laboratory – UT-Battelle, TN	1	0	0	0	1
Oak Ridge Reservation (UCOR), TN	3	3	4	1	11
Pantex Plant, TX	110	86	30	22	248
PermaFix, TN, WA, and FL	1	0	0	1	2
Portsmouth Gaseous Diffusion Plant, OH	9	9	64	16	98
Sandia National Laboratories, NM	23	18	17	13	71
TRU Waste Processing Center, TN	3	5	4	4	16
West Valley, NY	0	0	0	1	1
Y-12 National Security Complex, TN	4	1	8	4	17
Total Shipments	18	9	8	21	56

TABLE 5. NNSS ONSITE TRANSFERS OF LLW IN FY 2022

ONSITE TRANSFERS	SHIPMENTS BY QUARTER				
Generator, State	1 st	2 nd	3 rd	4 th	Total
Mission Support and Test Services, NV	4	4	6	3	17
Total Shipments	4	4	6	3	17

TABLE 6. CNR AND CNRH SHIPMENTS TRANSPORTED TO THE NNSS IN FY 2022

OFFSITE INBOUND SHIPMENTS	SHIPMENTS BY QUARTER				
Generator, State	1 st	2 nd	3 rd	4 th	Total
Idaho National Laboratory – Battelle Energy Alliance, ID	0	2	1	1	4
Los Alamos National Laboratory, NM	0	0	1	1	2
Mission Support and Test Services, NV	0	2	0	1	3
Sandia National Laboratory, NM	2	1	1	1	5
Total Shipments	2	5	3	4	14

2.3 TRANSPORTATION ROUTE REPORTING

DOE policy is to avoid shipments traveling through the I-15/US-95 interchange. The NNSSWAC includes wording requiring generators to notify their carriers to avoid this area and to select approved routes.

Shipments continue to be restricted from travel near the Hoover Dam. The NNSSWAC states:

“Waste transportation to the NNSS, regardless of DOT classification, shall avoid the Hoover Dam Bypass Bridge (Mike O’Callaghan – Pat Tillman Memorial Bridge).”

Recent quarterly and annual transportation reports may be found on the Internet at <http://www.nnss.gov/pages/programs/RWM/Reports.html>.

Older reports may be obtained by contacting the Office of Scientific and Technical Information at <https://www.osti.gov>, or by phone at (865) 576-8401.

Table 7 provides details of waste shipment routes traveled to the NNSS for the fourth quarter of FY 2022. Figure 1 provides a graphic depiction of waste shipment routes traveled to the NNSS for the fourth quarter of FY 2022.

Table 8 provides details of waste shipment routes traveled to the NNSS for FY 2022. Figure 2 provides a graphic depiction of waste shipment routes traveled to the NNSS for FY 2022.

TABLE 7. SHIPMENT ROUTES FOR THE FOURTH QUARTER OF FY 2022

LOW-LEVEL, MIXED LOW-LEVEL & CLASSIFIED NON-RADIOACTIVE WASTE SHIPMENTS TO/ON THE NEVADA NATIONAL SECURITY SITE																			
FOURTH QUARTER REPORT, FY 2022 (JULY, AUGUST, SEPTEMBER 2022)																			
RouteType	Route Description	Route Legend	Origin State>>	CA	ID	ID	ID	MD	NM	NM	NV	NY	OH	TN, WA, FL	TN	TN	TN	TN	TN
			Total Shipments by Route	Lawrence Livermore National Laboratory	Idaho National Laboratory - AMWTP	Idaho National Laboratory - BEA	Idaho National Laboratory - IEC	Aberdeen Proving Ground	Los Alamos National Laboratory	Sandia National Laboratories	Mission Support and Test Services	West Valley	Portsmouth Gaseous Diffusion Plant	Perma-Fix	DUF6 Conversion Project	Energy Solutions	Oak Ridge Reservation (UCOR)	Oak Ridge National Laboratory - UT Battelle	TRU Waste Processing Center
CALIFORNIA	I-15, CA-127, NV-373, US-95		8	3										5					
CALIFORNIA	I-40, I-15, CA-127, NV-373, US-95		1													1			
SOUTHERN	I-40, US-93, AZ-68, NV-163, US-95, NV-164, I-15, NV-160, US-95		78						2	5	1		13	9	2	2	21		1
SOUTHERN	I-40, US-95, NV-164, I-15, NV-160, US-95		16	1				1	13								1		
SOUTHERN	I-40, US-95, NV-164, I-15, CA-127, NV-373, US-95		1															1	
SOUTHERN	I-40, US-93, AZ-68, NV-163, US-95, NV-164, I-15, CA-127, NV-373, US-95		1						1										
NORTHERN	I-80, US-93-ALT, US-6, US-95		6			1					1	4							
NORTHERN	US-93, US-6, US-95		22		11	5	4							2					
ON-SITE	On-Site Shipments	N/A	3								3								
Total Shipments by Generator>>>			136	4	11	6	4	1	16	5	5	4	13	16	2	3	22	1	1
Total Volume (ft ³) by Generator>>>			121,207	5,407	12,173	2,708	3,026	437	8,100	1,738	838	5,295	13,088	13,003	4,693	340	9,606	57	1,695
																		38,977	27

FIGURE 1. ROUTES TRAVELED TO THE NNSS IN THE FOURTH QUARTER OF FY 2022



TABLE 8. SHIPMENT ROUTES FOR FY 2022

LOW-LEVEL, MIXED LOW-LEVEL & CLASSIFIED NON-RADIOACTIVE WASTE SHIPMENTS TO/ON THE NEVADA NATIONAL SECURITY SITE																						
Fiscal Year 2022																						
RouteType	Route Description	Route Legend	Origia State>>	CA	ID	ID	ID	MD	NM	NM	NV	NV	NY	OH	OH	TN, WA, FL	TN	TN	TN	TN	TN	TX
			Total Shipments by Route	Lawrence Livermore National Laboratory	Idaho National Laboratory - AMWTP	Idaho National Laboratory - Battelle Energy Alliance	Idaho National Laboratory - Fluor Idaho / IEC	Aberdeen Proving Ground	Los Alamos National Laboratory	Sandia National Laboratory	Mission Support and Test Services	Navarro	West Valley	Portsmouth Gaseous Diffusion Plant	DUF6 Conversion Project	Perma-Fix	Energy Solutions	Oak Ridge Reservation (UCOR)	Oak Ridge National Laboratory - UT Battelle	TRU Waste Processing Center	Y-12 National Security Complex	Pantex
SOUTHERN	I-40, US-93, AZ-68, NV-163, US-95, NV-164, I-15, NV-160, US-95		440			1			6	16	1			70	4	27	11	238	7	1	56	2
SOUTHERN	I-40, US-93, AZ-68, NV-163, US-95, NV-164, I-15, CA-127, NV-373, US-95		4						4													
SOUTHERN	I-40, US-95, NV-164, I-15, NV-160, US-95		119	1		44		7	49	5				1				10	2			
SOUTHERN	I-40, US-95, NV-164, I-15, CA-127, NV-373, US-95		1																1			
CALIFORNIA	I-15, CA-127, NV-373, US-95		83	21												62						
SOUTHERN	I-40, I-15, CA-127, NV-373, US-95		7	5													1		1			
NORTHERN	US-6, US-95 (TTR)		1									1										
NORTHERN	I-80, US-93-ALT, US-6, US-95		31			13					1		17									
NORTHERN	US-93, US-6, US-95		81		36	23	13									9						
NORTHERN	US-395 (CA/NV LINE), I-80, US-50/95-ALT, US-50, US-95		5			5																
NORTHERN	I-15, 215 BELTWAY, US-95 (Non-Approved)		2								2											
ON-SITE	On-Site Shipments	N/A	17								17											
Total Shipments by Generator>>>			791	27	36	86	13	7	59	21	21	1	17	71	4	98	12	248	11	1	56	2
Total Volume (ft³) by Generator>>>			635,417	51,620	35,119	68,813	7,720	2,957	28,664	7,488	3,676	516	19,429	104,169	9,385	50,827	3,457	127,205	10,145	1,695	101,146	1,387

FIGURE 2. ROUTES TRAVELED TO THE NNSS FY 2022



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3.0 INCIDENT/ACCIDENT DATA

There were no incidents or accidents in the fourth quarter of FY 2022.

There was one incident (load shift) in FY 2022 that is detailed below:

- On April 26, 2022, a truck carrying waste from Oak Ridge experienced a hard-braking event at the on-ramp to I-15 North and Nipton Road (in California), resulting in a load shift of 2 of 6 metal boxes on the trailer bed. The shipment was placed in a safe configuration and resecured, allowing the shipment to be safely delivered to the NNSS on schedule. No injuries, damage, or package breach were reported due to the event.

For the purpose of this report, incidents and accidents are defined as follows:

- **Incident:** An unintentional release of hazardous material from a package during transportation, load shift, or any occurrence during transportation in which any of the circumstances identified in 49 CFR 171.15(b) occurs (American National Standards Institute N14.27)
- **Accident:** An occurrence involving a commercial motor vehicle operating on a highway in interstate or intrastate commerce that results in a fatality; bodily injury to a person who, as a result of the injury, immediately receives medical treatment away from the scene of the accident; or one or more motor vehicles incurring disabling damage as a result of the accident, requiring the motor vehicle(s) to be transported away from the scene by a tow truck or other motor vehicle (49 CFR 390.5[1])

Waste generators and carriers are dedicated to ensuring an appropriate response to all offsite transportation events involving DOE radioactive materials. In a memo to all waste generator sites on October 17, 2016, notification criteria was established to provide additional clarity to the requirements in the NNSSWAC. This reporting is consistent with DOE Manual 460.2-1, and will help to ensure the following:

- Receiving timely notification of all offsite transportation events to assure adequate response resources are assigned
- Notifying appropriate field response personnel and/or resources (including field sites, Radiological Assistance Program teams, and state and tribal contacts) if they have not already been engaged
- Having all potentially involved personnel prepared to respond to inquiries from the media, elected officials, or the public

Waste generators are instructed to notify NNSS Operations Command Center (OCC) whenever a discrepancy, non-compliance, or inadequate performance or if a transportation incident (including law enforcement directives requiring rerouting) or emergency situation occurs. OCC must be notified no later than one hour after the route deviation/incident with specific details.

MSTS, a contractor to NNSA/NFO, controls NNSS waste receipt and disposal activities and is responsible for notifying appropriate personnel regarding shipping discrepancies, incidents, or accidents.

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4.0 EVALUATION OF SHIPPING CAMPAIGNS

There were no transportation-related findings in the fourth quarter of FY 2022.

There was one transportation-related finding in FY 2022.

- On January 27, 2022, two shipments on a single conveyance travelled on an unapproved route. Finding I-3305 was issued to Mission Support and Test Services and required a corrective action plan.

This section contains a summary of the annual shipping campaigns with respect to the significance of the packaging or transportation incidents or accidents reported in Section 3.0 of this report. Waste generators must ensure that waste is packaged and transported in a safe and compliant manner as detailed in the NNSSWAC and DOT regulations. Generators and their contracted shipping carriers must be diligent with regard to all requirements including packaging, routing, and shipping documentation.

The NNSS RWAP provides oversight of NNSS waste generators for compliance with DOT regulations and the NNSSWAC, including Section 6.0 of the NNSSWAC, Waste Transportation and Receipt. All RWAP-identified findings and observations on waste generator performance are tracked and trended.

Findings are issued by RWAP personnel to identify, track, and resolve deficiencies that violate the NNSSWAC, including failure to follow DOT requirements. Observations are also issued by RWAP personnel for conditions that represent a weakness in a waste generator's quality assurance or waste certification program that, if left uncorrected, could result in a condition adverse to quality. For the purposes of this report, only transportation and packaging findings are reported.

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REFERENCES

- U.S. Department of Energy, Nevada Operations Office, 2013. "Final Site-Wide Environmental Impact Statement for the Continued Operation of the Department of Energy/National Nuclear Security Administration Nevada National Security Site and Offsite Locations in the State of Nevada." DOE/EIS-0426. Las Vegas, Nevada. February 2013.
- U.S. Department of Energy, Nevada Operations Office, 2014. "Record of Decision (ROD) for the Continued Management, Operations, and Activities of the Nevada National Security Site (NNSS) and Offsite Locations in the State of Nevada." EIS-0426 Record of Decision. Las Vegas, Nevada. December 2014.
- U.S. Department of Energy, Office of Packaging and Transportation, 2016. Memo establishing notification criteria. Las Vegas, Nevada. October 2016.
- U.S. Department of Transportation Regulations, 2012. 49 CFR, "Transportation," Code of Federal Regulations, Office of the Federal Register, National Archives and Records Administration. U.S. Government Printing Office. Washington, D.C. 2012.

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