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FOURTH QUARTER / ANNUAL TRANSPORTATION REPORT FISCAL YEAR 2021

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

This report was prepared for:
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Office of Environmental Management
Nevada Program

By:
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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) 2021 and serves as quarterly/FY 2021 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 (ft^3) of waste generated may vary slightly due to rounding conventions for conversions from cubic meters to ft^3.

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 460.2A, *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 2021

Total LLW and MLLW Received from Offsite Generators

A total of 137,005 ft^3 of LLW and MLLW was disposed at the NNSS by 13 approved radioactive waste generators in 178 shipments. These shipments were transported using eight MCEP-approved motor carriers.

Total LLW and MLLW Received from Onsite NNSS Generators

A total of 1,077 ft^3 of LLW and MLLW in six onsite transfers was disposed 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 3,883 ft^3 of CNR/CNRH waste was disposed at the NNSS by three approved waste generators in five shipments. These shipments were transported using two 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 2021.

TABLE 1. NNSS INBOUND SHIPMENT SUMMARY FOR THE FOURTH QUARTER OF FY 2021

INBOUND	OFFSITE GENERATORS	NNSS GENERATORS	CARRIERS	SHIPMENTS	VOLUME (ft^3)
LLW/MLLW (offsite)	13	0	8	178[b]	137,005
LLW/MLLW (onsite)	N/A	1	N/A[a]	6	1,077
CNR/CNRH	3	0	2	5[b]	3,883

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

[b] The 178 LLW/MLLW and five CNR/CNRH shipments included 32 classified shipments (24 LLW, three MLLW, three CNR and two CNRH).

TABLE 2. APPROVED GENERATORS SHIPPING WASTE IN THE FOURTH QUARTER OF FY 2021

	GENERATOR	GENERATOR CODE
1	Idaho National Laboratory – Advanced Mixed Waste Treatment Project	AM
2	Idaho National Laboratory – Battelle Energy Alliance	NE
3	Idaho National Laboratory – Fluor Idaho	IN
4	Lawrence Livermore National Laboratory	LL
5	Los Alamos National Laboratory	LA
6	Mission Support and Test Services, LLC	DP
7	Nuclear Fuel Services	NF
8	Oak Ridge National Laboratory – UT-Battelle	OL
9	Oak Ridge Reservation (UCOR)	OR
10	PermaFix	PF
11	Portsmouth Gaseous Diffusion Plant	PO
12	Sandia National Laboratory	SA
13	TRU Waste Processing Center	FW
14	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 2021

	APPROVED MOTOR CARRIER	CARRIER CODE
1	Bennett Heavy & Specialized, LLC	BHAV
2	CAST Transportation	COLO
3	Hittman Transport	HITT
4	Interstate Ventures	ITSV
5	M.P. Environmental Services, Inc.	MPES
6	Specialty Transport, Inc.	MAJH
7	Tri-State Motor Transit	TSMT
8	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 2021. Table 5 provides a summary of NNSS onsite transfers of LLW and MLLW in FY 2021. Table 6 provides a summary of all CNR and CNRH waste shipments received at the NNSS in FY 2021. The three tables include a summary for FY 2021 in the "Total" column.

TABLE 4. OFFSITE SHIPMENTS OF LLW AND MLLW TRANSPORTED TO THE NNSS IN FY 2021

OFFSITE INBOUND SHIPMENTS	SHIPMENTS BY QUARTER				
Generator, State(s)	1st	2nd	3rd	4th	Total
Aberdeen Proving Ground, MD	3	1	0	**0**	**4**
DUF6 Conversion Project, TN	0	3	1	**0**	**4**
Energy Solutions, TN	4	2	6	**0**	**12**
Idaho National Laboratory – Advanced Mixed Waste Treatment Project, ID	2	6	6	**5**	**19**
Idaho National Laboratory – Battelle Energy Alliance, ID	19	35	20	**20**	**94**
Idaho National Laboratory – Fluor Idaho, ID	3	3	5	**7**	**18**
Lawrence Livermore National Laboratory, CA	7	5	10	**5**	**27**
Los Alamos National Laboratory, NM	5	7	17	**16**	**45**
Mission Support and Test Services, NV	0	0	1	**0**	**1**
Nuclear Fuel Services, TN	1	0	0	**1**	**2**
Oak Ridge National Laboratory – UT-Battelle, TN	2	1	2	**2**	**7**
Oak Ridge Reservation (UCOR), TN	34	38	51	**70**	**193**
Pantex Plant, TX	0	1	0	**0**	**1**
PermaFix, TN, WA, and FL	18	59	15	**12**	**104**
Portsmouth Gaseous Diffusion Plant, OH	7	34	0	**30**	**71**
Sandia National Laboratory, NM	2	0	4	**1**	**7**
TRU Waste Processing Center, TN	0	1	6	**1**	**8**
West Valley, NY	4	1	4	**0**	**9**
Y-12 National Security Complex, TN	0	0	7	**8**	**15**
Total Shipments	111	197	155	**178**	**641**

TABLE 5. NNSS ONSITE TRANSFERS OF LLW AND MLLW IN FY 2021

ONSITE TRANSFERS	SHIPMENTS BY QUARTER				
Generator, State	1st	2nd	3rd	4th	Total
Mission Support and Test Services, NV	8	2	6	**6**	**22**
Total Shipments	8	2	6	**6**	**22**

TABLE 6. CNR AND CNRH SHIPMENTS TRANSPORTED TO THE NNSS IN FY 2021

OFFSITE INBOUND SHIPMENTS	SHIPMENTS BY QUARTER				
Generator, State	1st	2nd	3rd	4th	Total
Idaho National Laboratory – Battelle Energy Alliance, ID	1	2	1	**2**	**6**
Lawrence Livermore National Laboratory, CA	0	0	0	**2**	**2**
PermaFix, TN, WA, and FL	1	0	0	**1**	**2**
Sandia National Laboratory, NM	1	0	2	**0**	**3**
Total Shipments	3	2	3	**5**	**13**

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 2021. Figure 1 provides a graphic depiction of waste shipment routes traveled to the NNSS for the fourth quarter of FY 2021.

Table 8 provides details of waste shipment routes traveled to the NNSS for FY 2021. Figure 2 provides a graphic depiction of waste shipment routes traveled to the NNSS for FY 2021.

TABLE 7. SHIPMENT ROUTES FOR THE FOURTH QUARTER OF FY 2021

LOW-LEVEL, MIXED LOW-LEVEL & CLASSIFIED NON-RADIOACTIVE WASTE SHIPMENTS TO/ON THE NEVADA NATIONAL SECURITY SITE																	
FOURTH QUARTER REPORT, FY 2021 (JULY, AUGUST, SEPTEMBER 2021)																	
RouteType	Route Description	Route Legend	Origin States>>	CA	ID	ID	ID	NM	NM	NV	OH	TN, WA, FL	TN	TN	TN	TN	TN
			Total Shipments by Route	Lawrence Livermore National Laboratory	Idaho National Laboratory - AMWTP	Idaho National Laboratory - Battelle Energy Alliance	Idaho National Laboratory - Fluor Idaho	Los Alamos National Laboratory	Sandia National Laboratories	Mission Support and Test Services	Portsmouth Gaseous Diffusion Plant	Perma-Fix	Nuclear Fuel Services	Oak Ridge Reservation (UCOR)	Oak Ridge National Laboratory - UT Battelle	TRU Waste Processing Center	Y-12 National Security Complex
SOUTHERN	I-40, US-93, AZ-68, NV-163, US-95, NV-164, I-15, NV-160, US-95		123			1		3			30	8	1	70	1	1	8
SOUTHERN	I-40, US-95, NV-164, I-15, NV-160, US-95		19	1		4		13	1								
CALIFORNIA	I-15, CA-127, NV-373, US-95		5	4								1					
SOUTHERN	I-40, I-15, CA-127, NV-373, US-95		3	2											1		
NORTHERN	US-95 (McDermott)		2									2					
NORTHERN	I-80, US-93-ALT, US-6, US-95		6			6											
NORTHERN	US-93, US-6, US-95		25		5	11	7					2					
ON-SITE	On-Site Shipments	N/A	6							6							
Total Shipments by Generator>>>			189	7	5	22	7	16	1	6	30	13	1	70	2	1	8
Total Volume (ft^3) by Generator>>>			141,965	6,713	4,846	16,120	5,590	8,194	922	1,077	54,478	2,305	629	30,533	2,461	674	7,425
*There were no transloaded shipments this quarter																	

FIGURE 1. ROUTES TRAVELLED TO THE NNSS IN THE FOURTH QUARTER OF FY 2021

TABLE 8. SHIPMENT ROUTES FOR FY 2021

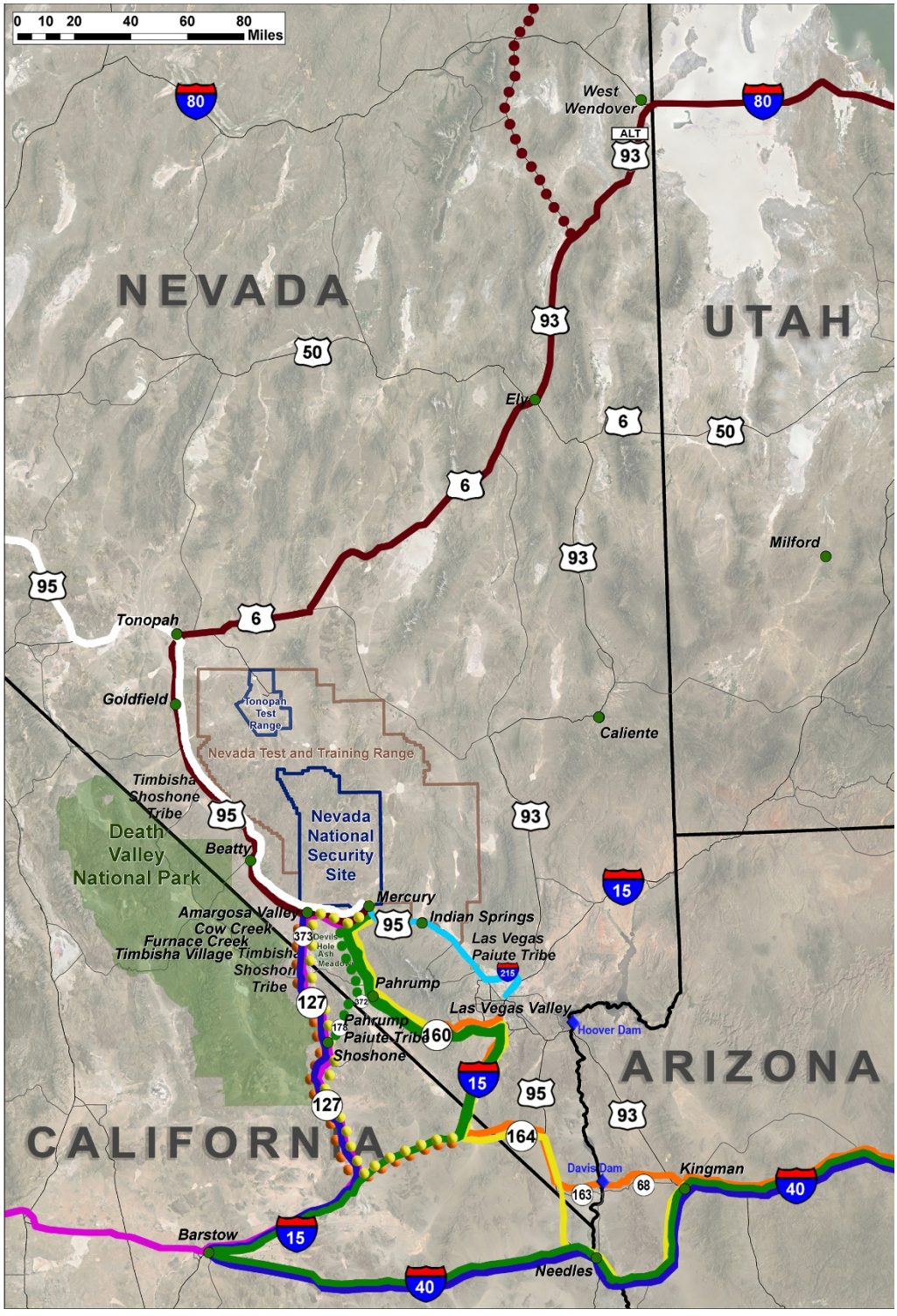
LOW-LEVEL, MIXED LOW-LEVEL & CLASSIFIED NON-RADIOACTIVE WASTE SHIPMENTS TO/ON THE NEVADA NATIONAL SECURITY SITE

Fiscal Year 2021

RouteType	Route Description	Route Legend	Total Shipments by Route	Origin State >>	CA	ID	ID	ID	MD	NM	NM	NV	NY	OH	OH	TN, WA, FL	TN	TN	TN	TN	TN	TN	TX
					Lawrence Livermore National Laboratory	Idaho National Laboratory - AMWTP	Idaho National Laboratory - BEA	Idaho National Laboratory - Fluor Idaho	Aberdeen Proving Ground	Los Alamos National Laboratory	Sandia National Laboratory	Mission Support and Test Services	West Valley	Portsmouth Gaseous Diffusion Plant	DUF6 Conversion Project	Perma-Fix	Energy Solutions	Nuclear Fuel Services	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		335				1		1	6	8			71	4	18	9	2	187	4	8	15	1
SOUTHERN	I-40, US-93, AZ-68, NV-163, US-95, NV-164, I-15, CA-127, NV-373, US-95		1							1													
SOUTHERN	I-40, US-95, NV-164, I-15, NV-160, US-95		59	1			13		3	38	2					1			1				
SOUTHERN	I-40, US-95, NV-164, I-15, CA-127, NV-373, US-95		2	1																1			
CALIFORNIA	I-15, CA-127, NV-373, US-95		60	20												40							
SOUTHERN	I-40, I-15, CA-127, NV-373, US-95		16	6												6	2			2			
SOUTHERN	I-40, I-15, NV-160, US-95		8	1												2			5				
SOUTHERN	I-40, I-15, CA-127, CA-178, NV-372, NV-160, US-95		2													1	1						
NORTHERN	I-80, US-50 ALT, US-50, US-95 (Reno)		5													5							
NORTHERN	US-95 (McDermott)		2													2							
NORTHERN	I-80, US-93-ALT, US-6, US-95		27				18						9										
NORTHERN	US-93, US-6, US-95		136			19	68	18								31							
NEVADA	Losee Road, 215 Beltway, US-95		1									1											
ON-SITE	On-Site Shipments	N/A	22									22											
	Total Shipments by Generator>>>		676		29	19	100	18	4	45	10	23	9	71	4	108	12	2	193	7	8	15	1
	Total Volume (ft^3) by Generator>>>		539,422		41,518	19,302	69,108	12,611	1,747	25,812	6,295	3,253	9,506	100,952	9,385	115,161	7,814	1,635	83,607	7,742	5,470	17,143	1,360

*There were no transloaded shipments this fiscal year

FIGURE 2. ROUTES TRAVELLED TO THE NNSS FY 2021



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3.0 INCIDENT/ACCIDENT DATA

There were no incidents or accidents in the fourth quarter of FY 2021.

There was one incident (load shift) in FY 2021 that is detailed below.

- On April 26, 2021, 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 2021. There were also no transportation-related findings in FY 2021.

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.

Although it did not result in a finding, there was a transportation event that occurred during the fourth quarter. While traveling north on I-15, a Hittman Driver inadvertently missed the Blue Diamond Road exit and continued north on I-15. The driver then took the next exit for I-215 west bound and continued on I-215 to the Flamingo Road exit. The driver took the Flamingo Road exit, went over the overpass, got back on I-215 (turned around), and returned to I-15. The driver took I-15 south bound to the Blue Diamond Road exit and completed the remainder of the trip to the NNSS per the approved route. The result was that the shipment did enter into a portion of the Las Vegas Valley that has been identified as off limits to waste shipments traveling to the NNSS. The proper notifications were made upon discovery in Area 5.

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