Tonopah Test Range

Environmental Restoration Corrective Action Sites

Locations of Use Restrictions and Post-Closure Inspection Sites

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Summary

Corrective Action Sites (CASs) and Corrective Action Units (CAUs) at the Tonopah Test Range (TTR) may be placed into three categories: Closed, Closed in Place, or Closure in Progress. CASs and CAUs where contaminants were either not detected or were cleaned up to within regulatory action levels are summarized below:

CLOSED					
CAU	CAU Description	Status	CAS	CAS Description	Location
400	Bomblet Pit and Five Points Landfill (TTR)	Closed	TA-19-001-05PT	Ordnance Disposal Pit	Five Points Intersection
			TA-55-001-TAB2	Ordnance Disposal Pit	Bunker 2 Road
401	Area 3 Gas Station Underground Storage Tank Site (TTR)	Closed	03-02-003-0357	Underground Storage Tank, Gas	First Gas Station, Area 3
402	Area 3 Building 0353 Underground Storage Tank Site (TTR)	Closed	03-02-001-0353	Underground Storage Tank, Diesel	Building 0353
403	Area 3 Second Gas Station Underground Storage Tank (TTR)	Closed	03-02-004-0360	Underground Storage Tanks	Second Gas Station
404	Roller Coaster Lagoons and Trench (TTR)	Closed	TA-21-001-TARC	Roller Coaster N. Disposal Trench	NW of Antelope Lake
405	Area 3 Septic Systems (TTR)	Closed	03-05-002-SW03	Septic Waste System	Area 3
			03-05-002-SW04	Septic Waste System	Area 3
			03-05-002-SW07	Septic Waste System	Area 3
406	Area 3 Building 03-74 & Building 03-58 Underground Discharge Points (TTR)	Closed	03-51-002-0374	Heavy Duty Shop UDP, Sumps	Building 0374
			03-51-003-0358	UPS Building UDP	UPS Building, Area 3
409	Other Waste Sites (TTR)	Closed	RG-24-001-RGCR	Battery Dump Site	Cactus Repeater
			TA-53-001-TAB2	Septic Sludge Disposal Pit	Area 3
			TA-53-002-TAB2	Septic Sludge Disposal Pit	Area 3
410	Waste Disposal Trenches (TTR)	Closed	03-19-001	Waste Disposal Site	Building 0385-T
			09-21-001-TA09	Disposal Trenches	Area 9
			TA-19-002-TAB2	Debris Mound	Bunker 2
			TA-21-002-TAAL	Disposal Trench	South Antelope Lake
			TA-21-003-TANL	Disposal Trench	NEDS Lake
423	Area 3 Underground Discharge Point, Building 0360 (TTR)	Closed	03-02-002-0308	Underground Discharge Point	Building 0360
425	Area 9 Main Lake Construction Debris Disposal Area (TTR)	Closed	09-08-001-TA09	Construction Debris Disposal Area	Area 9, Main Lake
427	Area 3 Septic Waste Systems 2, 6 (TTR)	Closed	03-05-002-SW02	Septic Waste System	Area 3
			03-05-002-SW06	Septic Waste System	Area 3
428	Area 3 Septic Waste Systems 1, 5 (TTR)	Closed	03-05-002-SW01	Septic Waste System	Area 3
			03-05-002-SW05	Septic Waste System	Area 3

CLOSED					
CAU	CAU Description	Status	CAS	CAS Description	Location
429	Area 3 Building 03-55 & Area 9 Building 09-52 Underground Discharge Points (TTR)	Closed	03-51-001-0355	Photo Shop UDP, Drains	Photo Shop
			09-51-001-0952	Mobile Photographic Lab UDPs	Area 9
430	Buried DU Artillery Round #1 (TTR)	Closed	TA-55-003-0960	Depleted Uranium Artillery Round	South of Area 9
461	Test Area JTA Sites (TTR)	Closed	TA-52-002-TAML	Depleted Uranium Impact Site	Main Lake
			TA-52-003-0960	Depleted Uranium Artillery Round #2	South of Area 9
			TTR-001	1987 W-79 JTA	Unknown
484	Surface Debris, Waste Sites, and Burn Area (TTR)	Closed	TA-52-001-TANL	NEDS Detonation Area	NEDS Lake
			TA-52-004-TAAL	Metal Particle Dispersion Test	Antelope Lake
			TA-52-005-TAAL	Joint Test Assembly DU Sites	Antelope Lake
			TA-54-001-TANL	Containment Tank and Steel Structure	NEDS Lake
			TA-52-006-TAPL	Depleted Uranium Site	Colimbo Detonation Area
485	Cactus Spring Ranch Pu and DU Site (TTR)	Closed	TA-39-001-TAGR	Cactus Spring Ranch, Soil Contam.	West of Target Areas
486	Double Tracks RadSafe Area (TTR)	Closed	71-23-001-71DT	Double Tracks RadSafe Area	Nellis Range 71
489	WWII UXO Sites (TTR)	Closed	RG-55-001-RGMN	WWII Ordnance Site	Mellan Airstrip
			RG-55-002-RGHS	WWII Ordnance Site	H-Site Road
			RG-55-003-RG36	WWII Ordnance Site	Gate 36E
490	Station 44 Burn Area (TTR)	Closed	RG-56-001-RGBA	Station 44 Burn Area	Station 44
			03-56-001-03BA	Fire Training Area	Area 3
			03-58-001-03FN	Gun Propellant Burn Area	Area 3
			09-54-001-09L2	Solid Propellant Burn Site	Area 9
495	Unconfirmed JTA Sites (TTR)	Closed	TA-55-006-09SE	Buried Artillery Round	Test Area
			TA-55-007-09SE	Buried Artillery Round	Test Area
496	Buried Rocket Site - Antelope Lake (TTR)	Closed	TA-55-008-TAAL	Buried Rocket	Antelope Lake
499	Hydrocarbon Spill Site, TTR	Closed	RG-25-001-RD24	Radar 24 Diesel Spill Site	Radar 24 Site

DU = depleted uranium

JTA = Joint Test Assembly

Pu = plutonium

TTR = Tonopah Test Range

UDP = underground discharge point

UST = underground storage tank

UXO = unexploded ordnance

CASs and CAUs where contaminants and/or waste have been closed in place are summarized below. The following table also summarizes the contaminant that has been closed at each site, if land use restrictions are present, and if post-closure inspections are required:

CLOSED IN PLACE							
CAU	CAU Description	COC	UR	PCI	CAS	CAS Description	Location
404	Roller Coaster Lagoons and Trench (TTR)	Haz	Yes	No	TA-03-001-TARC	Roller Coaster Lagoons	NW of Antelope Lake
407	Roller Coaster RadSafe Area (TTR)	Rad	Yes	Yes	TA-23-001-TARC	Roller Coaster RadSafe Area	NW of Antelope Lake
424	Area 3 Landfill Complexes (TTR)	Sanitary	Yes	Yes	03-08-001-A301	Landfill Cell A3-1	Area 3 Landfill Complex
		Sanitary	Yes	Yes	03-08-002-A302	Landfill Cell A3-2	Area 3 Landfill Complex
		Sanitary	Yes	Yes	03-08-002-A303	Landfill Cell A3-3	Area 3 Landfill Complex
		Sanitary	Yes	Yes	03-08-002-A304	Landfill Cell A3-4	Area 3 Landfill Complex
		Sanitary	Yes	Yes	03-08-002-A305	Landfill Cell A3-5	Area 3 Landfill Complex
		Sanitary	Yes	Yes	03-08-002-A306	Landfill Cell A3-6	Area 3 Landfill Complex
		Sanitary	Yes	Yes	03-08-002-A307	Landfill Cell A3-7	Area 3 Landfill Complex
		Sanitary	Yes	Yes	03-08-002-A308	Landfill Cell A3-8	Area 3 Landfill Complex
426	Cactus Spring Waste Trenches (TTR)	Rad	Yes	Yes	RG-08-001-RGCS	Waste Trenches	Cactus Spring Ranch
453	Area 9 UXO Landfill (TTR)	Ordnance	Yes	Yes	09-55-001-0952	Area 9 Landfill	Area 9
487	Thunderwell Site (TTR)	Debris	Yes	Yes	RG-26-001-RGRV	Thunderwell Site	Thunderwell Site

COC = contaminant of concern

PCI = post-closure inspections

UR = use restriction

CASs and CAUs where closure activities are in progress are summarized below. All CAUs and CASs where closure activities are in progress will be clean closed.

CLOSURE IN PROGRESS					
CAU	CAU Description	Status	CAS	CAS Description	Location
408	Bomblet Target Area (TTR)	Undergoing Remediation	TA-55-002-TAB2	Bomblet Target Areas	Antelope Lake
484	Surface Debris, Waste Sites, and Burn Area (TTR)	Undergoing Remediation	RG-52-007-TAML	Davis Gun Penetrator Test	Antelope Lake

Closed-In-Place CAU Descriptions

This section provides a summary of the CAUs and CASs where contamination above action levels has been closed in place. Environmental Restoration activities at these sites include post-closure inspections and maintenance/repairs. A rough order of magnitude (ROM) cost for clean closure to pre-use conditions is included for each CAU.

CAU 404: Roller Coaster Lagoons and Trench (TTR)

- CAS TA-03-001-TARC: Roller Coaster Lagoons

Contaminants/Waste Present

Pesticides (Dichlorodiphenyldichloroethane [DDD], Dichlorodiphenyldichloroethylene [DDE], and Dichlorodiphenyldichloroethane [DDT]) were detected above the U.S. Environmental Protection Agency Region IX Preliminary Remediation Goals in both the east and west sewage lagoons.

Current Site Conditions

The site has a land use restriction; however, post-closure inspections are not required.

Clean Closure ROM Cost

~\$15M

CASs

CAS TA-03-001-TARC (Roller Coaster Lagoons) is located within a fenced area situated approximately 1 mile north of the intersection of Main Road South and Brownes Lake Road.

The sewage lagoons received liquid sanitary waste from the Operation Roller Coaster Man Camp in 1963 and debris from subsequent range and construction cleanup activities. The debris and ordnance were subsequently removed and properly disposed; however, pesticides were detected above regulatory action levels in soil samples from the bottom of the lagoons.

CAU 404 CAS TA-03-001-TARC (Roller Coaster Lagoons)

CAU 407: Roller Coaster RadSafe Area (TTR)

- CAS TA-23-001-TARC: Roller Coaster RadSafe Area

Contaminants/Waste Present

During the removal of radioactive-impacted soil from this CAS, several pieces of concrete were removed that were determined to be transuranic waste. The waste was removed and disposed off site. The remaining contamination was closed in place.

Current Site Conditions

An engineered cover was constructed over the area containing radioactive-impacted debris and soil, and the area was fenced and posted as an “Underground Radioactive Material” area. The CAS has a land use restriction and is inspected annually to ensure the engineered cover, postings, and fencing have not been compromised.

Clean Closure ROM Cost

~\$75M

CASs

CAS TA-23-001-TARC (Roller Coaster RadSafe Area) is located at the intersection of Main Road South and Brownes Lake Road.

The CAS TA-23-001-TARC (Roller Coaster RadSafe Area) was used during Operation Roller Coaster in 1963 to decontaminate vehicles, equipment, and personnel from the Clean Slate tests.

CAU 407: Roller Coaster RadSafe Area

CAU 424: Area 3 Landfill Complexes (TTR)

- CAS 03-08-001-A301: Landfill Cell A3-1
- CAS 03-08-002-A302: Landfill Cell A3-2
- CAS 03-08-002-A303: Landfill Cell A3-3
- CAS 03-08-002-A304: Landfill Cell A3-4
- CAS 03-08-002-A305: Landfill Cell A3-5
- CAS 03-08-002-A306: Landfill Cell A3-6
- CAS 03-08-002-A308: Landfill Cell A3-8

Contaminants/Waste Present

The CAU 424 landfill cells contain sanitary, construction, and hydrocarbon waste.

Current Site Conditions

All CASs have land use restrictions and are marked by above-ground concrete monuments and signs indicating the presence of buried waste.

Clean Closure ROM Cost

~\$80M

CASs

CAU 424 consists of eight landfill cells located in the vicinity of Area 3 that received waste from daily operations at the Area 3 compound from approximately 1957 to 1993. Waste in the landfill cells is poorly documented due to unregulated disposal practices common at the time of waste disposition. Process knowledge and characterization data indicate no hazardous waste is present.

CAS 03-08-001-A301 (Landfill Cell A3-1) consists of five waste cells. Investigation of the site identified sanitary waste and hydrocarbon as the only contaminant present.

CAS 03-08-002-A302 (Landfill Cell A3-2) consists of one waste cell. Investigation of the site identified sanitary waste and hydrocarbon as the only contaminant present. A diesel storage tank was uncovered during the investigation but was not removed.

CAS 03-08-002-A303 (Landfill Cell A3-3) consists of three waste cells. Sanitary debris was the only material found during the investigation of this site.

CAS 03-08-002-A304 (Landfill Cell A3-4) consists of two buried waste cells. Sanitary debris was the only material found during the investigation of this site.

CAS 03-08-002-A305 (Landfill Cell A3-5) consists of one buried waste cell. Sanitary debris was the only material found during the investigation of this site.

CAS 03-08-002-A306 (Landfill Cell A3-6) consists of two buried waste cells. Sanitary debris was the only material found during the investigation of this site.

CAS 03-08-002-A308 (Landfill Cell A3-8) consists of two buried waste cells. Sanitary debris was the only material found during the investigation of this site.

CAU 424 Area 3 Landfill Complex Location Map

CAU 424 Land Use Restriction Surface Monuments

CAU 426: Cactus Spring Waste Trenches (TTR)

- CAS RG-08-001-RGCS: Waste Trenches

Contaminants/Waste Present

Sanitary waste was the only material confirmed to be present within the waste trenches during the characterization activities. Investigation activities confirmed the presence of wood, glass, metal, animal bone fragments, and paint chips.

Current Site Conditions

The waste trenches are covered by an engineered cover and the site is fenced.

Clean Closure ROM Cost

~\$2M

CASs

CAU 426 consists of one CAS (RG-08-001-RGCS) composed of four waste trenches located at Cactus Spring. The trenches were excavated to receive solid waste generated in support of Operation Roller Coaster, primarily the Double Tracks Test in 1963. The Double Tracks Test involved the use of live animals to assess the biological hazards associated with the non-nuclear detonation of plutonium-containing devices.

CAU 426 CAS RG-08-001-RGCS Cover and Fencing

CAU 453: Area 9 UXO Landfill (TTR)

- CAS 09-55-001-0952: Area 9 Landfill

Contaminants/Waste Present

Waste at this CAS consists of UXO and UXO debris.

Current Site Conditions

The Area 9 UXO landfill (CAS 09-55-001-0952) is closed with land use restrictions and is fenced. The landfill cells are marked by above-ground concrete monuments. The CAU is inspected annually to document the integrity of the site.

Clean Closure ROM Cost

~\$20M

CASs

CAU 453 consists of CAS 09-55-001-0952, which is composed of three waste cells located north of the Area 9 compound. The landfill cells were active from the early 1960s through 1993, and received waste generated from daily operations at Area 9 and from range cleanup of weapons testing debris. The buried contents of the landfill cells were not investigated due to the potential of live UXO.

CAU 453 CAS 09-55-001-0952 Landfill Monuments and Fencing

CAU 487: Thunderwell Site (TTR)

- CAS RG-26-001-RGRV: Thunderwell Site

Contaminants/Waste Present

Buried non-impacted metal debris is the only waste present at the Thunderwell Site.

Current Site Conditions

Two locations at CAU 487 CAS RG-26-001-RGRV (Thunderwell Site) containing buried metal debris related to the Thunderwell tests have land use restrictions and are marked by above-ground concrete monuments. The CAU is inspected annually to document the integrity of the site.

Clean Closure ROM Cost

~\$0.25M

CASs

CAU 487 CAS RG-26-001-RGRV (Thunderwell Site) is located southeast of the intersection of Avenue 57 and Avenue 25, approximately 5 miles north of Area 3. The site was the location of a series of reentry vehicle explosive tests conducted from 1957 until the early 1960s. Geophysical surveys of the site located two primary locations of large buried debris that were closed in place.

Numerous buried vertical metal tubes, approximately 6 feet in diameter, are also present at the site.

CAU 487 CAS RG-26-001-RGRV (Thunderwell Site) Monuments

Active CAU Descriptions

This section provides a summary of the CAUs and CASs where Environmental Restoration activities are currently being conducted. All currently active CAUs are planned for clean closure of any waste or contamination above action levels.

CAU 408: Bomblet Target Area (TTR)

- CAS TA-55-002-TAB2: Bomblet Target Areas

Contaminants/Waste Present

Contaminants and/or waste are expected to consist of submunition ordnance, explosive residue, and DU located at former test locations.

Current Site Conditions

This CAU is currently in the active closure phase, and field activities are anticipated to be completed by the end of fiscal year 2010.

CASs

CAS TA-55-002-TAB2 (Bomblet Target Areas) consists of six separate locations where submunition testing was conducted. These locations include Mid Target, BLU-63 area, SAC

Target, South Antelope Lake, and Tomahawk Targets 1 and 2. The sites in CAU 408 are planned to be clean closed and cleared of submunition.

CAU 484: Antelope and NEDS Lakes Waste Sites (TTR)

- CAS RG-52-007-TAML: Davis Gun Penetrator Test

Contaminants/Waste Present

Contaminants and/or waste at the CAU 484 locations consist of DU and miscellaneous debris.

Current Site Conditions

CAS RG-52-007-TAML was closed with land use restrictions in 2007. The impacted areas are marked by use restriction warning signs. The CAU is inspected annually to document the integrity of the site. This CAS is being re-addressed and is currently in the active closure phase. Field activities are anticipated to be completed by the end of fiscal year 2010.

CASs

CAS RG-52-007-TAML (Davis Gun Penetrator Test) consists of Davis Gun testing locations on Antelope, Brownes, Pedro, and Main Lakes, and Antelope Tuff 1, Antelope Tuff 2, Sidewinder Tuff, Myers Ridge, and Mt Helen (Nellis Range 75). The only location with land use restrictions is Antelope Lake. CAS RG-52-007-TAML is being re-addressed and is currently in the active closure phase. Field activities are anticipated to be completed by the end of fiscal year 2010. After completion, use restrictions will be removed.

CAU 484 Use Restriction Warning Sign