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*Symbol:* EPC-DO: 19-162
*LA-UR:* 19-24296
*Locates Action No.:* U1801172
*Date:* JUN 0 3 2019

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BUREAU

Ms. Michelle Hunter, Chief
Ground Water Quality Bureau
New Mexico Environment Department
Harold Runnels Building, Room N2261
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, NM 87502

**Subject: DP-1132, Condition No. 7, Verification of Secondary Containment, May 2019 Revision**

Dear Ms. Hunter:

On August 29, 2018, the New Mexico Environment Department (NMED) issued Discharge Permit DP-1132 to the U.S. Department of Energy and Triad National Security, LLC (DOE/Triad) for discharges of treated effluent from the TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF).

Pursuant to permit Condition No. 7, *Verification of Secondary Containment,* DOE/Triad are required to submit verification that all units intended to convey, store, treat or dispose of untreated liquid or semi-liquid waste streams meet the requirements of secondary containment. In November 2018 DOE/Triad identified six secondary containment units without leak detection systems. Installation of those six systems has been completed; DOE/Triad can now verify that all treatment, storage, and conveyance units at the RLWTF have secondary containment. The attached Verification of Secondary Containment Report provides information on each unit and its associated secondary containment (Attachment 1).



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Pursuant to permit Condition No. 7, *Verification of Secondary Containment,* DOE/Triad are required to submit verification that all units intended to convey, store, treat or dispose of untreated liquid or semi-liquid waste streams meet the requirements of secondary containment. In November 2018 DOE/Triad identified six secondary containment units without leak detection systems. Installation of those six systems has been completed; DOE/Triad can now verify that all treatment, storage, and conveyance units at the RLWTF have secondary containment. The attached Verification of Secondary Containment Report provides information on each unit and its associated secondary containment (Attachment 1).

On November 27, 2018, DOE/Triad reported to NMED that six of the 81 secondary containment units at the RLWTF did not have functioning leak detection systems (Attachment 2). DOE/Triad committed to complete the design of the missing systems within 90 days.

On March 20, 2019, DOE/Triad provided a status update to NMED on the six missing leak detection systems (Attachment 3). DOE/Triad reported that the design work was complete and installation would be finished by June 15, 2019.

This correspondence informs the NMED that the six leak detection systems have been installed and that all units intended to convey, store, treat or dispose of untreated liquid or semi-liquid waste streams meet the requirements in Discharge Permit DP-1132 for secondary containment.

Please contact Karen E. Armijo by telephone at (505) 665-7314 or by email at Karen.Armijo@nnsa.doe.gov, or Robert S. Beers by telephone at (505) 667-7969 or by email at bbeers@lanl.gov if you have questions regarding this report.

Sincerely,

Enrique "Kiki" Torres
Division Leader
Environmental Protection & Compliance
Triad National Security, LLC

Sincerely,

Karen E. Armijo
Permitting and Compliance Program Manager
National Nuclear Security Administration
U.S. Department of Energy

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Attachment(s): Attachment 1 DP-1132, Verification of Secondary Containment Report, May 2019 Revision
Attachment 2 DP-1132, Condition No. 7, Verification of Secondary Containment, November 19, 2018
Attachment 3 DP-1132, Status Update, Condition No. 7, Verification of Secondary Containment, March 20, 2019

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# ATTACHMENT 1

DP-1132, Verification of Secondary Containment Report,
May 2019 Revision

EPC-DO-19-162

LA-UR-19-24296

Date: JUN 0 3 2019

# Discharge Permit DP-1132
# Condition No. 7: Verification of Secondary Containment
# Radioactive Liquid Waste Treatment Facility (RLWTF)

---

## May 2019 Update

## Purpose

This report verifies secondary containment for all units and systems that convey, store, treat, or dispose of an untreated liquid or semi-liquid waste stream at the Radioactive Liquid Waste Treatment Facility (RLWTF) meet the requirements of secondary containment as defined in Ground water Discharge DP-1132.

## Requirements

Discharge Permit DP-1132 requires Los Alamos National Laboratory (LANL) to verify secondary containment by 11-27-2018. Permit requirements are listed below:

- Condition 7 requires LANL submit to the New Mexico Environment Department (NMED) verification demonstrating that all units intended to convey, store, treat, or dispose of an untreated liquid or semi-liquid waste stream meet the requirements of secondary containment as defined in DP-1132.
- Definition Y of DP-1132 defines secondary containment as a constructed unit or system designed to prevent any migration of waste streams or accumulated liquid out of the unit or system to the soil, ground water, or surface water at any time.
- Definition Y of DP-1132 adds that secondary containment can include, but is not limited to: double-walled pipes, concrete and floors equipped with sumps and alarm systems to detect potential leaks.

- Definition Y of DP-1132 also states that secondary containment must be:
  - Designed, constructed, and maintained to surround the unit on sides and bottom;
  - Free of cracks, gaps, or fissures;
  - Constructed of, or lined with, materials that are compatible with the waste streams to be in contact with the unit or system;
  - Placed on a foundation or base capable of withstanding pressure gradients, settling or uplift which may cause failure of the unit or system; and
  - Equipped with a leak detection system that is designed and operated so that it will detect the failure of the primary containment structure.

**Scope of the Secondary Containment Survey**

The secondary containment verification conducted by LANL included all facilities and systems regulated by DP-1132:

- Underground collection systems (piping and access vaults) at six LANL Technical Areas: TA-03, TA-35, TA-48, TA-50, TA-55, TA-59;
- Treatment units and systems in five buildings at TA-50 (Buildings 1, 2, 66, 248, and 250);
- The three treatment processes as described in the application for DP-1132: the main treatment process, the transuranic radioactive liquid waste (RLW) treatment process, and the secondary treatment process;
- Seventeen treatment units within the three treatment processes.

**Treatment Processes**

The RLWTF receives and treats RLW from generators at LANL. The RLWTF has a main treatment process for low-level RLW, a process for treating transuranic RLW, and a secondary treatment process for waste streams from both the low-level and transuranic processes.

The main treatment process consists of influent collection and storage, the treatment of low-level RLW, and the discharge of treated effluent. Process steps include treatment with chemicals in a reaction tank, filtration, ion exchange, and reverse osmosis. Treated effluent is sampled and analyzed prior to discharge. Two secondary streams are generated by primary treatment, solids precipitated in the reaction tanks, and reverse osmosis concentrate. Both are sent to the secondary treatment process.

Transuranic RLW treatment consists of influent collection and storage, treatment of the transuranic RLW, and sludge treatment. Treated transuranic RLW cannot discharged because it exceeds Department of Energy (DOE), Environmental Protection Agency (EPA), or NMED effluent limits. (e.g., Radioactivity levels in treated transuranic RLW can exceed levels found in low-level RLW influent.) Instead, treated transuranic RLW must be re-treated in the main or secondary treatment processes. Solids from the treatment process are concentrated, solidified with cement, and shipped to the Waste Isolation Pilot Plant (WIPP) for disposal as a transuranic waste.

The secondary process treats wastes from the primary and transuranic treatment process lines. It consists of a vacuum filter to treat solids from main process, secondary reverse osmosis to treat RO concentrate from the main process and/or treated transuranic RLW, and a bottoms disposal step. Wastes from the secondary treatment process are disposed as low-level radioactive solid waste.

### Treatment Units

Units within each of these process lines are summarized in Table 1, and discussed in the following pages.

**TABLE 1: RLWTF TREATMENT PROCESSES AND UNITS**

| Treatment Unit | | Location |
|---|---|---|
| **Main Treatment:** | | |
| M1 | Collection system | TA-03, 35, 48, 50, 55, 59 |
| M2 | Influent storage | 50-250 |
| M3 | Emergency influent storage | 50-250 |
| M4 | Reaction tanks | 50-01 |
| M5 | Microfilter | 50-01 |
| M6 | Pressure filters | 50-01 |
| M7 | Perchlorate ion exchange | 50-01 |
| M8 | Primary reverse osmosis | 50-01 |
| M10 | Effluent storage | 50-01 |
| **Transuranic:** | | |
| T1 | TRU Collection system | TA50, 55 |
| T2 | TRU Influent storage | 50-66 |
| T3 | TRU Treatment | 50-01 |
| T4 | TRU Sludge | 50-01 |
| T5 | TRU Effluent | 50-01 |
| **Secondary Treatment:** | | |
| S1 | Secondary reverse osmosis | 50-01 |
| S2 | Rotary vacuum filter | 50-01 |
| S3 | Bottoms storage | 50-248 |

Location: Technical Area – Building (e.g., 50-248)

Table 1 does not list treatment unit M9, copper-zinc ion exchange, because this treatment step is no longer used. Nor does Table 1 include units that convey or store treated water to be discharged to the environment, in accordance with DP-1132 Condition 7. Specifically, it does not list Outfall 051, the mechanical evaporator system (MES), or the solar evaporation tank (SET).

**Vessels and Secondary Containment**

Table 2 expands upon the treatment unit summary provided in Table 1. Table 2 lists vessels associated with each treatment unit, vessel location, and information about each vessel and its secondary containment.

Vessels include water treatment equipment (e.g., the microfilter) and tanks associated with the unit (e.g., the sludge tank and cleaning tanks). Each vessel is described by capacity, material of construction, and whether the vessel is above ground, on the ground (or floor), or inground. Definition CC of DP-1132 defines these three terms, as they apply to tanks.

Table 2 also describes the secondary containment provided for each vessel, by identifying the type of secondary containment, its material of construction, and the leak detection alarm that notifies RLWTF personnel of the presence of water in the secondary containment.

**Survey Summary**

The report of November 2018 had identified six rooms in Building 50-01 that were not equipped with leak detection systems. Leak detection systems have now been installed in those rooms.

The installation of the new leak detection systems now allows the RLWTF to confirm that secondary containment is in place for all units and systems that "convey, store, treat, or dispose of an untreated liquid or semi-liquid waste stream".

## Table 2: RLWTF Vessels and Secondary Containment

| | | | | Vessel | | | Secondary Containment | | |
|---|---|---|---|---|---|---|---|---|---|
| | Treatment Unit | Vessel(s) | Location | Capacity (gals.) | Category | Material | Structure | Material | Leak Detection |
| **Main Treatment:** | | | | | | | | | |
| M1 | Collection system | Piping (~ 4 miles) | Six TAs | --- | Inground | Polyethylene | Pipe | Polyethylene | 63 alarms |
| | | Vaults (63) | Six TAs | --- | Inground | Concrete | Floor | Concrete | 63 alarms |
| M2 | Influent storage | CS piping | 50-250-04 | --- | Aboveground | HDPE | Pipe | HDPE | 250-BW_to_WMRM |
| | | CS piping | 50-01-71A | --- | Aboveground | HDPE | Pipe | HDPE | 250-BW_from_WMRM |
| | | 1-TK1 | 50-250-01 | 3,000 | Onground | Steel | Floor | Concrete | 250_SMP1 |
| | | TK-W5, W6 | 50-250-03 | 50,000 ea. | Aboveground | Fiberglass | Floor | Concrete | 250_SMP3 |
| | | Xfer piping | 50-250-04 | --- | Inground | Polyethylene | Pipe | Polyethylene | 250_Inf, 250_Eff |
| M3 | Emergency influent storage | TK-W1, W2, W3, W4 | 50-250-03 | 50,000 ea. | Aboveground | Fiberglass | Floor | Concrete | 250_SMP3 |
| M4 | Reaction Tanks | TK71, TK72 | 50-01-70 | 10,000 ea. | Aboveground | Steel | Floor | Concrete | RUF_71A_A1 |
| | | CST1, CST2 | 50-01-16 | 4,800 | Onground | Steel | Floor | Concrete | SMP_16_A2 |
| M5 | Microfilter | Filter | 50-01-70 | 40 | Aboveground | Steel | Floor | Concrete | RUF_71A_A1 |
| | | Concentrate tank | 50-01-70 | 500 | Onground | Polyethylene | Floor | Concrete | RUF_71A_A1 |
| | | Cleaning tanks (2) | 50-01-70 | 400 | Onground | Polyethylene | Floor | Concrete | RUF_71A_A1 |
| M6 | Pressure filters | Filters (3) | 50-01-63 | 300 | Aboveground | Lined Steel | Floor | Concrete | SMP_16_A2 |
| M7 | Perchlorate ion exchange | IX vessels (8) | 50-01-16 | 400 | Aboveground | Fiberglass | Floor | Concrete | SMP_16_A2 |
| | | TK09 | 50-01-62 | 10,000 | Aboveground | Steel | Floor | Concrete | SMP_62_A1 |
| M8 | Primary reverse osmosis | R72 RO unit | 50-01-72 | 40 | Aboveground | Steel | Floor | Concrete | RUF_71A_A1 |
| | | R72 CIP tank | 50-01-72 | 500 | Aboveground | Polyethylene | Floor | Concrete | RUF_71A_A1 |
| | | M8 RO unit | 50-01-36 | 60 | Aboveground | Fiberglass | Floor | Concrete | SMP_36_A1 |
| | | M8 CIP tank | 50-01-36 | 300 | Aboveground | Polyethylene | Floor | Concrete | SMP_36_A1 |
| M9 | Reserved | | | | | | | | |
| M10 | Effluent storage | N.Frac, S.Frac | 50-01-34B | 20,000 | Aboveground | Steel | Floor | Concrete | SMP_34B_A1 |
| M11 | Effluent evaporator | ---- | 50-257 | 1,200 | Aboveground | S.Steel | Floor | Hypalon, Asphalt | -- |
| M11 | Solar evaporation | E.Tank, W.Tank | TA52 | 380,000 | Inground | HDPE | Liner | HDPE, Concrete | ID |
| M11 | NPDES Outfall #051 | ---- | Canyon | --- | Inground | --- | --- | --- | -- |

Notes: See Page 6.

## Table 2: RLWTF Vessels and Secondary Containment (concluded)

| | | | | Vessel | | | Secondary Containment | | |
|---|---|---|---|---|---|---|---|---|---|
| | Treatment Unit | Vessel(s) | Location | Capacity (gals.) | Category | Material | Structure | Material | Leak Detection |
| **Transuranic:** | | | | | | | | | |
| T1 | TRU Collection system | Piping (~1 mile) | TA50, TA55 | --- | Inground | PVDF, PP | Pipe | PVDF, PP | CTL_WM57_A1 |
| | | Vaults (1) | 50-201 | --- | Inground | Concrete | Floor | Concrete | CTL_WM57_A1 |
| T2 | TRU Influent storage | Acid tank | 50-66 | 3,900 | Aboveground | Steel | Floor | Concrete | CTL_WM66_A4 |
| | | Caustic tank | 50-66 | 3,000 | Aboveground | Steel | Floor | Concrete | CTL_WM66_A4 |
| T3 | TRU Treatment | TK1 | 50-01-60 | 900 | Aboveground | Steel | Floor | Concrete | SMP_60_A1 |
| | | TK2 | 50-01-60 | 800 | Aboveground | Fiberglass | Floor | Concrete | SMP_60_A1 |
| T4 | TRU Solids | TK-7A | 50-01-60A | 900 | Aboveground | Steel | Floor | Concrete | SMP_60A_A2 |
| T5 | TRU Effluent | TK3 | 50-01-60 | 1,000 | Aboveground | Fiberglass | Floor | Concrete | SMP_60_A1 |
| **Secondary Treatment:** | | | | | | | | | |
| S1 | Secondary reverse osmosis | RO vessel | 50-01-24 | 10 | Aboveground | Fiberglass | Floor | Concrete | SMP_24-A1 |
| | | TK25 | 50-01-24 | 300 | Aboveground | Polyethylene | Floor | Concrete | SMP_24-A1 |
| | | TK73 | 50-01-70 | 3,700 | Aboveground | Steel | Floor | Concrete | RUF_71A_A1 |
| S2 | Vacuum filter | Vacuum filter | 50-01-116 | 150 | Aboveground | S.Steel | Floor | Concrete | SMP_16_A2 |
| | | TK14, TK15 | 50-01-116 | 800 | Aboveground | Steel | Floor | Concrete | SMP_16_A2 |
| | | TK08 | 50-01-61 | 8,000 | Aboveground | Steel | Floor | Concrete | SMP-61-A1 |
| S3 | Bottoms storage | TK-NE, SE, SW, NW | 50-248 | 20,000 ea. | Aboveground | Steel | Floor | Concrete | SMP_TKF_A2 |
| | | 3K tank | 50-248 | 3,000 | Aboveground | Steel | Floor | Concrete | SMP_TKF_A2 |
| | | 17K tank | 50-02 | 17,000 | Aboveground | Steel | Floor | Concrete | SMP_WM2_A2 |

Notes:

1. Location: Technical Area-Bldg-Room
2. Vessel category per definition CC of DP-1132: Aboveground, Onground, Inground
3. Collection systems: Each access vault is equipped with a sump and leak detection probe-alarm
4. Leak detection: ID means in design.
5. Red indicates changes since November 2019.
6. S Steel means stainless steel.
7. HDPE means high-density polyethylene.
8. PVDF means polyvinylidene fluoride.
9. PP means polypropylene.

# ATTACHMENT 2

DP-1132, Condition No. 7,
Verification of Secondary Containment
November 19, 2018

EPC-DO-19-162

LA-UR-19-24296

Date: JUN 0 3 2019

EPC-DO: 19-162

ATTACHMENT 2

LA-UR-19-24296

Los Alamos NATIONAL LABORATORY

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*Symbol*: EPC-DO-18-403
*LA-UR*: 18-30432
*Locates Action No.*: U1801172
*Date*: NOV 19 2018

Ms. Michelle Hunter, Chief
Ground Water Quality Bureau
New Mexico Environment Department
Harold Runnels Building, Room N2261
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, NM 87502

**Subject: DP-1132, Condition No. 7, Verification of Secondary Containment**

Dear Ms. Hunter:

On August 29, 2018, the New Mexico Environment Department (NMED) issued Discharge Permit DP-1132 to the U.S. Department of Energy and Los Alamos National Security, LLC (subsequently transferred to Triad National Security, LLC) for discharges of treated effluent from the TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF). Pursuant to permit Condition No. 7, *Verification of Secondary Containment*, the U.S. Department of Energy and Triad National Security, LLC (DOE/Triad) is required to submit to NMED by November 27, 2018, verification that all units intended to convey, store, treat or dispose of untreated liquid or semi-liquid waste streams meet the requirements of secondary containment as defined in Discharge Permit DP-1132.

Enclosure 1 documents that all treatment, storage, and conveyance units at the RLWTF have secondary containment. The majority of those secondary containments—63 out of 81—are associated with the Radioactive Liquid Waste Collection System (RLWCS). The remaining 18 secondary containments are located within buildings and rooms at Technical Area (TA)-50. Presently, six of these 18 secondary containments do not have functioning leak detection systems, as required by permit Condition No. 7.

Planning and design are underway for installation of the missing leak detection systems. The design effort will take approximately 90 days. Once the design has been completed, a schedule for installing the additional detection systems will be prepared.

The RLWTF has round-the-clock knowledge of the status of vessels within TA-50 through other facility monitoring systems. For example, tank levels are continuously monitored and an unexpected level drop will generate an alarm that requires a response by the on-call duty operator. In addition, Rooms 60, 60A, and 61 are equipped with continuous radiation monitoring instruments that would sound an alarm if a vessel develops a leak.

In the interim, until the missing leak detection systems are installed, the listed rooms will be inspected at least once each work day. In addition, a revised secondary containment verification report will be submitted with each Discharge Permit DP-1132 quarterly monitoring report until all leak detection systems are installed and operational.

Please contact Karen E. Armijo by telephone at (505) 665-7314 or by email at Karen.Armijo@nnsa.doe.gov, or Robert S. Beers by telephone at (505) 667-7969 or by email at bbeers@lanl.gov if you have questions regarding this submittal.

Sincerely,

Enrique "Kiki" Torres
Division Leader
Environmental Protection & Compliance
Triad National Security, LLC

Sincerely,

Karen E. Armijo
Permitting and Compliance Program Manager
National Nuclear Security Administration
U.S. Department of Energy

TVV/KEA/MTS/RSB:jdm

Enclosure(s): (1) DP-1132, Verification of Secondary Containment

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# ENCLOSURE 1

DP-1132, Verification of Secondary Containment

EPC-DO: 18-403

LA-UR-18-30432

Date: NOV 19 2018

**Discharge Permit DP-1132**
**Condition No. 7: Verification of Secondary Containment**
**Radioactive Liquid Waste Treatment Facility (RLWTF)**

---

**November 2018**

## Purpose

This report verifies secondary containment for all units and systems that convey, store, treat, or dispose of an untreated liquid or semi-liquid waste stream at the Radioactive Liquid Waste Treatment Facility (RLWTF) meet the requirements of secondary containment as defined in Discharge Permit DP-1132.

## Requirements

Discharge Permit DP-1132 requires Los Alamos National Laboratory (LANL) to verify secondary containment by November 27, 2018. Permit requirements are listed below:

- Condition 7 of DP-1132 requires that LANL submit to the New Mexico Environment Department (NMED) verification demonstrating that all units intended to convey, store, treat, or dispose of an untreated liquid or semi-liquid waste stream meet the requirements of secondary containment as defined in DP-1132.
- Definition Y of DP-1132 defines secondary containment as a constructed unit or system designed to prevent any migration of waste streams or accumulated liquid out of the unit or system to the soil, ground water, or surface water at any time.
- Definition Y of DP-1132 adds that secondary containment can include, but is not limited to: double-walled pipes, concrete and floors equipped with sumps and alarm systems to detect potential leaks.
- Definition Y of DP-1132 states that secondary containment must be:
  - Designed, constructed and maintained to surround the unit on sides and bottom;
  - Free of cracks, gaps, or fissures;
  - Constructed of, or lined with, materials that are compatible with the waste streams to be in contact with the unit or system;
  - Placed on a foundation or base capable of withstanding pressure gradients, settling or uplift which may cause failure of the unit or system; and
  - Equipped with a leak detection system that is designed and operated so that it will detect the failure of the primary containment structure.

**Scope of the Secondary Containment Survey**

The secondary containment verification included all facilities and systems regulated by Discharge Permit DP-1132:

- Underground collection systems (piping and access vaults) at six LANL Technical Areas: TA-03, TA-35, TA-48, TA-50, TA-55, TA-59;
- Treatment units and systems in five buildings at TA-50 (Buildings 1, 2, 66, 248, and 250);
- The three treatment processes as described in Discharge Permit DP-1132: the main treatment process, the transuranic radioactive liquid waste (RLW) treatment process, and the secondary treatment process;
- The seventeen treatment units within the three treatment processes.

**Treatment Processes**

The RLWTF receives and treats RLW from generators at LANL. The RLWTF has a main treatment process for low-level RLW, a process for treating transuranic RLW, and a secondary treatment process for waste streams from both the low-level and transuranic processes.

The main treatment process consists of influent collection and storage, the treatment of low-level RLW, and the discharge of treated water to the environment. Process steps include treatment with chemicals in a reaction tank, filtration, ion exchange, reverse osmosis, and the sampling and analysis of treated water prior to discharge. Two secondary streams are generated by primary treatment, solids precipitated in the reaction tanks, and reverse osmosis concentrate. Both are sent to the secondary treatment process.

Transuranic RLW treatment consists of influent collection and storage, treatment of the transuranic RLW, and sludge treatment. Treated transuranic RLW cannot be discharged to the environment because it exceeds DOE, EPA, and NMED effluent limits (e.g., Radioactivity levels in treated transuranic RLW can exceed levels found in low-level RLW influent). Instead, treated transuranic RLW must be re-treated in the main or secondary treatment processes. Solids from the treatment process are concentrated, solidified with cement, and shipped to the Waste Isolation Pilot Plant (WIPP) for disposal as a transuranic waste.

The secondary process treats wastes from the primary and transuranic treatment lines. It consists of a vacuum filter to treat solids from main process, secondary reverse osmosis to treat RO concentrate from the main process and/or treated transuranic RLW, and a bottoms disposal step. Wastes from the secondary treatment process are disposed as low-level radioactive solid waste.

**Treatment Units**

Units within each of these process lines are summarized in Table 1, and discussed in the following pages.

**TABLE 1: RLWTF TREATMENT PROCESSES AND UNITS**

| Treatment Unit | | Location |
|---|---|---|
| **Main Treatment:** | | |
| M1 | Collection system | TA-03, 35, 48, 50, 55, 59 |
| M2 | Influent storage | 50-250 |
| M3 | Emergency influent storage | 50-250 |
| M4 | Reaction tanks | 50-01 |
| M5 | Microfilter | 50-01 |
| M6 | Pressure filters | 50-01 |
| M7 | Perchlorate ion exchange | 50-01 |
| M8 | Primary reverse osmosis | 50-01 |
| M10 | Effluent storage | 50-01 |
| **Transuranic:** | | |
| T1 | TRU Collection system | TA50, 55 |
| T2 | TRU Influent storage | 50-66 |
| T3 | TRU Treatment | 50-01 |
| T4 | TRU Sludge | 50-01 |
| T5 | TRU Effluent | 50-01 |
| **Secondary Treatment:** | | |
| S1 | Secondary reverse osmosis | 50-01 |
| S2 | Rotary vacuum filter | 50-01 |
| S3 | Bottoms storage | 50-248 |

Location: Technical Area – Building (e.g., 50-248)

Table 1 does not list treatment unit M9, copper-zinc ion exchange, because this treatment step is no longer used. Nor does Table 1 include units that convey or store treated water to be discharged to the environment, in accordance with DP-1132 Condition 7. Specifically, it does not list the NPDES Outfall 051, the mechanical evaporator system (MES), or the solar evaporation tank (SET).

**Vessels and Secondary Containment**

Table 2 expands upon the treatment unit summary provided in Table 1. Table 2 lists vessels associated with each treatment unit, vessel location, and information about each vessel and its secondary containment.

Vessels include water treatment equipment (e.g., the microfilter) and tanks associated with the unit (e.g., the sludge tank and cleaning tanks). Each vessel is described by capacity, material of construction, and whether the vessel is above ground, on the ground (or floor), or in-ground. Definition CC of Discharge Permit DP-1132 defines these three terms, as they apply to tanks.

Table 2 also describes the secondary containment provided for each vessel, by identifying the type of secondary containment, its material of construction, and the leak detection alarm that notifies RLWTF personnel of the presence of water in the secondary containment.

**Survey Summary**

The survey confirmed that secondary containment is in place for all units and systems that convey, store, treat, or dispose of an untreated liquid or semi-liquid waste stream. However, the following rooms in Building 50-01 do not have the required leak detection systems:

- Room 24, location of the secondary reverse osmosis treatment unit
- Room 36, location of the double-pass M8 reverse osmosis unit
- Room 61, used for storage of low-level solids (TK08)
- Rooms 60 and 60A, location of equipment for the treatment of transuranic RLW
- Room 62, used for storage of RLW that has been chemically treated and filtered (TK09)

Planning and design is underway for the installation of the required leak detection system in these rooms. The design effort will take approximately 90 days. Once the design has been completed, a schedule for installing the additional detection systems will be prepared.

The RLWTF has round-the-clock knowledge of the status of vessels within these rooms through the other facility monitoring systems. For example, tank levels are continuously monitored, and unexpected level drops generate an alarm that requires a response by an on-call duty operator. In addition, Rooms 60, 60A, and 61 are equipped with continuous radiation monitoring instruments that would sound an alarm if a vessel develops a leak.

In the interim, until the leak detection alarms are installed, the listed rooms will be inspected at least once each work day. In addition, a revised secondary verification report will be submitted with each DP-1132 quarterly monitoring report, until leak detection systems are installed.

## Table 2: RLWTF Vessels and Secondary Containment

| Treatment Unit | | Vessel | Location | Vessel | | | Secondary Containment | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Capacity (gals.) | Category | Material | Structure | Material | Leak Detection |
| **Main Treatment:** | | | | | | | | | |
| M1 | Collection system | Piping (~ 4 miles) | Six TAs | --- | In-ground | Polyethylene | Pipe | Polyethylene | 63 alarms |
| | | Vaults (63) | Six TAs | --- | In-ground | Concrete | Floor | Concrete | 63 alarms |
| M2 | Influent storage | WMRM tanks (2) | 50-250-003 | 50,000 | Aboveground | Fiberglass | Floor | Concrete | PLC250_SMP3 |
| | | Xfer piping | 50-250-004 | --- | In-ground | Polyethylene | Pipe | Polyethylene | 250_Inf, 250_Eff |
| | | Xfer pump room | 50-250-001 | --- | Aboveground | Steel | Floor | Concrete | PLC250_SMP1 |
| M3 | Emergency influent storage | WMRM tanks (4) | 50-250-003 | 50,000 | Aboveground | Fiberglass | Floor | Concrete | PLC250_SMP3 |
| M4 | Reaction Tanks | TK71, TK72 | 50-01-70 | 10,000 | Aboveground | Steel | Floor | Concrete | RUF_71A_A1 |
| M5 | Microfilter | Filter | 50-01-70 | 40 | Aboveground | Steel | Floor | Concrete | RUF_71A_A1 |
| | | Sludge tank | 50-01-70 | 500 | On-ground | Polyethylene | Floor | Concrete | RUF_71A_A1 |
| | | Cleaning tanks (2) | 50-01-70 | 200 | On-ground | Polyethylene | Floor | Concrete | RUF_71A_A1 |
| M6 | Pressure filters | Filters (3) | 50-01-63 | 100 | Aboveground | Lined Steel | Floor | Concrete | SMP_16_A2 |
| M7 | Perchlorate ion exchange | IX vessels (8) | 50-01-16 | 50 | Aboveground | Fiberglass | Floor | Concrete | SMP_16_A2 |
| | | TK09 | 50-01-62 | 10,000 | Aboveground | Steel | Floor | Concrete | F |
| M8 | Primary reverse osmosis | R72 RO unit | 50-01-72 | 40 | Aboveground | Steel | Floor | Concrete | RUF_71A_A1 |
| | | R72 CIP tank | 50-01-72 | 500 | Aboveground | Polyethylene | Floor | Concrete | RUF_71A_A1 |
| | | M8 RO unit | 50-01-36 | 60 | Aboveground | Fiberglass | Floor | Concrete | F |
| | | M8 CIP tank | 50-01-36 | 300 | Aboveground | Polyethylene | Floor | Concrete | F |
| M1 | Effluent storage | N.Frac, S.Frac | 50-01-34B | 20,000 | Aboveground | Steel | Floor | Concrete | SMP_34B_A1 |
| **Transuranic:** | | | | | | | | | |
| T1 | TRU Collection system | Piping (~1 mile) | TA50, TA55 | --- | In-ground | PVDF, PP | Pipe | PVDF, PP | CTL_WM57_A1 |
| | | Vaults (1) | 50-201 | --- | In-ground | Concrete | Floor | Concrete | CTL_WM57_A1 |
| T2 | TRU Influent storage | Acid tank | 50-66 | 3,900 | Aboveground | Steel | Floor | Concrete | CTL_WM66_A4 |
| | | Caustic tank | 50-66 | 3,000 | Aboveground | Steel | Floor | Concrete | CTL_WM66_A4 |
| T3 | TRU Treatment | TK1 | 50-01-60 | 900 | Aboveground | Steel | Floor | Concrete | F |
| | | TK2 | 50-01-60 | 800 | Aboveground | Fiberglass | Floor | Concrete | F |
| T4 | TRU Sludge | TK-7A | 50-01-60A | 900 | Aboveground | Steel | Floor | Concrete | F |
| T5 | TRU Effluent | TK3 | 50-01-60 | 1,000 | Aboveground | Fiberglass | Floor | Concrete | F |

**Notes:** See Page 6

## Table 2: RLWTF Vessels and Secondary Containment (concluded)

| Treatment Unit | | Vessel | Location | Vessel | | | Secondary Containment | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Capacity (gals.) | Category | Material | Structure | Material | Leak Detection |
| **Secondary Treatment:** | | | | | | | | | |
| S1 | Secondary reverse osmosis | RO vessel | 50-01-24 | 10 | Aboveground | Fiberglass | Floor | Concrete | F |
| | | TK25 | 50-01-24 | 300 | Aboveground | Polyethylene | Floor | Concrete | F |
| | | TK73 | 50-01-70 | 3,700 | Aboveground | Steel | Floor | Concrete | RUF_71A_A1 |
| S2 | Rotary vacuum filter | Vacuum filter | 50-01-116 | 900 | Aboveground | S.Steel | Floor | Concrete | SMP_16_A2 |
| | | TK08 | 50-01-61 | 8,000 | Aboveground | Steel | Floor | Concrete | F |
| S3 | Bottoms storage | TK-NE, SE, SW, NW | 50-248 | 20,000 | Aboveground | Steel | Floor | Concrete | SMP_TKF_A2 |
| | | 3K tank | 50-248 | 3,000 | Aboveground | Steel | Floor | Concrete | SMP_TKF_A2 |
| | | 17K tank | 50-02 | 17,000 | Aboveground | Steel | Floor | Concrete | SMP_WM2_A2 |

**Notes:**

1. Vessel Descriptions, per definition CC of DP-1132: Aboveground, On-ground, In-ground.
2. When multiple tanks or vessels are identified, capacity is for each vessel.
3. Collection systems: Each access vault is equipped with a sump and leak detection probe-alarm
4. Collection system:
   - Piping: leaks in primary pipe would drain into the next downstream access vault.
   - Access vaults: each is equipped with a sump and leak detection probe-alarm.
5. Location: Technical Area-Bldg-Room
6. F means a leak detection system for the listed containment needs to be installed.

# ATTACHMENT 3

DP-1132, Status Update, Condition No. 7,
Verification of Secondary Containment,
March 20, 2019

EPC-DO-19-162

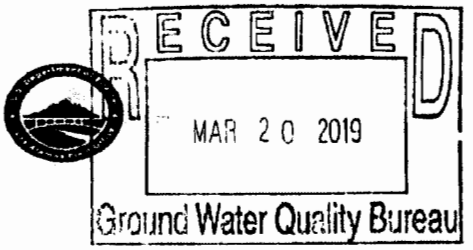
LA-UR-19-24296

Date: JUN 0 3 2019

EPC-DO: 19-162 ATTACHMENT 3 LA-UR-19-24296

Los Alamos NATIONAL LABORATORY EST 1943

COPY

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*Symbol*: EPC-DO-19-069
*LA-UR*: 19-21981
*Locates Action No.*: U1801172
*Date*: MAR 2 0 2019

Ms. Michelle Hunter, Chief
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1190 St. Francis Drive
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Santa Fe, NM 87502

**Subject: DP-1132, Status Update, Condition No. 7, Verification of Secondary Containment**

Dear Ms. Hunter:

On August 29, 2018 the New Mexico Environment Department (NMED) issued Discharge Permit DP-1132 to the U.S. Department of Energy and Los Alamos National Security, LLC (subsequently transferred to Triad National Security, LLC) for discharges of treated effluent from the TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF). Pursuant to permit Condition No. 7, *Verification of Secondary Containment*, the U.S. Department of Energy and Triad National Security, LLC (DOE/Triad) were required to submit to NMED by November 27, 2018 verification that all units intended to convey, store, treat, or dispose of untreated liquid or semi-liquid meet the requirements of secondary containment, as defined in Discharge Permit DP-1132. In a November 19, 2018 letter (Attachment 1), DOE/Triad submitted the required verification to NMED. In summary, the above-referenced letter communicated the following:

1. The RLWTF has secondary containment for all units and systems intended to convey, store, treat, or dispose of an untreated liquid or semi-liquid.
2. Six rooms at the RLWTF do not have the required leak detection systems.
3. Designs for the missing leak detection systems would be completed in ~90 days.
4. An installation schedule would be submitted to NMED when the design was complete.

The designs for leak detection systems in the six rooms identified in the above-referenced November 19, 2018, letter (Attachment 1) have been completed, and installation will be finished by June 15, 2019. Upon completion of work, a revised secondary containment verification report will be submitted to NMED.

Please contact Karen E. Armijo by telephone at (505) 665-7314 or by email at Karen.Armijo@nnsa.doe.gov, or Robert S. Beers by telephone at (505) 667-7969 or by email at bbeers@lanl.gov if you have questions regarding this update.

Sincerely,

Enrique "Kiki" Torres
Division Leader
Environmental Protection & Compliance
Triad National Security, LLC

Sincerely,

Karen E. Armijo
Permitting and Compliance Program Manager
National Nuclear Security Administration
U.S. Department of Energy

ET/KEA/MTS/RSB:jdm

Attachment(s): Attachment 1 DP-1132, Condition No. 7, Verification of Secondary Containment

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