Fullam Docs 030714 /caseloads / LANL / LANL emails

Fullam, Jennifer, NMENV

From:	Pruett, Jennifer, NMENV
Sent:	Monday, January 13, 2014 7:19 AM
To:	Beers, Bob; Fullam, Jennifer, NMENV
Cc:	Saladen, Michael T
Subject:	RE: Comments on DP-1132 Draft Discharge Permit

Good morning Bob,

My apologies for my delayed response. I dropped the ball after promising Jenn Fullam I'd reply. We'll need you to send in an IPRA for these documents, then will work with you to get them to you in a way that works for you. We may have some electronically, but others may be hard copy only.

Thanks, and again – I apologize for taking so long to respond.

Thank you for your patience,
JJP

Jennifer J. Pruett
Manager, Pollution Prevention Section
Harold Runnels Bldg.
1190 St. Francis Dr.
P.O. Box 5469
Santa Fe, NM 87502-5469
505-827-0652

From: Beers, Bob [mailto:bbeers@lanl.gov]
Sent: Tuesday, January 07, 2014 2:37 PM
To: Fullam, Jennifer, NMENV
Cc: Saladen, Michael T; Pruett, Jennifer, NMENV
Subject: Comments on DP-1132 Draft Discharge Permit

Hi Jennifer,

Would it be possible for LANS to obtain copies of the public comments submitted to the NMED on draft Discharge Permit DP-1132?

If they are too large to email (or too inconvenient) then I could come by to pick up hard-copies.

I'll be at GWQB tomorrow dropping off a document.

Thanks,

Bob Beers
Los Alamos National Security, LLC
505-667-7969

: 08464

AECOM

Facility Operations Analysis and Sequence of Operations for the TA-50 Radioactive Liquid Waste Treatment Facility Upgrade Project (RLWTF-UP) Low-Level Waste Subproject

60239831-EASO-001, Revision B

January 17, 2013

Prepared for
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

Reviewed Classification/UCNI

Edward N. Gift	179991	4 Jan 2013	Unclassified
(Reviewed By)	Z#	(Review Date)	(Classification)

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60239831-EASO-001, Revision B

Prepared for: Los Alamos National Laboratory
P.O. Box 1663
Los Alamos, New Mexico 87545

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Contract 66355-001-09

Approvals:

Ja-Kael Luey, PE, Engineering Manager — Date

Kirk Boes, Project Manager — Date

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List of Terms

ALARA	as low as reasonably achievable
AOBV	Air-Operated Ball Valve
ASME®	American Society of Mechanical Engineers
ENC	Enclosure
ESM	*Engineering Standards Manual*
EVAP	Evaporator
FCV	Flow Control Valve
FDD	Facility Design Description
FLT	Filter
FRD	Functions and Requirements Document
HEPA	high-efficiency particulate air
HVAC	Heating, Ventilation, and Air Conditioning
LANL	Los Alamos National Laboratory
LLW	low-level waste

MTPS	Main Treatment Process System
MXC	In-Line Mixer
NFGC®	*National Fuel Gas Code®*
NFPA	National Fire Protection Association
P	Pump
P&ID	process piping and instrumentation diagram
PC	Performance Category
RAMI	Reliability, Availability, Maintainability, and Inspectability
RLWCS	Radioactive Liquid Waste Collection System
RLWTF	Radioactive Liquid Waste Treatment Facility
RLWTF-UP	Radioactive Liquid Waste Treatment Facility Upgrade Project
ROU	Reverse-Osmosis Unit
SDC	Seismic Design Category
SDD	System Design Description
SWTPS	Secondary Waste Treatment and Packaging System
TA	Technical Area
TK	Tank
UMC®	*Uniform Mechanical Code®*
UPC®	*Uniform Plumbing Code®*
WAC	Waste Acceptance Criteria
WAH	High Weight Alarm
WAHH	High-High Weight Alarm
ZLD	Zero Liquid Discharge

List of Trademarks

ASHRAE	Registered trademark of the American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc.
ASME	Registered trademark of the American Society of Mechanical Engineers.
AutoCAD	Registered trademark of AutoDesk, Inc.
Isolok	Registered trademark of Bristol Equipment Company.
NFGC and *National Fuel Gas Code*	Registered trademarks of the National Fire Protection Association.
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1.0 Introduction

The Radioactive Liquid Waste Treatment Facility (RLWTF) located at the Los Alamos National Laboratory (LANL) has been in operation since 1963. It is currently well beyond its original design life of 25 years. The RLWTF Upgrade Project (RLWTF-UP) will be a replacement facility designed to receive, treat, and discharge liquid waste feed from various LANL technical areas (TAs). The RLWTF-UP Low-Level Waste (LLW) Subproject will be constructed for the treatment of LLW.

This Facility Operations Analysis and Sequence of Operations provide the process system description, facility layout description, operational time-cycle, and estimated resource requirements for operation of the RLWTF. This facility does not treat transuranic waste, which will be addressed under a different project.

1.1 Purpose

The purpose of this document is to provide a summary-level description of the operational philosophy for the LLW Subproject. The level of detail is commensurate with inputs required to support the *Design Basis and Approach for the TA-50 Radioactive Liquid Waste Treatment Facility Upgrade Project (RLWTF-UP) Low-Level Waste Subproject* (60239831-TRPT-001) and schedule.

1.2 Scope

This document is one of several related documents that address an overall project implementation strategy. This document addresses operation-specific activities beginning with preparation of the operational procedures and operator training required for the Readiness Review, hot startup, facility, and process run-in period, and routine operations (see Figure 1-1). General conditions of operations, such as upset and emergency conditions, are outlined in the *Radioactive Liquid Waste Treatment Facility Upgrade Project (RLWTF-UP) Low Level Waste Subproject Functions and Requirements Document* (FRD) (100761-LLW-FRD-0017) and have been further defined using inputs from the *Preliminary Hazards Analysis Report for the Radioactive Liquid Waste Treatment Facility Upgrade Project Low-Level Waste and Common Support Capability* (RLWTF-UP-PHAR-11-001-R0).

Figure 1-1. Applicable Project Phase.

<table>
<tr><th>Design</th><th>Fabrication</th><th>Construction</th><th>Cold Startup</th><th>Readiness</th><th>Hot Startup</th><th>Run-In</th><th>Operations</th></tr>
<tr><td>Design and validate design inputs</td><td>Procure and validate component performance</td><td>Construct, install, and verify system's integrity</td><td>Shakedown facility and process</td><td>Demonstrate operators' performance</td><td>Introduce Radioactive Waste</td><td>Ramp-up to full production</td><td>Full production</td></tr>
<tr><td colspan="6">Existing Plant Operations</td><td>[standby]</td><td></td></tr>
<tr><td colspan="3"></td><td colspan="5">New Facility Operations</td></tr>
<tr><td colspan="8">Supporting Documents</td></tr>
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<tr><td colspan="3"></td><td colspan="2">Operator Training</td><td colspan="3">Operations Strategy</td></tr>
<tr><td colspan="2"></td><td colspan="6">Decontamination and Decommissioning Plan</td></tr>
<tr><td colspan="2"></td><td colspan="6">Integration Plan</td></tr>
</table>

1.3 Document Interfaces

This document is consistent with the FRD (100761- LLW-FRD-0017) and relies on inputs from the following design media:

- 60239831-FDD-001, *S.1.1 Low-Level Waste Treatment Building, Facility Design Description for the TA-50 Radioactive Liquid Waste Treatment Facility Upgrade Project (RLWTF-UP) Low-Level Waste Subproject*;
- 60239831-PCAL-001, *LLW Bounding Material Balance* calculation;
- 60239831-RAMI-001, *Reliability, Availability, Maintainability, and Inspectability Analysis for the Radioactive Liquid Waste Treatment Facility Upgrade Project (RLWTF-UP) Low-Level Waste Subproject*; and
- 60239831-SDD-001, *S.1.3 Process Systems, System Design Description for the TA-50 Radioactive Liquid Waste Treatment Facility Upgrade Project (RLWTF-UP) Low-Level Waste Subproject.*
- Drawing C55864, Sheets A-1150 and A-1151 (facility arrangement or layout drawings);
- Drawing C55864, Sheets D-6010 through D-6030 and D-6035 [process piping and instrumentation diagrams (P&IDs)];
- Drawing C55867, Sheets D-6410, 6411, and D-6412 (P&IDs);
- RLWTF-UP-PHAR-11-001-R0, *Preliminary Hazards Analysis Report for the Radioactive Liquid Waste Treatment Facility Upgrade Project Low-Level Waste and Common Support Capability*;

The operational strategy will be used as an input to the schedule.

2.0 Process System Description

Description for the LLW process is provided to support the subsequent discussions of the operation philosophy. The systems are divided into primary process systems, facility support systems, facility site systems, and architectural/structural systems. The architectural/structural systems are discussed in Section 3.0. Further details on each of the following system descriptions are provided in the LLW Treatment Building, Facility Design Description (FDD) (60239831-FDD-001) and the Process Systems, System Design Description (SDD) (60239831-SDD-001).

The concept of skid-mounted (modular) systems and components has been incorporated throughout the design of the process, where practical, for ease of installation, maintenance, and versatility.

2.1 Primary Process Systems

The LLW Subproject is being designed to treat the LLW wastewater received from the LLW Influent Storage Facility. The wastewater will be fed to the RLWTF entering the building in the vicinity of the Influent Roughing Filter (FLT-1101).

The five Primary Process Systems are:

1. Low-Level Waste Main Treatment Process System (LLW MTPS) (Section 2.1.1),
2. Low-Level Waste Secondary Waste Treatment and Packaging System (LLW SWTPS) (Section 2.1.2),
3. Treated Effluent System (Section 2.1.3),
4. Chemical Dosing System (Section 2.1.4), and
5. Sample Collection System (Section 2.1.5).

Overall, the LLW treatment process is a combination of semi-continuous and batch operations. Based on the design of the process, some of the unit operations can be operated independent of each other in response to plant conditions. For the LLW wastewater process, a tank in the LLW Influent Storage Facility is analyzed to ensure LLW Waste Acceptance Criteria (WAC) is met prior to sending to the LLW Treatment Building for treatment. This tank represents a "batch" which will be processed through the facility over the course of multiple days. This batch is transferred to and collected in the reaction tanks until sufficient material is present to warrant treatment operations.

2.1.1 Low-Level Waste Main Treatment Process System

The LLW MTPS receives and treats LLW transferred from the LLW Influent Storage Facility. The LLW MTPS is comprised of the following five subsystems:

1. Low-Level Waste Influent Filter System (Section 2.1.1.1),
2. Low-Level Waste Reaction/Precipitation System (Section 2.1.1.2),
3. Low-Level Waste Microfiltration System (Section 2.1.1.3),
4. Low-Level Waste Reverse-Osmosis System(Section 2.1.1.4), and
5. Low-Level Waste Polishing System (Section 2.1.1.5).

2.1.1.1 Low-Level Waste Influent Filter System. The LLW Influent Filter System consists of one mechanically cleaned roughing filter. The LLW Influent Filter System has the primary function of removing particulates that are greater than 150 microns in size. Periodically the separated particulate is purged, sending these solids to be packaged into 55-gallon drums.

2.1.1.2 Low-Level Waste Reaction/Precipitation System. The LLW Reaction/Precipitation System removes radionuclide and inorganic contaminants from the LLW influent by adding magnesium sulfate and ferric sulfate, and adjusting the pH to 10.8. This treatment co-precipitates inorganic and radionuclide contaminants removing silica and other scale forming materials similar to calcium carbonate that are subsequently separated from the water by filtration. The system consists of an inline mixer for injecting the chemicals into the roughing filter effluent to a single 1,000-gallon reaction tank. The tank is sized to

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provide sufficient residence time for the precipitation to occur. The tank is also a collection point for several recycle streams, specifically the decanted liquid from the Sludge Thickening Tank, the liquid from the Rotary Press, most of the concentrate from Reverse Osmosis, and optionally the condensate from the Low-Temperature Evaporator. The tank is equipped with a low-speed mechanical mixer to agitate the tank's contents, as needed. The LLW Reaction/Precipitation System in conjunction with the LLW Microfiltration System constitutes a pretreatment that prepares water for reverse osmosis.

2.1.1.3 Low-Level Waste Microfiltration System. The LLW Microfiltration System removes and concentrates suspended solids carried over in the stream from the Reaction Tank. The LLW Microfiltration System consists of a second Reaction/Concentration Tank and a Microfilter Bank. A Microfilter operates on a cross-flow basis circulating concentrate at a high flow rate from the Reaction/Concentration Tank through the filter tubes and back to the Reaction/Concentration Tank, while taking off a solids-free filtrate. The filtrate rate is about 10 percent of the circulating concentrate rate. Frequent automatic backpulsing is required to maintain acceptable flux across the Microfilter. Chemical cleaning is required periodically when backpulsing becomes ineffective. Filtrate is sent to the LLW Reverse-Osmosis System. A slip stream of the concentrate containing the separated solids is taken off at the Reaction/Concentration Tank and sent to the LLW SWTPS.

2.1.1.4 Low-Level Waste Reverse-Osmosis System. The LLW Reverse-Osmosis System consists of a pH Adjustment Tank (TK-1301), a Reverse-Osmosis Unit (ROU-1301), and a Permeate Holding Tank (TK-1304). TK-1301 receives Microfilter (FLT-1201) filtrate. The filtrate and pH adjusting chemicals (sulfuric acid or sodium hydroxide) are blended in the tank using a mixer. pH is monitored in the tank discharge to regulate the addition of pH adjusting chemicals. Filtrate adjusted to the correct pH is discharged from TK-1301 to ROU-1301. Reverse Osmosis recovers about 75 volume percent of the influent filtered water as permeate with 25 volume percent and most of the dissolved solids reporting to Reverse Osmosis concentrate. TK-1304 is equipped for pH adjustment, if required. The ROU-1301 skid is equipped with an on-board cartridge filter.

2.1.1.5 Low-Level Waste Polishing System. The LLW Polishing System for the Reverse-Osmosis Permeate consists of two ion-exchange columns for removing perchlorate ions, two ion-exchange columns for polishing metal contaminants, and two carbon adsorption columns for removing organics. The pairs of columns are arranged in a lead and lag configuration (i.e., in series) with sampling between the columns to track the breakthrough status of the lead column. Valving is provided so that any combination of treatments may be operated, or the entire polishing system may be bypassed if no polishing is required. The vessels will be drained and replaced when spent. LANL-approved arrangements will be made for the disposition of the vessels with spent resins/adsorbers.

2.1.2 Low-Level Waste Secondary Waste Treatment and Packaging System

The LLW SWTPS receives the secondary waste from the LLW MTPS and provides subsequent treatment (e.g., further dewatering of solids in a Rotary Press and dewatering of liquid waste with a Low-Temperature Evaporator) for packaging. The LLW SWTPS is comprised of the following four subsystems:

1. Low-Level Waste Solids Collection and Concentration System (Section 2.1.2.1),
2. Low-Level Waste Dewatering System (Section 2.1.2.2),
3. Low-Level Waste Liquids Drum Loading System (Section 2.1.2.3), and
4. Low-Level Waste Solids Drum Loading System (Section 2.1.2.4).

2.1.2.1 Low-Level Waste Solids Collection and Concentration System. The LLW Solids Collection and Concentration System is comprised of a Sludge Thickening Tank with associated pump, Thickener Decant Holding Tank with transfer pump, Solids Concentration Rotary Press and pump, and a Rotary Press Filtrate Tank (TK-1707) with associated transfer pump. The Sludge Thickening Tank receives the

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solids concentrate from the Microfilter and dewaters the solids by gravity settling. The thickened solids are then periodically processed through a Rotary Press, discharging fully dewatered solids cake into a waste drum. Liquids separated at the Rotary Press, and decanted at the Sludge Thickening Tank, are recycled to the Reaction Tanks. Bulk filtering aid is added to the Sludge Thickening Tank as needed to enhance the dewatering performance of the Rotary Press.

2.1.2.2 Low-Level Waste Dewatering System. The LLW Dewatering System is comprised of an Evaporator Feed Tank, Low-Temperature Evaporator, and an Evaporator Condensate Tank. A sidestream of the reverse osmosis concentrate is diverted to the Evaporator Feed Tank, with most of the reverse osmosis concentrate recycling to the Reaction Tanks. The Low-Temperature Evaporator condensate capacity is 2.2 gpm, and it is advisable to maximize the concentrate diverted to evaporation subject to the maximum condensate generation capacity. Less concentrate recycle to the Reaction Tank is advantageous because it results in lower overall total dissolved solids concentration building up in the system. The Low-Temperature Evaporator operates at reduced pressure, thus allowing 30 percent salt solution (normal boiling point around 103 °C) to boil at 50 °C (122 °F) or less. The actual operating temperature of the Low-Temperature Evaporator is dependent on the pressure in the evaporator maintained by the onboard vacuum system.

2.1.2.3 Low-Level Waste Liquids Drum Loading System. The LLW Liquids Drum Loading System provides stations for packaging the purge from the influent filter and the concentrate from the Low-Temperature Evaporator. These stations are operated in a similar manner and consist of a fill station enclosure, drum dolly, secondary waste weigh station, product sampling, and associated structures and components. The filter purge and concentrate from the Low-Temperature Evaporator are packaged in 55-gallon drums lined with a polyliner and a plastic bag. Absorbent polymer is added to the drums before filling to immobilize the purge water and concentrates. With sufficient polymer and time allowed for the polymer to work, there is no free liquid left in the drums. The drums are sealed and then transferred to the LLW Drum Storage Area where the drums are segregated by waste type.

2.1.2.4 Low-Level Waste Solids Drum Loading System. The LLW Solids Drum Loading System is comprised of an enclosure that interfaces with the Rotary Press. A plastic bag is inserted into an empty 55-gallon drum that is then brought into the LLW Rotary Press Drum Loading System. The bag is wrapped around the discharge chute of the Rotary Press to ensure containment as the dewatered waste solids discharge from the press directly into the 55-gallon drums. Absorbent polymer may be used in these drums as a precaution to ensure dewatered waste meets free water acceptance criteria. The drum is sealed and then transferred to the covered LLW Drum Storage Area where the drums are segregated by waste type.

2.1.3 Treated Effluent System

The LLW Treated Effluent System is comprised of two Effluent Tanks and the associated pump inside of the LLW Effluent Storage Tank Area and an Effluent Sample Building (Building 261). After an Effluent Tank is filled, a sample of the effluent is collected at the sampler in the Effluent Sample Building and analyzed to ensure that all requirements for final discharge to the plant outfall or to the Zero Liquid Discharge (ZLD) System have been met. In the event that a final pH adjustment is required, the Effluent Sample Building is equipped to dose the circulating effluent with caustic or sulfuric acid and Effluent Tanks are equipped with an internal eductor to facilitate mixing in the tank. Treated effluent that fails to meet discharge requirements is returned to the Influent Storage Facility.

2.1.4 Chemical Dosing System

Table 2-1 provides a summary of all chemicals projected to be used in the LLW Subproject, their storage location, and expected frequency of use. Routine use is during normal operations; maintenance use is when the facility has planned down time (such as for cleaning equipment in place); and "As Needed" use is for situations where a change in waste stream properties warrants the use. For chemicals that serve multiple functions, the more frequent usage is stated as well.

Table 2-1. Radioactive Liquid Waste Treatment Facility Chemical Projections.

Chemical	Storage Container(s) Maximum Stored	Use	Storage Location	Frequency
Sodium Hydroxide (25% and 5%)	50-gallon day tank	Neutralization pH Adjustment	RLWTF	Routine
Sulfuric Acid (93% and 5%)	50-gallon day tank	pH Adjustment Cleaning Agent	RLWTF	Routine
Magnesium Sulfate (25%)	50-gallon day tank	Precipitation Process	RLWTF	Routine
Ferric Sulfate (36%)	50-gallon day tank	Precipitation Process	RLWTF	Routine
Sodium Permanganate (20%)	30 gallon in container(s)	Wastewater Treatment	RLWTF	As Needed
Ethylene diamine tetraacetic acid (EDTA)	5-gallon drum (x2)	Cleaning Agent for Reverse-Osmosis Unit	TA-50-1	Maintenance
Waste Lock	50 lb	Drum Packaging	TA-50-1	Routine
Diatomaceous Earth	80-lb bags (x2 pallets)	Bulk Rotary Press Aid	TA-50-1	Routine
Argon	450 L Dewar (2)	Wet Laboratory	Outside RLWTF	Routine
P-10 Gas	Gas Cylinders (6)	PCM and HFM units	Outside RLWTF	Routine

HFM = hand and foot monitor.
PCM = personnel contamination monitor.
RLWTF = Radioactive Liquid Waste Treatment Facility.
TA = Technical Area.

The Chemical Dosing System consists of several chemical metering pumps and associated chemical day tanks. Each pump and drum is located near the point-of-use. The typical chemical metering pump is equipped with a weighted suction line with foot valve that inserts into the 2-in. opening of the drum lid, a pressure safety valve that relieves back into the drum through the same opening, and flow meter with flow switch/alarm to notify when there is no flow. The chemical level in each drum is checked on a regular basis, and topped off as needed. TAC-4001 and TAC-4002 are also equipped with a low-power mixer.

The chemical metering pumps and their mode of operation are summarized in Table 2-2. Some pumps operate in metering mode to support continuous operation, while others dispense chemicals in small doses for incremental pH adjustment of the large effluent batch tanks or complete batch transfers of cleaning chemicals.

Table 2-2. Chemical Metering Pumps Mode of Operation.

Chemical Pump	Chemical Drum	Chemical	Mode of Operation
P-4001	TAC-4001	Ferric Sulfate	Metering proportional to influent flow rate through MXC-1101.
P-4002	TAC-4002	Magnesium Sulfate	Metering proportional to influent flow rate through MXC-1101.
P-4003	TAC-4003	Sodium Hydroxide	Metering to adjust pH in TK-1101.
P-4006	TAC-4006	Sodium Hydroxide	Metering to adjust pH in TK-1301.
P-4007	TAC-4007	Sulfuric Acid	Metering to adjust pH in TK-1301.
P-4010	TAC-4010	Sodium Hydroxide	Metering to adjust pH in TK-1304.
P-4011	TAC-4011	Sulfuric Acid	Metering to adjust pH in TK-1304.
P-4012	TAC-4012	Sulfuric Acid	Incremental to adjust pH in TK-1501 or TK-1502.
P-4013	TAC-4013	Sodium Hydroxide	Incremental to adjust pH in TK-1501 or TK-1502.

2.1.5 Sample Collection System

The Sample Collection System will collect liquid and solid samples for process control and compliance verification. The samples will be packaged (as required) and transferred for analysis.

Sample collection points are located at strategic locations throughout the process. Samplers are of two types: composite and manual fixed volume. The composite sampler is an air-operated Isolok®-type sampler that takes a series of small samples from slurry lines and composites them into the same sample bottle. Composite sampling is necessary to get a representative sample of streams that are likely to have particulate. Manual fixed volume samplers are used where the stream is free of particulate.

There are 5 composite samplers and 11 manual fixed volume samplers in the LLW Process Area. There is one manual fixed volume sampler in the Effluent Sample Building. All samplers have an air supply and fixed volume samplers also include a process water supply for flushing the sample chamber.

2.2 Facility Support Systems

The LLW Treatment Building provides protection to personnel and equipment from hazardous environmental and natural phenomena, and from the hazard of structure and wild land fires. The building also provides secondary containment for all process operations and will prevent potential contamination to the environment from the release of liquids because of leaks or process operation upsets.

The RLWTF Support Systems are as follows:

1. Stack Air Sampling System (Section 2.2.1);
2. Chilled Water System (Section 2.2.2);
3. Compressed Air System (Section 2.2.3);
4. Electrical Power System (Section 2.2.4);
5. Lighting System (Section 2.2.5);
6. Facility Control System (Section 2.2.6);
7. Fire Protection System (Section 2.2.7);
8. Heating, Ventilation, and Air Conditioning System (Section 2.2.8);
9. Heating Water System (Section 2.2.9);
10. Lightning Protection System (Section 2.2.10);
11. Natural Gas System (Section 2.2.11);
12. Non-Potable Water System (Section 2.2.12);
13. Potable Water System (Section 2.2.13);
14. Radiation Monitoring System (Section 2.2.14);
15. Secondary Containment Basin System (Section 2.2.15); and
16. Telecommunication and Radio Address System (Section 2.2.16).

2.2.1 Stack Air Sampling System

The Stack Air Sampling System monitors emissions of gases, vapors, and particulates, including radionuclides from the facility.

2.2.2 Chilled Water System

The Chilled Water System provides chilled water to facility and process equipment for heat removal. The system consists of three packaged, skid-mounted, 52-ton chillers which provide chilled water at a supply temperature of 45 °F, with a chilled water return temperature of 55 °F. The Chilled Water System also provides facility chilled water for the Heating, Ventilation, and Air Conditioning (HVAC) System.

2.2.3 Compressed Air System

The Compressed Air System supplies compressed air for motive power source tools and equipment. The Compressed Air System provides a total of 52-scfm air at 125 psi, not to exceed 38 °F dew point, to process users.

2.2.4 Electrical Power System

The Electrical Power System distributes low-voltage (e.g., 480V/277V and 208V/120V) power within the LLW treatment process and facility support service areas. As part of the Electrical Power System, a primary switchboard distributes power to motor control centers, power panels, and transformers in the facility. The motor control centers and power panels supply power to process equipment, facility support equipment, office areas, and lighting.

2.2.5 Lighting System

The Lighting System is made up of the Interior and Exterior Lighting Systems. The Interior Lighting System illuminates the interior space of the three LLW buildings. This system provides normal and emergency egress lighting to the office areas and the process areas. The Interior Lighting System obtains power from the Electrical Power System.

The Exterior Lighting System illuminates the RLWTF exterior areas. The system illuminates the parking areas and the grounds surrounding the three LLW buildings and the LLW Drum Storage Area. The Exterior Lighting System provides illumination for the secondary roadways and egress lighting. The system obtains normal power from the Electrical Power System.

2.2.6 Facility Control System

The Facility Control System provides centralized online monitoring and control of the facility and associated waste treatment processes. As a fully integrated control system, the Facility Control System will collect, display, monitor, and record selected facility and process data. This information will be displayed in a centralized location to aid in the efficient operation of the facility, allow for maintenance activities, and permit recovery from any upset condition.

2.2.7 Fire Protection System

The Fire Protection System consists of three subsystems: (1) Fire Detection and Alarm, (2) Fire Suppression, and (3) Water Supply and Distribution. The Fire Detection and Alarm Subsystem's main function is to detect fire and generate signals indicating the presence and location of that fire. It also executes commands and alarms and monitors the status and condition of the other subsystems. The Fire Suppression Subsystem automatically delivers extinguishing agent to contain or limit the extent of the fire. The Water Supply and Distribution Subsystem functions to provide a reliable supply of water to water-based fire suppression systems and fire hydrants for fire ground operations.

2.2.8 Heating, Ventilation, and Air Conditioning System

2.2.8.1 Low-Level Waste Treatment Building.

1. The HVAC System that serves the LLW Treatment Building is split into five unique subsystems.
2. The LLW Process Area, Wet-Chemistry Laboratory, Decontamination Room, and Donn/Doff Corridor are supplied by a dedicated, once-through, roof-top Air Handling Unit.
3. Air from these spaces is exhausted and room pressures maintained by a system that consists of redundant blowers and monitored stack. High-efficiency particulate air (HEPA) filtration is

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provided at source locations in the laboratory hood ductwork and as breather filters on the process tanks and enclosures.

4. A Heat Recovery System, that circulates 43 percent propylene glycol, is used to recover some energy from the once-through exhaust air. The Heat Recovery System will be used to preheat the supply air in accordance with LANL's *Engineering Standards Manual* (ESM) (Chapter 6, "Mechanical," Section D30, "HVAC, Heating, Cooling, HVAC Distribution, and TAB," Subsection D30GEN, "Additional General HVAC Requirements," Paragraph 5.2).

5. The remaining support areas (nonradiation area), with the exception of the Vestibule, Communications Room, Fire Riser Room, and Vacuum Pump Room, are serviced by a roof-top Air Handling Unit that mixes return air and outdoor air, per air quality requirements from the *Ventilation for Acceptable Indoor Air Quality* (ASHRAE® Standard 62.1).

6. The Communications Room has its own, redundant dedicated split system, in accordance with LANL's ESM [Chapter 7, "Electrical" (ISD 341-2, PD342, and STD-342-100)] and VAR-2012-120, which allows for a dedicated, redundant cooling system that does not positively pressurize the space and does not use outside air.

7. The Vestibule and Fire Riser Room, located on the west side of the building, each have a dedicated unit heater for freeze protection, and the Vacuum Pump Room has a dedicated split system for cooling needs. In addition, air is exhausted from the Fire Riser Room and Vacuum Pump Room for circulation and moisture control.

8. Heating for the supply Air Handling Units is provided by heating water pumped from the LLW Utility Building to the applicable Air Handling Unit and Terminal Units. The water is heated in the LLW Utility Building by two high-efficiency, low-nitrogen oxide, natural gas boiler loops.

9. Cooling is provided by chilled water pumped from the LLW Utility Building to the applicable Air Handling Unit. The water is cooled by air-cooled scroll chillers that use non-ozone depleting refrigerant, in accordance with U.S. Department of Energy requirements. Three chiller units are provided, with one unit redundant.

2.2.8.2 Low-Level Waste Effluent Sample Building. The single-room building is cooled by a dedicated split system and heated (for freeze protection) by a unit heater.

2.2.9 Heating Water System

The Heating Water System provides heating water to the HVAC heating main and reheat coils in the HVAC Supply Distribution Ducts to maintain space temperatures throughout the facility. The system consists of two 900-MBh, gas-fired boilers which provide heating water at a supply temperature of 190 °F with a heating water return temperature of 160 °F. The boilers are sized for 50 percent of the facility load and will operate one boiler until the load dictates the use of a second boiler to meet the heating demand. Heating water is distributed by one of two redundant, 100 percent capacity, centrifugal pumps in the LLW Utility Building to and from the LLW Treatment Building by 3-in. piping.

2.2.10 Lightning Protection System

The lightning risk assessment indicates that the LLW Utility and Effluent Sample Buildings do not require a Lightning Protection System.

The lightning protection risk assessment indicates that the LLW Treatment Building and the LLW Drum Storage Area require lightning protection. A conventional system using air terminals, down conductors, and ground rods will be installed to protect the LLW Treatment Building. A mast system will be installed to protect the LLW Drum Storage Area.

2.2.11 Natural Gas System

The Natural Gas System provides natural gas for use in the water boilers in the Heating Water System and hot water heaters in the Potable Water System. Natural gas is also provided to the make-up air unit located within the LLW Utility Building (see Drawing C55865, Sheet P-6200, "Natural Gas P&ID").

The Natural Gas System is designed to provide adequate flow of gas to the gas-fired equipment. The system includes various safety features including a seismic valve and a leak detection shutoff valve. The Natural Gas System is designed to be compliant with the requirements of the *Uniform Plumbing Code* (UPC 2008); *Uniform Mechanical Code* (UMC 2009); *Gas Transmission & Distribution Piping Systems* (ASME B31.8); and *National Fuel Gas Code* (NFGC) (NFPA 54).

2.2.12 Non-Potable Water System

The Non-potable Water System provides non-potable water to the treatment process, hose bibs, and makeup to HVAC piping systems as well as the facility wet laboratory. The Non-potable Water System is separated from the Potable Water System via reduced pressure principle backflow preventers in accordance with LANL's ESM.

The non-potable water demand for the facility is approximately 45 gpm. This flow of non-potable water is provided from the LLW Utility Building via an above ground, insulated, and heat-traced 2-in. pipe.

The Non-potable Water System is designed to comply with UPC (2008) as well as applicable sections of LANL's ESM.

2.2.13 Potable Water System

The Potable Water System provides hot and cold water to the fixtures for drinking fountains, bathroom sinks, bathroom showers, emergency eyewash stations, safety showers, and decontamination showers. The Potable Water System is separated from the Non-potable Water System via reduced pressure principle backflow preventers in accordance with LANL's ESM.

Building total water demand (potable and non-potable) is approximately 200 gpm. Of this flow, the potable water demand for the facility is approximately 154 gpm.

Potable water is supplied to the building via insulated and heat traced above ground piping from the LLW Utility Building. Potable cold water is supplied via a 3-in. pipe and potable hot water for personal hygiene use is supplied via a 2.5-in. pipe. Potable hot water for the emergency showers and eyewashes is provided by point-of-use electric water heaters.

The Potable Water System is designed to comply with the UPC (2008) as well as applicable sections of LANL's ESM.

2.2.14 Radiation Monitoring System

The Radiation Monitoring System consists of monitors and samplers. The Radiation Monitoring System provides monitoring of the workspaces for airborne, alpha particle-emitting, radioactive contamination and provides monitoring of personnel for external alpha/beta or gamma radiation contamination. This system monitors airborne radioactivity and contamination to characterize workplace conditions, to verify the effectiveness of physical design features, engineering, and administrative controls, and to identify areas requiring postings.

Radiation detection instrumentation, such as continuous air monitors and personnel contamination monitors, will be used to warn personnel of the presence of radioactive material above a predetermined alarm set-point.

2.2.15 Secondary Containment Basin System

The Secondary Containment Basin System provides containment of spills and overflows. The leak detectors are located in sumps at the low point(s) of the containments and provide a signal to the Facility Control System when a leak is detected. Leak detection for the pipe-in-pipe LLW influent lines are located in the LLW Influent Storage Facility (secondary encasement lines drain back to the LLW Influent Storage Facility). The larger containment areas are each equipped with leak detectors (to detect leaks from the Process Tank and associated pipes and equipment) located in sumps with permanently installed Sump Pumps. The Sump Pumps can be connected to a tank or drum to collect leaked material.

Containment sumps equipped with leak detectors are located in the Process Areas of the RLWTF to collect spills and overflows from process equipment, piping, tanks, and pumps. The Process Area Sumps are designed for the installation of temporary Sump Pumps. Temporary pumps are used to simplify design of the support systems.

2.2.16 Telecommunication and Radio Address System

Communication entrance cables are derived from existing manhole PB50-0001. Three 4-in. concrete encased conduits containing the communication entrance cables for the LLW Treatment and Utility Buildings are installed from the existing manhole to a pull box mounted on the retaining wall east of the LLW Utility Building. Entrance conduits are routed along the retaining wall, penetrate the retaining wall, transition to underground, and emerge through the floor slab in the LLW Communication Room. Each communication duct includes three inner ducts. Two of these 4-in. conduits are spare.

A Public Address System for non-life safety communication will be provided.

2.3 Facility Site Systems

The RLWTF Site Systems are as follows:

1. Electrical Distribution System (Section 2.3.1),
2. Roads and Grounds System (Section 2.3.2),
3. Storm Water Systems (Section 2.3.3), and
4. Sanitary Sewer System (Section 2.3.4).

2.3.1 Electrical Distribution System

Medium-voltage (13.2-kV) distribution will be derived from existing manhole 50-109 located on the north end of the construction area. A pad-mounted switch will be installed at the manhole. Two radial feeders in underground concrete-encased duct banks will be installed from the switch to two pad-mounted transformers; one is installed on the west side of the LLW Treatment Building and the other is on the north side of the LLW Utility Building. One transformer will supply 480 volt, 3-phase power to the LLW Treatment Building. The other transformer will supply 480 volt, 3-phase power to the LLW Utility Building. The Transuranic Liquid Waste Building is not in the LLW Subproject design scope, but provisions for the service ductbank for the Transuranic Liquid Waste Building are included in the LLW Subproject design.

2.3.2 Roads and Grounds System

The Roads and Grounds System provides adequate facilities for the safe movement and circulation of vehicular and pedestrian traffic. These facilities will be designed for vehicular access (delivery trucks, government vehicles, etc.); parking spaces adjacent to the facility for delivery vehicles; and sidewalks designed in compliance with the LANL architectural design standards for pedestrian access. The facility is designed with provision for a loop road to provide security for, and service/maintenance access around, the facility. The road will be designed to separate the pedestrian and heavy vehicular traffic on the site.

The site development for the LLW Subproject will require the removal of approximately 25 parking spaces. The new site layout will include the integration of new parking to replace the parking removed in the site demolition. However, parking will not be replaced on a one-to-one basis with existing parking.

2.3.3 Storm Water Systems

The Storm Water Systems provide the piping, culverts, etc. to convey drainage from rain and snow melt off the TA-50 Site. Storm water runoff will be collected from impervious surfaces such as roofs, parking lots, roads, and sidewalks and then routed above ground by curb and gutter, lined channels, and culverts. The storm water will then be routed to the underground portion of the system via drop inlets then through underground pipes. The Storm Water Systems shall not impact adjacent structures and areas. Storm water channels will be designed to accommodate the new facility and to improve existing sheet flows from parking areas and roadways. The Storm Water Systems will be designed so the runoff velocity and sediment yield post-construction will be equal to or less than the predevelopment rates.

2.3.4 Sanitary Sewer System

The Sanitary Sewer System provides interior plumbing for the collection and discharge of sanitary waste effluent. The Sanitary Sewer System will collect the sanitary sewer effluent from the building and route it to existing sanitary sewer pipes, which discharge to the existing Wastewater Treatment Plant at TA-46. The Sanitary Sewer System is sized for the LLW Treatment Building load as well as the load from the old RLWTF.

3.0 Facility Layout

This section addresses the facility layout features that are specific to supporting worker operations and equipment maintenance. The facility layout is provided in Drawing C55864, Sheets A-1150 and A-1151.

3.1 Campus Overview

The LLW Subproject construction site is located at TA-50, south of the Los Alamos townsite, on U.S. Department of Energy-controlled land. It is located on the northeast corner of the intersection of Pajarito Drive and Pecos Road, on the mesa bounded by Mortandad Canyon to the north and Two-Mile Canyon to the south. The planned construction site is bordered by the existing RLWTF (TA-50-1) on the east; Material Disposal Area C to the south; Building TA-50-37 to the west; and Pecos Drive to the north. These constraints, together with the existing site topography, influence the design of any new facilities.

The scope of the LLW Subproject is to develop the design for a facility to treat LLW. Specific to the LLW Subproject, the project will include the following functionality:

- Facility/infrastructure and LLW treatment;
- Secondary waste treatment (including storage, treatment, and packaging);
- Treated effluent storage, reuse, and discharge;
- Chemical receipt and storage for point-source usage; and
- Secondary solid waste storage and handling.

Electrical/control/data transmission and receipt for equipment associated with LLW influent storage, treatment processes, and effluent storage and discharge.

The LLW Treatment Building layout was developed on the principles of separation (e.g., keeping hazardous or potentially contaminated operations physically separate for nonhazardous, cleaner operations); personnel circulation (e.g., preventing the co-mingling of personnel in anti-contamination clothing with personnel in street clothing); compartmentalization (i.e., locating process equipment to maximize adjacencies, thus minimizes length of piping runs); material movement (e.g., providing for the vertical and horizontal flow of materials into, and within, the building); and economy (e.g., locating facility and process equipment, that do not have to be in the LLW Treatment Building, in less expensive support buildings or outside).

3.1.1 Treatment Building Interior Layout and Operator Features

The LLW Treatment Building is a single-level, rectangular structure with a high bay in the LLW Process Area. The concrete structure provides reduced fire hazard risks internally between areas with different occupancy classifications.

The LLW Treatment Building contains a LLW Process Area, which accommodates process equipment; a Wet-Chemistry Laboratory with analytical and support equipment; an Operations Center for process monitoring; and a dedicated area with personnel contamination monitors, supporting electrical room, telecommunication room, and restrooms.

The treatment layouts [3-dimensional models developed in AutoCAD® Mechanical, Engineering, and Plumbing (MEP) software] are provided in Figures 3-1 and 3-2.

Figure 3-1. Proposed Design of the Low-Level Waste Treatment Building.

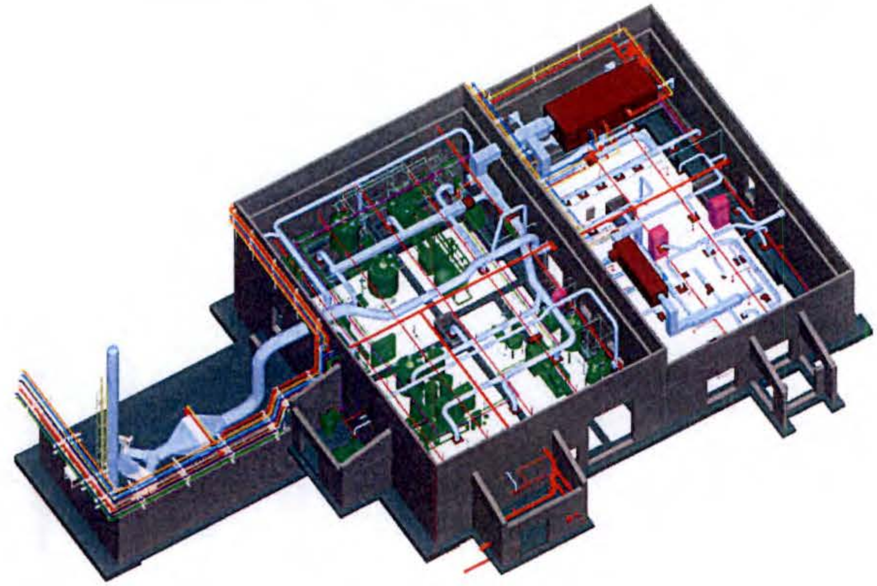
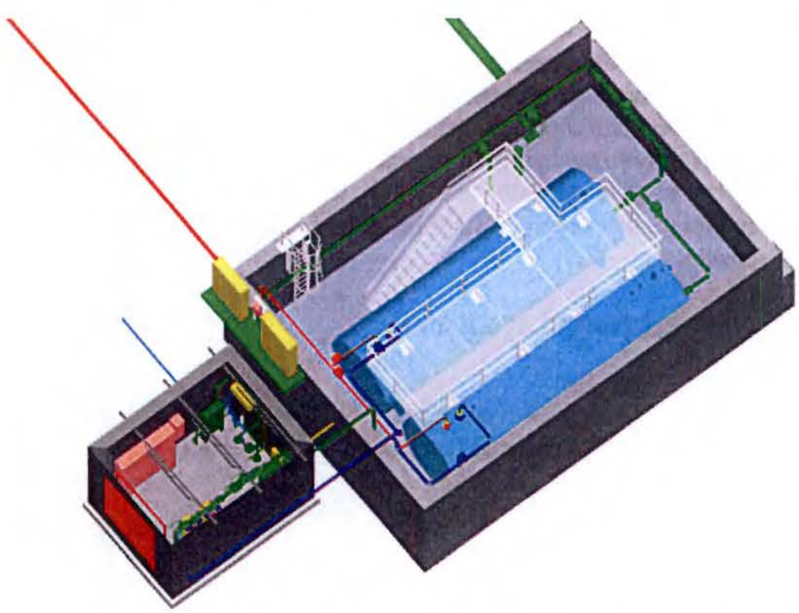


Figure 3-2. Low-Level Waste Effluent Storage Tank Area and Sample Building.



The main personnel entrance into the facility is through a vestibule on the west side of the building. Personnel will proceed to the Change Rooms to change into anti-contamination clothing prior to entering the Process Areas. Change Rooms include showers, lockers, and clean anti-contamination clothing storage. Adjacent to the Change Room will be an area with personnel contamination monitors. Visitors entering the facility may proceed directly to the Operations Center located near the entrance, but outside the Process Areas. The Operations Center will have a workstation and control monitor. The Operator will be able to look onto the Process Area through a window on the north wall of the room.

The LLW Treatment Building is designed for remote operation from the Operations Center and contact Maintenance. The Drum Loading Operations and Rotary Press are an exception, as they require an Operator's presence to place empty drums and remove loaded drums.

Equipment in the LLW Process Area includes Influent Roughing Filters (FLT-1101), Reaction Tanks (TK-1101 and TK-1102), LLW Microfilter (FLT-1201), Reverse-Osmosis Units (ROU-1301), Permeate Holding Tank (TK-1304), pH Adjustment Tank (TK-1301), Evaporator Supply Tank (TK-1705), Low-Temperature Evaporators (EVAP-1701 and EVAP-1702), Cold Evaporator Condensate Tank (TK-1706), and the Polishing Filters [Ion-Exchange Columns (FLT-1403 and FLT-1404) and Carbon Adsorption Columns (FLT-1405 and FLT-1406)]. In addition, there are Evaporator, Roughing Filter Purge, and Dewatered Solids Drum Loading Stations.

3.1.2 Exterior Layout

Located outside the main LLW Treatment Building are various facility support facilities including the LLW Utility Building, Effluent Tanks, Effluent Sample Building, and LLW Drum Storage Area.

The LLW Utility Building is a mechanical and electrical support structure for the LLW Treatment Building that will consist of a one-story structure measuring 32 ft wide by 26 ft. The LLW Utility Building houses the air compressor, natural gas-fired boilers, electrical panels, potable hot water heater, and the pumps for the chilled water and heating water systems. This building will not be occupied on a daily basis, except for brief periods to verify the equipment is functioning correctly. Other exceptions would include routine maintenance and repair/replacement on an as needed basis. The building will be comprised of Concrete Masonry Unit walls and metal roof deck supported by metal framing.

The HVAC exhaust equipment is located at the northeast corner of the LLW Treatment Building. The intake is mounted on the LLW Treatment Building near the southeast corner.

The LLW Drum Storage Area, located to the north of the LLW Treatment Building, consists of a concrete pad surrounded by a fence and equipped with a double gate. The LLW Drum Storage Area is approximately 26 ft wide by 34 ft long and provides approximately 880 ft^2 of drum storage area. Drums of LLW are taken by forklift to the storage area. This area provides temporary storage until the drums are shipped from the RLWTF Site. The size of the LLW Drum Storage Area allows the pallets to be positioned to allow for a walkway between each row of pallets to perform periodic visual inspections on each drum. The storage is designed to hold up to 114 drums for up to 90-days staging. The drums are expected to be palletized with four drums per pallet and stacked two pallets high.

Vehicle barriers (i.e., concrete-filled steel pipe bollards) are placed around the LLW Treatment Building to protect facilities and equipment that are at risk of being damaged by a vehicle impact.

3.2 Radiological Control

The primary radiological concerns include potentially contaminated surfaces and airborne radioactive materials. The LLW Treatment Building design provides features for directing flow from lower to higher contaminated areas. Waste Drum Loading Stations may represent the highest radiological risk. Based on current operations, this area is expected to present higher levels of activity than elsewhere in the LLW Treatment Building. The proposed operational strategy includes some contact operations required to load, seal, and place the lid on the drum. Radiological risk is minimized through a design feature that employs the use of an enclosure at each Drum Loading Station to provide secondary confinement. The facility layout provides a sufficient allowance for positioning Continuous Air Monitoring and Fixed Head Air Samplers. There are a limited number of entry points with step-off pads and survey stations. The exit doors will have the appropriate step-off pads and personnel contamination monitors.

If maintenance is required, it is anticipated that tents or glovebags may be needed to perform the necessary repairs or change out.

3.3 Maintenance Access

A minimum personnel access corridor of 3 ft is maintained around most process equipment. Access is provided to move drums to the LLW Drum Storage Area. The evaporators can be replaced by putting rollers on one end and lifting the other with a forklift. All other process equipment can be removed with a forklift. Note that use of a forklift is restricted to planned outages and may not be used while the facility is processing waste.

3.4 Human Factors

A full assessment of human-factor issues has been conducted in accordance with requirements cited in the FRD (100761-LLW-FRD-0017). This assessment includes such items as dimensional considerations, temperature and humidity control, lighting, noise, vibration, component arrangement, protective equipment, display and control interfaces, annunciators, communication systems, maintainability, access, habitability, monitoring, controls, tools, and test equipment.

The facility is equipped with an Operations Center from which the majority of the process is remotely controlled. Space envelopes, as described above, have been defined for operations and maintenance access.

3.5 Solid Waste Collection Areas

The facility design has multiple locations where solid waste will be collected in drums. Once filled, the drums will be stored in designated exterior storage areas. The following summarizes the initial approach for designation of the different Solid Waste Collection Areas:

- **Satellite Accumulation Areas** – The Roughing Filter (FLT-1101), Rotary Press (FLT-1704), and Low-Temperature Evaporator (EVAP-1702) with their associated Drumming Stations are projected to fill the drums at a slow, intermittent rate. Designation of these areas as Satellite Accumulation Areas will allow operational flexibility for filling the drums based on the process and waste characteristics.
- **Exterior Greater Than 90--Day Accumulation Area** – The process LLW Bounding Material Balance calculation (60239831-PCAL-001) shows there is the potential to create mixed LLW, if the facility receives LLW at WAC limits. Procedures to control composition at the Influent Storage Facility will be needed to preclude this occurrence.

4.0 Operations Time-Cycle

The operation activities include preparation of the operating procedures and worker training during the Cold Startup, and participation in the Readiness Review, Hot Startup, Run-In, and Full-Production Operations. Testing and acceptance activities that precede operations, transition from the existing facility to new facilities operations, and decontamination and decommissioning that will in part be conducted in parallel with operations, are addressed in additional documentation.

4.1 Operating and Maintenance Procedures

Procedures are initially prepared by facility staff for both operations and maintenance during the latter stage of design. Near the end of construction, the operating staff will review and update procedures to match "as-built" conditions.

4.2 Operator Training

Training is initiated during Cold Startup on a schedule appropriate for the operations staff to achieve a prescribed level of proficiency prior to Readiness Review. Cold Startup and Readiness Review activities are defined at a high level in Test and Acceptance Criteria and will be refined in future test procedures. Performance-based training may include: (1) Use of mock-up equipment, (2) simulated operations with installed equipment, and (3) simulated operations with installed equipment including simulants.

4.3 Hot Startup

Hot Startup will be initiated after successful completion of the Readiness Review and receipt of formal authorization. Radioactive waste will be introduced into the facility and process and facility systems' performance will be verified in accordance to startup procedures. It is anticipated that during the Hot Startup period the throughput may be gradually increased over a limited time period to full-scale production rates.

4.4 Run-In

The Run-In period, estimated to be three to six months, will provide initial trending data for process control, equipment performance, and compliance with WAC, air permits, and effluent discharge limits. The existing facility will be maintained in standby mode to ensure availability of process capability during the Run-In period.

4.5 Full-Production Operations

4.5.1 Routine Operations

A summary-level Routine Operating philosophy for the LLW Treatment Building is described in this section. Documentation of the individual process steps and their associated duration is an initial step towards developing input to the detailed as low as reasonably achievable (ALARA) and dose analysis.

The LLW operational strategy, described in Section 4.5.1.1, details a 5-day normal operating week. Volumes and flow rates detailed in this section are based on design values in the Material Balance calculation (60239831-PCAL-001) and the *LLW Process Operating Durations* calculation (60239831-PCAL-005).

Wastewater treatment will occur in weekly intervals. Typically, the LLW process will operate three weeks per month.

4.5.1.1 Low-Level Waste Operations. The LLW operational strategy is driven by the requirements in the FRD (100761-LLW-FRD-0017).

The design basis normal throughput for the LLW operations is 5,000,000 L/yr using a single-shift operation and an average processing rate of 25.3 gpm. The facility will typically process LLW 36 wk/yr, 4 days/wk (145 days/yr based on the LANL calendar), and 6 treatment hours/day per the FRD (100761-LLW-FRD-0017).

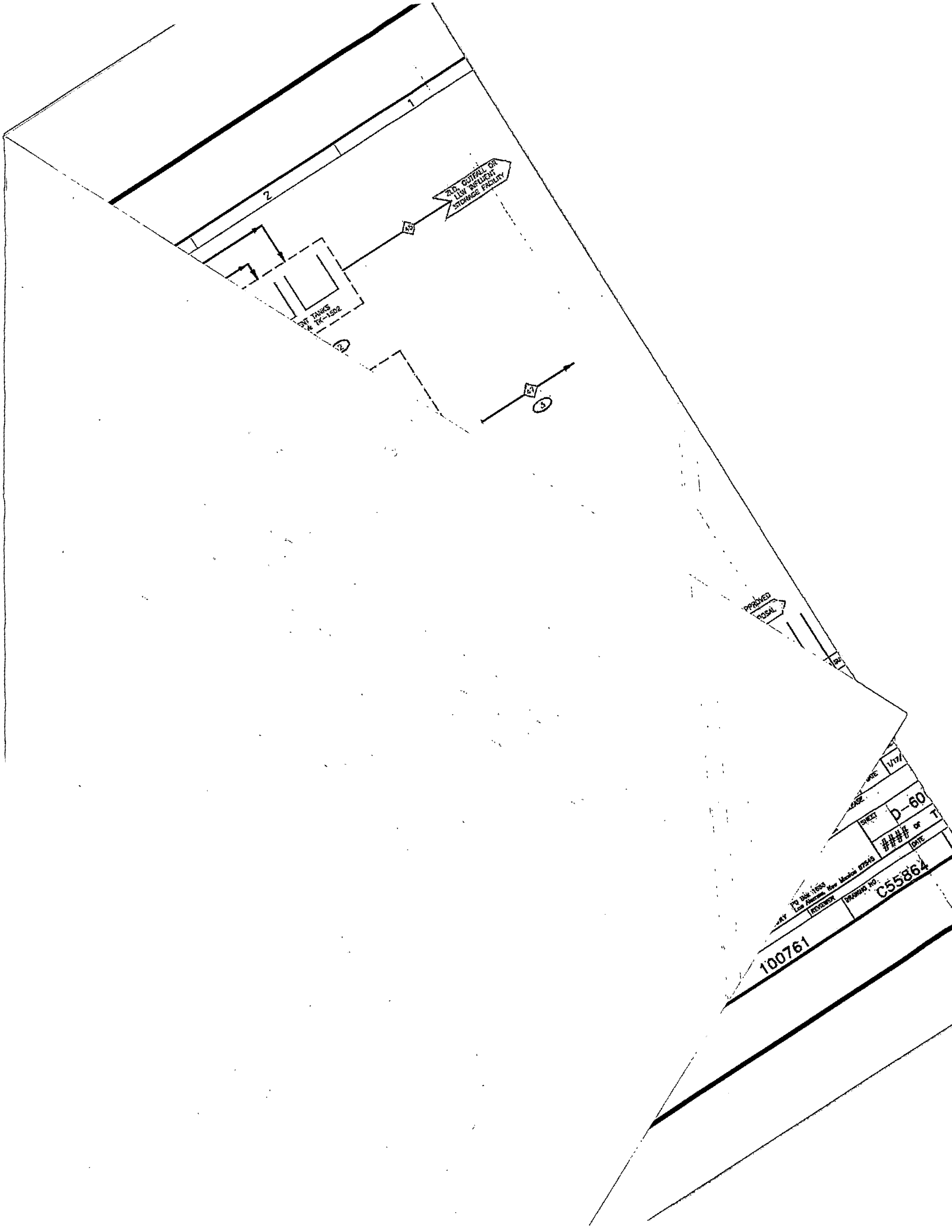
Both the main low level and secondary waste processes can be operated in a continuous operational mode during the operating day. When the concentration of total suspended solids in the waste influent is at typical levels rather than at the WAC limit, the secondary solids handling can also be operated on a batch-basis as needed. Startup and shutdown time (1/2 hour each) is required during each day. Plant checks are required each day to confirm that chemical dosing drums have sufficient volume for the day and to top off the chemical dosing drums (as needed). Plant checks are also required on Sunday.

The fifth day of the week is reserved for maintenance activities such as chemical cleaning of the Microfilter and Reverse Osmosis, as needed, and laying up the facility for the weekend. This would include such activities as working off the inventory in the Sludge Thickening Tank through the Rotary Press, working off the inventory in the Evaporator Feed Tank through the Evaporator, and purging the Roughing Filter (FLT-1101), along with any drumming activity associated with these operations. There should be no new influent introduced to the facility during the fifth day, as the Main Treatment Process System is based on a 4 day/wk operation.

4.5.1.1.1 Low-Level Waste Main Treatment Process System. The following LLW strategy will occur on each of the 145 normal operating days. Figure 4-1 provides an overview of the LLW process.

1. **Influent Filter System Sequence of Operations:** The LLW water is received from the Influent Storage Facility at a nominal flow rate of 50 gpm in a semi-continuous pattern for the 6-hour operating duration, based on the level of TK-1101. The wastewater is fed through a Roughing Filter (FLT-1101), which removes large particulate and suspended solids larger than 150 microns from the influent stream. As the solid material accumulates on the filter screens, an increase in differential pressure across the filter occurs. The filter is automatically cleaned by an internal magnetically actuated cleaning disk, which moves down the screen media. The cleaning process is actuated daily by an electronic timer. If the pressure differential across the online filter reaches a high setpoint of 15 psid, then an alarm will be actuated. At the end of every operating week, a manual purge valve is operated thereby pushing solids and carrier liquid out the purge outlet at the bottom of the filter into 55-gallon drums that have been charged with 5.6 kg of absorbent polymer. Approximately 20 kg (5 gallons) of slurry are purged. The design capacity of the filter's purge chamber is 1.3 gallons. Therefore, it is assumed that 3.7 gallons is carrier liquid. The polymer ensures that there is no free liquid left in the drum. The drums are transferred to the LLW Drum Storage Area. FLT-1101 solids will fill approximately 4 drums/yr.
    a. Run Conditions – Interlocks:
        i. I-1 software process interlock on LAHH-1123; closes Air-Operated Ball Valve (AOBV)-1103 and stops Influent Feed Pumps P-01 and P-02 located at TA-50-250.
    b. Run Conditions:
        i. Verify available space in Reaction Tank TK-1101 (LI-1123), start P-01 or P-02.

Figure 4-1. Process Flow Diagram.


2
1
ZLD, OUTFALL OR
LLW INFLUENT
STORAGE FACILITY
TK-1502
PO Box 1663
Los Alamos, New Mexico 87545
REVIEWER
DRAWING NO.
C55864
SHEET
D-60
DATE
100761

c. Influent Filter System Operation: LLW water is pumped from the Influent Storage Facility. The P-01 and P-02 pumps are started after valves are aligned and positions are confirmed. The pumps are operated in a lead/standby fashion. The designated lead pump shall rotate upon one of the following conditions (user selectable):

i. Manually through a software switch,
ii. If pump runtime (adjusted) is exceeded,
iii. Daily,
iv. Weekly, and
v. Monthly.

The pump flow is nominally controlled by the Influent Filter System (FIC-1102) to 50 gpm in a semi-continuous pattern for the 6-hour operating duration, based on the fluid level of TK-1101. As solid material accumulates on the Rough Filter (FLT-1101), it is cleaned daily by an electronic timer that actuates a magnetic cleaning disk which moves down the screen media. Samples of the filtrate, out of FLT-1101, shall be taken per a sampling plan.

d. Alarms (P-01, P-02, and FLT-1101): Alarms shall be provided as follows –

i. Influent Pump (P-01 and P-02) – low flow (FAL-1131 and FAL-1132), less than 25 gpm when operating and

ii. Roughing Filter (FLT-1101) – High-pressure differential (PDAH-1104), greater than 15 psid.

The roughing filter manual purge valve is operated at the end of each week's process operation to remove accumulated solids at the bottom of FLT-1101. The purge requires system pressure to purge out the sludge and process water. Prior to this, a bagged drum charged with absorbent polymer is loaded into the Drumming Enclosure (ENC-1701). When the designated drum weight is reached, allow 30 minutes to ensure the polymer has absorbed all of the free liquid, disconnect fill line, seal the lid openings, and remove from ENC-1701. A new bagged drum charged with absorbent is added back into ENC-1701.

e. Alarms (Drums): Alarms shall be provided as follows –

i. High Weight Alarm (WAH-1701) and
ii. High-High Weight Alarm (WAHH-1701).

2. **Reaction/Precipitation System Sequence of Operations:** The Roughing Filter (FLT-1101) filtrate passes through an In-Line Mixer (MXC-1101) to be dosed with magnesium sulfate and ferric sulfate. The chemicals come from the Chemical Dosing System that is discussed in Section 2.1.4. The dosing rate is pumped proportional to influent flow rate so that a consistent 25-wt% magnesium (0.00046 gallons per gallon of influent) and 30-wt% ferric iron (0.00020 gallons per gallon of influent) concentration will be in the dosed influent. The dosed influent is fed to the 1,000-gallon Reaction Tank (TK-1101). TK-1101 also receives continuous Reverse-Osmosis Concentrate Recycle in the range of 6 to 7 gpm. During Secondary Solids Handling Operations, there may also be Sludge Thickening Tank (TK-1702) decant and Rotary Filter (FLT-1704) recycling periodically back to TK-1101 at 5 gpm each. The pH of the wastewater in TK-1101 is adjusted to 10.8 with the addition of 25-wt% sodium hydroxide from the Chemical Dosing System, which is controlled by a tank pH Element (AE-1100) and Transmitter (AIT-1100). The dosed influent, process recycles, and chemicals are completely mixed via MC-1101.

A residence time of 15 minutes is required in TK-1101 to maximize precipitation reactions. To achieve this residence the minimum volume of liquid in the tank is maintained at 550 gallons.

When this low point is reached, the influent will be pumped semi-continuously at 50 gpm until the tank level reaches 950 gallons.

The discharge from TK-1101 to Reaction Tank (TK-1102) is continuous. Level Controller (LIC-1124) will modulate LCV-1124 to maintain a constant level in TK-1102. TK-1102 also receives the return stream from the Microfilter (FLT-1201) and feeds FLT-1201. TK-1102 is optionally called the "Concentration Tank" because it accumulates the solids separated by FLT-1201.

a. Run Conditions – Interlocks:

   i. I-1 software process interlock on LAHH-1123 stops Pump P-4003 and closes Air-Operated Ball Valves AOBV-5622, AOBV-1115, AOBV-1324, AOBV-1708, and AOBV-1157; stops Pump P-1703; closes AOBV-1103; and stops P-01 and P-02 in the Influent Storage Facility. Stop PS-5700.

   ii. I-2 software process interlock on LAHH-1125 closes valve AOBV-1126 and stops Pump P-1701.

b. Run Conditions:

   i. Start P-1701 after starting FLT-1201.

c. Reaction/Precipitation System Operation: The Roughing Filter (FLT-1101) passes through an In-Line Mixer (MXC-1101) and is dosed with magnesium sulfate and ferric sulfate. The dosing rate is pumped proportional to filtrate flow rate, 25-wt% magnesium sulfate (0.00046 gallons per gallon of filtrate) and 36-wt% ferric sulfate (0.00020 gallons per gallon of filtrate). The dosed filtrate then feeds to the 1,000-gallon TK-1101. Additionally, TK-1101 receives continuous Reverse-Osmosis Concentrate Recycle and Sludge Thickening Tank (TK-1702) decant and Rotary Filter (FLT-1704), filtrate during secondary solids handling operations. The pH of the wastewater in TK-1101 is adjusted to 10.8 with the addition of 25 wt % sodium hydroxide from the Chemical Dosing System. Dosing is controlled by a tank pH Element (AE-1100) and Transmitter (AIT-1100). The dosed influent, process recycles, and chemicals are completely mixed via MXC-1101.

   A residence time of 15 minutes is required in TK-1101 to maximize precipitation reactions. Therefore, the minimum volume of liquid in the tank is 550 gallons. When this low point is reached, the influent is pumped semi-continuously at 50 gpm until the tank level reaches 950 gallons and the Influent Pump (P-1703) is stopped.

   The discharge from TK-1101 to TK-1102 is continuous. Level Controller (LIC-1124) will modulate LCV-1124 to maintain a constant level in TK-1102.

d. Alarms (TK-1101): Alarms shall be provided as follows –

   i. High Level (LAH-1123), 950 gallons and
   ii. High-High Level (LAHH-1123), 1,000 gallons.

3. **Microfiltration System Sequence of Operations:** Wastewater/suspended solids slurry is pumped from Reaction Tank TK-1102 at a high flow rate (approximately 316 gpm) to the Microfilter (FLT-1201). The FLT-1201 filtrate rate is 31.6 gpm (nominally) passing to the LLW Reverse-Osmosis pH Adjustment Tank (TK-1301). FLT-1201 concentrate recycles back to TK-1102 at a flow rate of 284 gpm (nominally). The solids concentration in the tank increases as the filtrate passes to TK-1301. Small volumes of sludge are pumped at 5 gpm to the Sludge Thickening Tank (TK-1702) intermittently. This occurs approximately every operating hour for 2 minutes. Every day, nearly 60 gallons of sludge is fed to TK-1702. Solids content in TK-1102

is monitored with the samples taken at SMP-1212. Operating times may need to be varied to keep solids content below 5 wt%. After the 6-hour operating shift, flush the sludge thickening line with 60 gallons of non-potable water. This feed will be monitored and controlled by the TK-1702 level transmitter (LIT-1716). Of this feed, approximately 35 gallons of liquid is decanted from TK-1702 a day and is staged in the Sludge Thickener Decant Holding Tank (TK-1703) until it is transferred to TK-1102.

a. Run Conditions – Interlocks:

   i. I-2 software process interlock on LAHH-1125 closes Air-Operated Ball Valves AOBV-5623 and AOBV-1126, and stops Pump P-1701.

b. Run Conditions:

   i. Confirm available level in TK-1102 (LI-1124), start FLT-1201.

c. Microfiltration System Operation: Wastewater/suspended solids slurry is pumped from TK-1102 at approximately 316 gpm to FLT-1201. FLT-1201 filtrate is transferred at 31.6 gpm to TK-1301. FLT-1201 concentrate recycles back into TK-1102 at 284 gpm. When the solids concentration in TK-1102 reaches 5 percent, small volumes of sludge are pumped at 5 gpm to TK-1702, intermittently. Solids content in TK-1102 is monitored with the samples taken at SMP-1212. Samples shall be taken per a sampling plan.

   After each operating shift, flush the Sludge Thickening Line (LLW-153) with 60 gallons of non-potable water. This feed will be monitored and controlled by the TK-1702 Level Transmitter (LIT-1716).

d. Alarms [Clean-In-Place Tanks (TAC-4200 and TAC-4201)]: Alarms (not including vendor package alarms and safeties) shall be provided as follows –

   i. High Level (LAH-4200 and LAH-4201), 100 gallons.

4. **Reverse-Osmosis System Sequence of Operations:** The Microfilter (FLT-1201) filtrate is pH adjusted with 93-wt% sulfuric acid in the Reverse-Osmosis pH Adjustment Tank (TK-1301) from pH 10.8 to between 6.5 and 7.5. For additional pH adjustment, 25-wt% sodium hydroxide is also provided, if required. These chemical conditions are controlled by AIC-1301 and pumped into the tank at 0.1 gpm. Flow Control Valve FCV-1315 is modulated to maintain a flow to the Reverse-Osmosis Unit (ROU-1301) at a rate that matches the Microfilter (FLT-1201) filtrate, through FI-1206. An additional 5 gpm will be recycled back to TK-1301. The Reverse-Osmosis Skid is equipped with an on-board cartridge filter that will require periodic maintenance. With the baseline assumption of a 75 percent reverse-osmosis recovery efficiency, approximately 25 gpm of Reverse-Osmosis Permeate is collected in the Reverse-Osmosis Permeate Holding Tank (TK-1304). TK-1304 is equipped to adjust the pH of the permeate prior to polishing, if required. The adjustment uses either 25 percent sodium hydroxide or 93 percent sulfuric acid which is pumped into the tank based on AIC-1346. The Reverse Osmosis Permeate should be discharged at a pH of between 6 and 9. A small portion, nominally 2.2 gpm, of the Reverse-Osmosis Concentrate is sent to the Evaporator Supply Tank through Gate Valve V-5201. The remainder is recycled back to Reaction Tank (TK-1101). The flow rate to the Evaporator Supply Tank should be the maximum that the evaporator can support. V-5201 is adjusted manually until the correct valve adjustment is found that maintains a stable level in the Evaporator Supply Tank. Some operating experience will be required to find the correct adjustment on V-5201. The limitation of the 2.2 gpm is based on the maximum allowable flow to the Evaporator.

   a. Run Conditions – Interlocks:

      i. I-1 software process interlock on LAH-1123 closes Air-Operated Ball Valve AOBV-1324.

ii. I-3 software process interlock on LAHH-1302 stops Pumps P-4006 and P-4007, and closes valves AOBV-1304 and AOBV-1214.

iii. I-4 software process interlock on LAHH-1344 closes valve AOBV-1331.

iv. I-5 software process interlock on LAHH-1722 closes valve AOBV-1323.

v. I-9 software process interlock on LAH-4302 closes valve AOBV-5624.

b. Run Conditions:

i. Confirm operation of Microfilters (PI-1211 and PI-1218) and available level in TK-1301 (LI-1302) and TK-1304 (LI-1344), start Pump P-1302 and ROU-1301.

c. Reverse Osmosis System Operation: The Microfilter (PI-1211 and PI-1218) filtrate is pH adjusted with 93-wt% sulfuric acid in TK-1301 from pH 10.8 to between 6.5 and 7.5. For additional pH adjustment, 25-wt% sodium hydroxide is also provided, if required. Chemical conditions are controlled by AIC-1301 and pumped into the tank at 0.1 gpm. Flow Control Valve FCV-1315 is modulated to maintain a flow to the ROU-1301 at a rate that matches the microfilter (PI-1211 and PI-1218) filtrate, through FI-1206. An additional 5 gpm will be recycled back into TK-1301. Recycle samples shall be taken at SMP-1306 per a sampling plan. Approximately 25 gpm of reverse-osmosis permeate is collected in TK-1304. Permeate samples shall be taken at SMP-1310 per a sampling plan. P-1408 is a water reuse pump. This capability has been provided to minimize miscellaneous water use in the process. Permeate in TK-1304 may be pumped to TK-1704 to prepare filter aid, or to portable drums for use around the process area, or to other locations by means of temporary hose connections to facilitate flushing of lines.

TK-1304 is equipped to adjust the pH of the permeate prior to polishing, if required. The adjustment uses either 25 percent sodium hydroxide or 93 percent sulfuric acid which is pumped into the tank based on AIC-1346. The reverse osmosis permeate should be discharged at a pH of between 6 and 9. A small portion, 2.2 gpm, of the reverse-osmosis concentrate is sent to the Evaporator Supply Tank (TK-1705), through Gate Valve V-5201. The remainder is recycled back into Reaction Tank TK-1101.

d. Alarms [Reverse-Osmosis pH Adjustment Holding Tank (TK-1301)]: Alarms shall be provided as follows –

i. Low Level (LAL-1302),
ii. High Level (LAH-1302), and
iii. High-High Level (LAHH-1302).

e. Alarms [Reverse-Osmosis Feed (LLW-228)]: Alarms shall be provided as follows –

i. Low Flow (FAL-1315).

f. Alarms [(Reverse-Osmosis Feed Recycle (LLW-220)]: Alarms shall be provided as follows –

i. Low Flow (FAL-1311).

g. Alarms [(Reverse-Osmosis Clean-In-Place Tank (TAC-4302)]: Alarms shall be provided as follows –

i. High Level (LAH-4302).

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h. Alarms [(Reverse-Osmosis Permeate Holding Tank (TK-1304)]: Alarms shall be provided as follows –

   i. High Level (LAH-1344) and
   ii. High-High Level (LAHH-1344).

5. **Polishing System (Optional for Effluent to Canyon Outfall) Sequence of Operations:** Reverse-Osmosis Permeate is pumped at a rate of 50.9 gpm, with 25.5 gpm being recycled back into the Reverse-Osmosis Permeate Holding Tank (TK-1304) and 25.4 gpm being sent to the Ion-Exchange Units. 10,000 gpd of Reverse-Osmosis Permeate is polished through two sets of Ion-Exchange Units (FLT-1401 to FLT-1406) (perchlorate and metal contaminant removal) and a set of adsorbers for removal of organics before it is collected in one of two effluent tanks. Each set of Ion-Exchange Units and the adsorbers are operated in a lead-lag configuration with sampling on the discharge of the lead unit. When breakthrough is detected from the lead unit, the lead unit is drained and replaced at the first opportunity. During replacement, the new unit is installed in the lag position so that the second unit in line is always the fresher of the two. The spent unit is capped and dispositioned as a single assembly in a manner to be prescribed by LANL.

   a. Run Conditions – Interlocks:

      i. None.

   b. Run Conditions:

      i. Confirm discharge point, appropriate valve alignment on polishing columns, confirm availability of effluent tank, start Pump P-1407.

   c. Polishing System Operation: Permeate is pumped at a rate of 50.9 gpm, with 25.5 gpm being recycled back into TK-1304 and 25.4 gpm being sent to the Ion-Exchange Units (FLT-1401 to FLT-1406). If valved out (for transfer to ZLD), permeate is pumped directly to the Effluent Storage Tanks (TK-1501 and TK-1502). 10,000 gpd of reverse-osmosis permeate is polished through two sets of ion-exchange units (perchlorate and metal contaminant removal) and a set of adsorbers for removal of organics. Each set of ion-exchange units and the adsorbers are operated in a lead-lag configuration with sampling (SMP-1410, SMP-1412, and SMP-1414) on the discharge of the lead unit per a sampling plan. When breakthrough is detected from the lead unit, the lead unit is drained by opening the drain valve at the bottom of the cylinder. Install new unit in the lag position. Cap the spent unit and disposition as prescribed by LANL's Operating Procedures.

   d. Alarms [Reverse-Osmosis Permeate Recycle (LLW-449)]: alarms shall be provided as follows –

      i. Low Flow (FAL-1403) and
      ii. High Flow (FAH-1403).

   e. Alarms [Treated Effluent (LLW-2667)]: alarms shall be provided as follows –

      i. Low Flow (FAL-1405) and
      ii. High Flow (FAH-1405).

Up to 10,000 gallons may be accumulated in either tank in the LLW Effluent Storage Tank Area. Effluent batches are sampled at the Effluent Sample Building and analyzed to verify compliance with discharge requirements. If pH adjustment is needed in the Effluent Tank to meet final discharge criteria, sodium hydroxide or sulfuric acid is added to the circulating effluent via the dosing station in the Effluent Sample Building and the contents are mixed via in-tank eductors. After sampling, the effluent is pumped to the plant outfall or to the ZLD Evaporation Tanks.

4.5.1.1.2 Low-Level Waste Secondary Treatment and Packaging System.

1. **De-Watering System Sequence of Operations:** The Low-Temperature Evaporator processes concentrate from Reverse Osmosis. Reverse-Osmosis Concentrate should be routed to the Evaporator Supply Tank at the maximum rate that the evaporator can handle, thus minimizing the amount of Reverse-Osmosis Concentrate that is recycled to Reaction Tank #1. The evaporator condensate capacity is 500 L/hr (2.2 gpm or 793 gpd). The evaporator target is to produce concentrate with approximately 30-wt% dissolved solids content. The primary method of judging when concentrate is ready to discharge is to track the volume of condensate that has been discharged. In addition, dissolved solids is correlated with the operating temperature of the evaporation chamber (at a pressure of 0.05 atm, 30-wt% sodium sulfate bubbles at 35°C or 95°F.) When the evaporation chambers reach the target temperature, concentrate is pumped out periodically to be packaged with polymer absorbent in 55-gallon drums. The drums are filled on a weight basis. The evaporators will produce enough concentrate to fill seventy-five 55-gallon drums per year under typical conditions.

   a. Run Conditions – Interlocks:

      i. I-5 software process interlock on LAHH-1722 closes valves AOBV-5626, AOBV-1737, and AOBV-1323.

      ii. I-7 software process interlock on LAL-1722 stops Pump P-1705 and stops Evaporators EVAP-1701 and EVAP-1702.

      iii. I-8 software process interlock on LAL-1700 stops Pump P-1706.

      iv. I-12 software process interlock on LAHH-1700 stops Evaporators EVAP-1701 and EVAP-1702.

   b. Run Conditions:

      i. Confirm evaporator feed available in TK-1705 (LI-1722) and space available in TK-1706 (LI-1700) to receive condensate and Enclosure ENC-1702 ready to receive concentrate.

   c. De-Watering System Operation: Start evaporator unit to invoke automatic operation. In automatic mode, pressing run button initializes valve configuration and energizes the vacuum pump. When pressure is drawn down to 30 torr, the feed inlet valve opens and feed is drawn into the evaporation tanks. The water cooled condenser starts and the compressor starts.

      Process instrumentation monitors the level in the evaporation tanks and the condensation tanks. Evaporation tank level is automatically controlled by float switches; inlet valve opens as needed to maintain the target level. When condensate level rises to upper level float, the Condensate Discharge Pump turns on draining the condensation tanks for a preset time or until TK-1706 is full.

      After a preset amount of condensate has been pumped, the residual concentrate in the evaporator will be 30 percent total solids. Drums are filled by manually operating the Concentrate Pump.

      The Evaporator should not be left overnight with 30 percent concentrate because it will become supersaturated as it cools to room temperature. After the Evaporator has been turned off for the day, Pump P-1705 and the Concentrate Pump should be used to circulate the contents of TK-1705 into the Evaporator and the Evaporator contents into TK- 1705.

d. Alarms [Evaporator Supply Tank (TK-1705)]: Alarms shall be provided as follows –

i. Low Level (LAL-1722),
ii. High Level (LAH-1722), and
iii. High-High Level (LAHH-1722).

e. Alarms [Drum Enclosure (ENC-1702)]: Alarms shall be provided as follows –

i. Weight High (WAH-1702) and
ii. Weight High-High (WAHH-1702.

f. Alarms [Evaporator Condensate Tank (TK-1706)]: Alarms shall be provided as follows –

i. Low Level (LAL-1700),
ii. High Level (LAH-1700), and
iii. High-High Level (LAHH-1722).

The sludge that accumulates in the Sludge Thickening Tank is periodically dewatered in a Rotary Press and packaged in 55-gallon drums. When influent total suspended solids loading is typical, it takes from two to four days to accumulate sufficient solids to justify a Rotary Press run. For planning purposes under typical conditions, the frequency of Rotary Press operation is no more than twice per week. Typically, therefore, the drum production rate is 1 or 2 per week. This is consistent with the material balance showing dewatered cake coming from the Rotary Press is sufficient to fill 48 drums per year (typical conditions). Total suspended solids loading in the wastewater coming out of the Influent Roughing Filter can be up to 10,000 ppm under worst case WAC conditions. If this condition persisted for a long time, the Sludge Thickening Tank cycle time would be much shorter, and Rotary Press operations frequency and drum generation rate would increase up to several times each day to keep up with the solids accumulation.

4.5.2 Operations During Upset Conditions

Results from Effluent Tank sampling can take up to 4 hours. If the effluent in one of the Effluent Tanks is sampled and the results exceed discharge requirements, the effluent will be discharged back to the Influent Storage Facility.

4.5.3 Operations During Emergency Conditions

Procedures to handle expected emergency and upset conditions will be developed during Title III and commissioning activities. General off-normal and emergency conditions accounted for in the design include:

- **External Fire** – Exterior walls are noncombustible and constructed of concrete. The structure offers some resistance to an external fire.
- **Internal Fire** – The system design does not require an Operator to remain in the facility to accomplish a safe shutdown of the facility.
- **Process Leaks** – The Primary Confinement Systems are designed to withstand Performance Category (PC)-1 natural phenomena hazards. In the event of a leak, waste will be collected in sumps equipped with a leak detector to alert Operators of an off-normal condition.
- **Process Equipment Upsets** – Equipment redundancy has been removed for the most part from this design. Process equipment upsets of short duration can be absorbed by taking advantage of the surge capacity in the tanks between operations. In the event that process equipment needs to be drained, the in-process waste can be returned to the Influent Storage Facility.

4.5.4 As Low As Reasonably Achievable

The operational strategy will be consistent with the guidelines defined in the future ALARA Plan. Assessments performed, to date, for the design indicate that the composition of the waste can be adequately shielded by metal wall thicknesses equal to or greater than that of a 55-gallon drum. Radiation detection units are located throughout the facility to provide monitoring and early warning to Operators.

4.5.5 Environmental Permits

The operational strategy will be consistent with the requirements defined in the applicable environmental permits as defined in the FRD (100761-LLW-FRD-0017).

5.0 Estimated Resource Requirements

Staffing estimates have been made with LANL inputs, as summarized in Table 5-1.

Table 5-1. Low-Level Waste Treatment Process Resource Requirements.*

Operator	Number required per working day	
Main Process Operators[(a,b)]	Minimum: 5	Optimum: 7
Secondary Process Operators[(b,c)]	Minimum: 3	Optimum: 4
Chemists	Minimum: 4	Optimum: 4
Radiation Control Technicians[(b)]	Minimum: 3	Optimum: 3
Waste Management Coordinators	Minimum: 2	Optimum: 2
Instrumentation Technicians	Minimum: 2	Optimum: 2
Computer Operators	Minimum: 2	Optimum: 2
Process Engineers	Minimum: 2	Optimum: 2
Operations Supervisor	Minimum: 1	Optimum: 1

*These manpower estimates do not include personnel for the following needed functions: authorization basis, quality assurance, administration, group leader, work control, facility engineering, electricians, industrial hygienist, facility management, maintenance, and decontamination.

[(a)]**Main Processes:** Toughing Filters, Reaction Tanks, Microfilter, Reverse Osmosis, Ion Exchange, Adsorbers, Effluent, Chemical Addition, and Sample Collection System.

[(b)]**Staff Needs:** Be available for Sunday plant checks.

[(c)]**Secondary Processes:** Solids Concentrator, Sludge Drum Operations, Evaporator, and Evaporator Drum Operations.

5.1 Site Services

5.1.1 Fire Protection

No special Fire Protection Services are required by the RLWTF operations. The fire protection coverage is provided at the site by automatic Fire Suppression Systems and the Los Alamos County Fire Department.

5.1.2 Emergency Medical

No special Ambulance or Medical Services are required by RLWTF operations. The emergency medical coverage is provided at the site to service multiple facilities including RLWTF.

6.0 References

1. 100761-LLW-FRD-0017, 2012, *Radioactive Liquid Waste Treatment Facility Upgrade Project (RLWTF-UP) Low Level Waste Subproject Functions and Requirements Document*, Los Alamos National Laboratory, Los Alamos, New Mexico.

2. 60239831-FDD-001, 2013, *S.1.1 Low-Level Waste Treatment Building, Facility Design Description for the TA-50 Radioactive Liquid Waste Treatment Facility Upgrade Project (RLWTF-UP) Low-Level Waste Subproject*, AECOM Technical Services, Inc., Albuquerque, New Mexico.

3. 60239831-PCAL-001, *LLW Bounding Material Balance*, AECOM Technical Services, Inc., Albuquerque, New Mexico.

4. 60239831-PCAL-005, *LLW Process Operating Durations*, AECOM Technical Services, Inc., Albuquerque, New Mexico.

5. 60239831-RAMI-001, 2013, *Reliability, Availability, Maintainability, and Inspectability Analysis for the Radioactive Liquid Waste Treatment Facility Upgrade Project (RLWTF-UP) Low-Level Waste Subproject*, AECOM Technical Services, Inc., Albuquerque, New Mexico.

6. 60239831-SDD-001, 2013, *S.1.3 Process Systems, System Design Description for the TA-50 Radioactive Liquid Waste Treatment Facility Upgrade Project (RLWTF-UP) Low-Level Waste Subproject*, AECOM Technical Services, Inc., Albuquerque, New Mexico.

7. 60239831-TRPT-001, 2013, *Design Basis and Approach for the TA-50 Radioactive Liquid Waste Treatment Facility Upgrade Project (RLWTF-UP) Low-Level Waste Subproject*, AECOM Technical Services, Inc., Albuquerque, New Mexico.

8. ASHRAE Standard 62.1, *Ventilation for Acceptable Indoor Air Quality*, American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc., Atlanta, Georgia.

9. ASME B31.8, *Gas Transmission & Distribution Piping Systems*, American Society of Mechanical Engineers, New York, New York.

10. LANL ESM, *Engineering Standards Manual*, ISD-341-2, PD342, and STD-342-100, Los Alamos National Laboratory, Los Alamos, New Mexico.
    a. Chapter 6, "Mechanical," Section D30, "HVAC, Heating, Cooling, HVAC Distribution, and TAB," Rev. 4, 9/29/09.
    b. Chapter 7, "Electrical"
        i. Section D5000, "General Electrical Requirements," Rev. 6, 11/8/11.
        ii. Section D5010, "Electrical Service & Distribution," Rev. 4, 11/8/11.
        iii. Section D5020, "Lighting & Branch Circuit Wiring," Rev. 4, 11/3/08.
        iv. Section D5030, "Communications," Rev. 4, 9/28/09.
        v. Section D5090, "Other Electrical Systems," Rev. 4, 11/8/11.
        vi. Section G4010, "Site Electrical Distribution," Rev. 3, 8/20/10.
        vii. Section G4020, "Site Lighting," Rev. 3, 5/12/10.
        viii. Section G4030, "Site Communications," Rev. 2, 10/27/06.
        ix. Section G4090, "Other Site Electrical Utilities," Rev. 2 10/27/06.

11. NFPA 54, *National Fuel Gas Code*, National Fire Protection Association, Quincy, Massachusetts.

12. RLWTF-UP-PHAR-11-001-R0, 2011, *Preliminary Hazards Analysis Report for the Radioactive Liquid Waste Treatment Facility Upgrade Project Low-Level Waste and Common Support Capability*, Los Alamos National Laboratory, Los Alamos, New Mexico.

13. UPC, *2008 Uniform Plumbing Code*, International Association of Plumbing and Mechanical Officials, Ontario, California.

14. UMC, *2009 Uniform Mechanical Code*, International Association of Plumbing and Mechanical Officials, Ontario, California.

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Construction Specification for the TA-50 Radioactive Liquid Waste Treatment Facility Upgrade Project (RLWTF-UP) Low-Level Waste Subproject

60239831-SPEC-001, Revision 1

July 7, 2014

Prepared for
Los Alamos National Laboratory
Los Alamos, New Mexico 87544

Reviewed Classification/UCNI

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Construction Specification for the TA-50 Radioactive Liquid Waste Treatment Facility Upgrade Project (RLWTF-UP) Low-Level Waste Subproject

60239831-SPEC-001, Revision 1

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The technical material and data contained in this Project Manual were prepared under the supervision and direction of the undersigned, whose seals as professional Architects and Engineers are licensed to practice in the State of New Mexico.

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DIVISION 25 – INTEGRATED AUTOMATION

Fullam, Jennifer, NMENV

From:	George, Robert, NMENV
Sent:	Thursday, April 4, 2013 4:19 PM
To:	Brian Shields
Cc:	Knutson, Gerald, NMENV; Fullam, Jennifer, NMENV
Subject:	RE: LANL Discharge
Attachments:	13-0052 Mar-04 NPDES Permit NM0028355 Potential Unpermitted Discharge Re....pdf

Brian,

I will make sure that contact information for both you and Rachel is listed on the facility specific interested parties lists for DP-857 (SWWS and SERF), DP-1589 (Septic Tanks), DP-1132 (Radioactive Liquid Waste Treatment Facility) and DP-1793 (On-site Treatment and Disposal).

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Robert J. George
Domestic Waste Team Leader
NMED-Ground Water Quality Bureau
P.O. Box 5469
Santa Fe, New Mexico 87502
Office Phone: 505-476-3648

From: Brian Shields [mailto:bshields@amigosbravos.org]
Sent: Thursday, April 04, 2013 3:04 PM
To: George, Robert, NMENV
Subject: LANL Discharge

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Thank you for your assistance.
Brian

Brian Shields, Executive Director
Amigos Bravos
P.O.Box 238, Taos, NM 87571
Voice: 575-758-3874
Mobile: 575-770-0946
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e-mail: bshields@amigosbravos.org
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Mike
(505) 665-6085

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Sent: Tuesday, March 12, 2013 4:11 PM
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Cc: Brian Shields
Subject: Discharge

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Thank you,
-Rachel

--
Rachel Conn
Amigos Bravos
575-758-3874
P.O. Box 238
Taos, NM 87571

Fullam Docs 030714 / Caseloads / LANL / Liquid Emails

Fullam, Jennifer, NMENV

From: Brian Shields <bshields@amigosbravos.org>
Sent: Thursday, April 4, 2013 5:05 PM
To: George, Robert, NMENV
Cc: Knutson, Gerald, NMENV; Fullam, Jennifer, NMENV
Subject: Re: LANL Discharge

Thanks!

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Date: Thursday, April 4, 2013 4:19 PM
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Cc: "Knutson, Gerald, NMENV" <Gerald.Knutson@state.nm.us>, "Fullam, Jennifer, NMENV" <Jennifer.Fullam@state.nm.us>
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Robert J. George

: 08641

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Fullam Docs 030714 / Case loads / LANL / LANL emails

Fullam, Jennifer, NMENV

From:	Fullam, Jennifer, NMENV
Sent:	Friday, April 5, 2013 10:23 AM
To:	'Brian Shields'; George, Robert, NMENV
Cc:	Knutson, Gerald, NMENV
Subject:	RE: LANL Discharge

Brian,

In regards to the release at SERF, LANL did provide notification to NMED in accordance with 20.6.2.1203.

Jennifer T. Fullam
Environmental Scientist
Ground Water Quality Bureau
New Mexico Environment Department
505.827.2909
jennifer.fullam@state.nm.us

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DP-1132
Blue File - MRs

Los Alamos
NATIONAL LABORATORY

Environmental Protection Division
Water Quality & RCRA Group (ENV-RCRA)
PO Box 1663, K490
Los Alamos, New Mexico 87545
505-667-0666

National Nuclear Security Administration
Los Alamos Field Office, A316
3747 West Jemez Road
Los Alamos, New Mexico, 87545
(505) 667-5794/FAX (505) 667-5948

Date: April 30, 2013
Symbol: ENV-RCRA-13-0076
LAUR: 13-22600

GROUND WATER
APR 30 2013
BUREAU

Mr. Jerry Schoeppner, 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

Dear Mr. Schoeppner:

SUBJECT: DISCHARGE PLAN DP-1132 QUARTERLY REPORT, FIRST QUARTER 2013, TA-50 RADIOACTIVE LIQUID WASTE TREATMENT FACILITY

This letter from the U.S. Department of Energy and Los Alamos National Security, LLC (DOE/LANS) is the first quarter 2013 Discharge Plan DP-1132 report for the Technical Area (TA)-50 Radioactive Liquid Waste Treatment Facility (RLWTF). Since the first quarter of 1999, DOE/LANS have provided the New Mexico Environment Department (NMED) with voluntary quarterly reports containing analytical results from effluent and groundwater monitoring.

During the first quarter of 2013, no effluent was discharged to either the National Pollutant Discharge Elimination System (NPDES) Outfall 051 or to the recently constructed solar evaporative tanks (SET) at Technical Area (TA)-52; all effluent was evaporated on-site at the effluent evaporator.

Quarterly Monitoring Results, Mortandad Canyon Alluvial Groundwater Wells
Table 1.0 presents the analytical results from sampling conducted at Mortandad Canyon alluvial well MCO-3 during the first quarter of 2013. No samples were collected from alluvial wells MCO-4B, MCO-6, and MCO-7 because there was insufficient water present. A sample from MCO-3 was submitted to GEL Laboratories LLC (GEL) for analysis. All of the analytical results were below the New Mexico Water Quality Control Commission (NM WQCC) 3103 standards for nitrate-nitrogen (NO_3-N), fluoride (F), and total dissolved solids (TDS). Analytical results from the sampling of

: 08681

intermediate and regional aquifer wells in Mortandad Canyon can be accessed online at the Intellus New Mexico environmental monitoring data web site (http://www.intellusnmdata.com).

TA-50 RLWTF Effluent Monitoring Results
No final weekly composite (FWC) samples were collected during the first quarter of 2013 because no effluent was discharged to Mortandad Canyon.

No final monthly composite (FMC) samples were collected during the first quarter of 2013 because no effluent was discharged to Mortandad Canyon.

Please contact Robert S. Beers by telephone at (505) 667-7969 or by email at bbeers@lanl.gov if you have questions regarding this report.

Sincerely,

Alison M. Dorries
Division Leader
Environmental Protection Division
Los Alamos National Security LLC

Sincerely,

Gene E. Turner
Environmental Permitting Manager
Environmental Projects Office
Los Alamos Field Office
U.S. Department of Energy

AMD:GET:RSB/lm

Cy: James Hogan, NMED/SWQB, Santa Fe, NM
John E. Kieling, NMED/HWB, Santa Fe, NM
Hai Shen, NA-OO-LA, (E-File)
Gene E. Turner, NA-OO-LA, (E-File)
Carl A. Beard, PADOPS, A102
Michael T. Brandt, ADESHQ, (E-File)
Alison M. Dorries, ENV-DO, (E-File)
Randall S. Johnson, ENV-ES, (E-File)
Michael T. Saladen, ENV-RCRA, (E-File)
Robert S. Beers, ENV-RCRA, K490
Dianne W. Wilburn, TA55-DO, (E-File)
Victor J. Salazar, TA-55 RLW, (E-File)
John C. Del Signore, TA-55 RLW, (E-File)
LASOmailbox@nnsa.doe.gov, (E-File)
locatesteam@lanl.gov, (E-File)
ENV-RCRA Correspondence File, K490

Table 1.0. Mortandad Canyon Alluvial Well Sampling, 1st Quarter, 2013.

Sampling Location	Sample Field Prep (F/UF)[1]	Sample Date	Perchlorate (ug/L)	NO_3+NO_2-N (mg/L)	TKN (mg/L)	NH3-N (mg/L)	TDS (mg/L)	F (mg/L)
MCO-3	F	2/8/2013	2.37	0.85	0.13	0.15	363	0.25
MCO-4B	F	2/8/2013	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]
MCO-6	F	2/8/2013	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]
MCO-7	F	2/8/2013	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]
NM WQCC 3103 Groundwater Standards			*NA*[2]	*10 mg/L*[3]	*NA*[2]	*NA*[2]	*1000 mg/L*	*1.6 mg/L*

Notes:

[1]All samples filtered.

[2]NA means that there is no NM WQCC 3103 standard for this analyte.

[3]The NM WQCC 3103 Groundwater Standard is for NO_3-N.

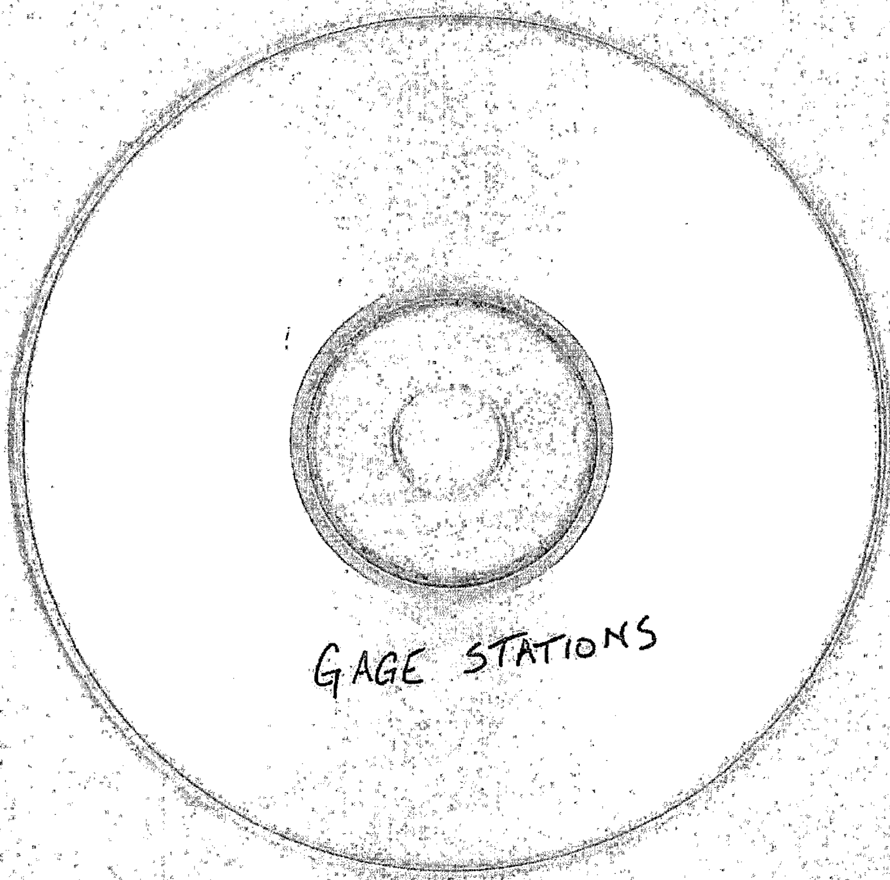
[4]Ice means that ice and snow blocked safe access to the well.

[5]Dry means that there was insufficient water in the well for sampling.

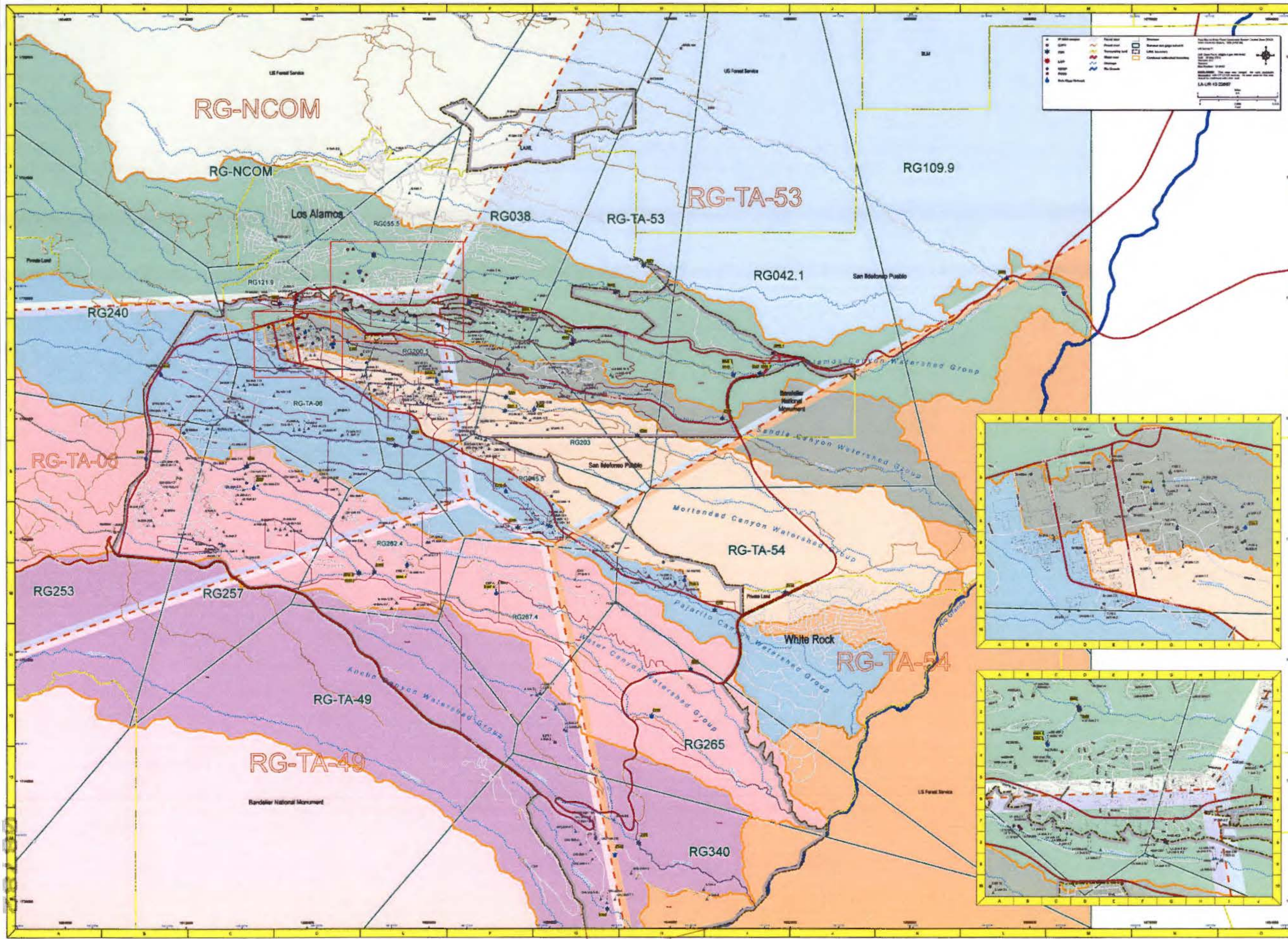
J- means that the reported value is expected to be more uncertain than usual with a potential negative bias.

J+ means that the reported value is expected to be more uncertain than usual with a potential positive bias.

J means the reported value is greater than the Method Detection Limit (MDL) but less than the Reporting Limit (RL).



File Date: 5/17/2013



RG-NCOM
US Forest Service
RG-NCOM
Los Alamos
RG055.5
RG038
RG-TA-53
RG-TA-53
BLM
RG109.9
RG042.1
San Ildefonso Pueblo
Private Land
RG121.9
RG240
RG200.5
Los Alamos Canyon Watershed Group
Bandelier National Monument
RG-TA-06
RG203
San Ildefonso Pueblo
Sandia Canyon Watershed Group
Mortandad Canyon Watershed Group
RG-TA-54
RG282.4
RG253
RG257
RG287.4
Private Land
Pajarito Canyon Watershed Group
White Rock
RG-TA-54
Water Canyon Watershed Group
Ancho Canyon Watershed Group
RG-TA-49
RG265
RG-TA-49
Bandelier National Monument
US Forest Service
RG340

1132 Blue File

NEW MEXICO
ENVIRONMENT DEPARTMENT

Ground Water Quality Bureau

SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
Lieutenant Governor

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The Honorable My
Pueblo of Santa An
2 Dove Road
Santa Ana Pueblo,

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CERTIFIED MAIL – RETURN RECEIPT REQUESTED

June 14, 2013

The Honorable Myron Armijo, Governor
Pueblo of Santa Ana
2 Dove Road
Santa Ana Pueblo, NM 87072

RE: Preliminary Draft Ground Water Discharge Permit for the Los Alamos National Laboratory Radioactive Liquid Waste Treatment Facility, DP-1132

Dear Governor Armijo:

The purpose of this letter is to inform you that the New Mexico Environment Department (NMED) Ground Water Quality Bureau (GWQB) has been in the process of drafting a ground water Discharge Permit for the Los Alamos National Laboratory (LANL) Radioactive Liquid Waste Treatment Facility. This facility processes chemical and radioactive wastewater from various Technical Areas (TAs) at LANL and discharges treated wastewater to a tributary of Mortandad Canyon, to mechanical evaporators and is proposing to discharge to a solar evaporative tank system in the future. NMED has given this facility the permit number DP-1132. An application for a Ground Water Discharge Permit for this facility was first received by NMED on April 16, 1996 and LANL has submitted copious information concerning the facility over the intervening years. On February 16, 2012, LANL submitted a revised application for the Radioactive Liquid Waste Treatment Facility along with supplemental information on August 10, 2012.

With the information contained in LANL's submittals and a series of technical meetings with LANL, NMED has prepared a *preliminary* draft Discharge Permit (copy enclosed). In accordance with NMED's Tribal Communication and Collaboration Policy (2009), NMED is extending this invitation to the Pueblo to discuss any comments or concerns regarding this preliminary draft Discharge Permit prior to the formal public notification and comment period. It is NMED's hope that engaging the Pueblo now will allow for meaningful and constructive discussions, before the draft Discharge Permit is published for formal public comment.

NMED's goal is to publish notice of the availability of a draft Discharge Permit and begin the formal public notice and comment period in August 2013. At that time, Santa Ana Pueblo will have the opportunity to provide formal comments, or request that a hearing be held on the draft Discharge Permit.

Should you have any questions or if Santa Ana Pueblo is interested in meeting with NMED staff to discuss the preliminary draft, please contact the technical reviewer for this site, Jennifer Fullam at (505) 827-2909 (jennifer.fullam@state.nm.us) or Robert George, Domestic Waste Team Leader for the Ground Water Quality Bureau at (505) 476-3648 (robert.george@state.nm.us).

Sincerely,

J Ott for Jerry Schoeppner

Jerry Schoeppner, Chief
Ground Water Quality Bureau

JS:RG/rjg

Encls: Preliminary Draft Discharge Permit DP-1132, LANL-RLWTF dated June 14, 2013

cc: Alan Hatch, Director, Department of Natural Resources, Pueblo of Santa Ana, 2 Dove Road, Santa Ana NM 87004
Jennifer Fullam, GWQB Tribal Contact (via email, without enclosure)
Mary Rose, NMED Tribal Liaison (without enclosure)

1132 Blue File

NEW MEXICO
ENVIRONMENT DEPARTMENT

Ground Water Quality Bureau

SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
Lieutenant Governor

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The Honorable Te
Pueblo of San Ilde
Route 5 - Box 315
Santa Fe, NM 875

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

June 14, 2013

The Honorable Terry Aguilar, Governor
Pueblo of San Ildefonso
Route 5, Box 315-A
Santa Fe, NM 87506

RE: Preliminary Draft Ground Water Discharge Permit for the Los Alamos National Laboratory Radioactive Liquid Waste Treatment Facility, DP-1132

Dear Governor Aguilar:

The purpose of this letter is to inform you that the New Mexico Environment Department (NMED) Ground Water Quality Bureau (GWQB) has been in the process of drafting a ground water Discharge Permit for the Los Alamos National Laboratory (LANL) Radioactive Liquid Waste Treatment Facility. This facility processes chemical and radioactive wastewater from various Technical Areas (TAs) at LANL and discharges treated wastewater to a tributary of Mortandad Canyon, to mechanical evaporators and is proposing to discharge to a solar evaporative tank system in the future. NMED has given this facility the permit number DP-1132. An application for a Ground Water Discharge Permit for this facility was first received by NMED on April 16, 1996 and LANL has submitted copious information concerning the facility over the intervening years. On February 16, 2012, LANL submitted a revised application for the Radioactive Liquid Waste Treatment Facility along with supplemental information on August 10, 2012.

With the information contained in LANL's submittals and a series of technical meetings with LANL, NMED has prepared a *preliminary* draft Discharge Permit (copy enclosed). In accordance with NMED's Tribal Communication and Collaboration Policy (2009), NMED is extending this invitation to the Pueblo to discuss any comments or concerns regarding this preliminary draft Discharge Permit prior to the formal public notification and comment period. It is NMED's hope that engaging the Pueblo now will allow for meaningful and constructive discussions, before the draft Discharge Permit is published for formal public comment.

NMED's goal is to publish notice of the availability of a draft Discharge Permit and begin the formal public notice and comment period in August 2013. At that time, San Ildefonso Pueblo will have the opportunity to provide formal comments, or request that a hearing be held on the draft Discharge Permit.

Should you have any questions or if San Ildefonso Pueblo is interested in meeting with NMED staff to discuss the preliminary draft, please contact the technical reviewer for this site, Jennifer Fullam at (505) 827-2909 (jennifer.fullam@state.nm.us) or Robert George, Domestic Waste Team Leader for the Ground Water Quality Bureau at (505) 476-3648 (robert.george@state.nm.us).

Sincerely,

for Jerry Schoeppner

Jerry Schoeppner, Chief
Ground Water Quality Bureau

JS:RG/rjg

Encls: Preliminary Draft Discharge Permit DP-1132, LANL-RLWTF dated June 14, 2013

cc: Steve Rydeen, Dept of Environmental and Cultural Preservation, Pueblo of San Ildefonso, Rt. 5 Box 315-A, Santa Fe, NM 87506
Jennifer Fullam, GWQB Tribal Contact (via email, without enclosure)
Mary Rose, NMED Tribal Liaison (without enclosure)

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NEW MEXICO
ENVIRONMENT DEPARTMENT

Ground Water Quality Bureau

SUSANA MARTINEZ
Governor

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Lieutenant Governor

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The Honorable Vinc
Pueblo of Jemez
P.O. Box 100
Jemez Pueblo, NM

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

June 14, 2013

The Honorable Vincent Toya, Sr., Governor
Pueblo of Jemez
P.O. Box 100
Jemez Pueblo, NM 87024

RE: Preliminary Draft Ground Water Discharge Permit for the Los Alamos National Laboratory Radioactive Liquid Waste Treatment Facility, DP-1132

Dear Governor Toya:

The purpose of this letter is to inform you that the New Mexico Environment Department (NMED) Ground Water Quality Bureau (GWQB) has been in the process of drafting a ground water Discharge Permit for the Los Alamos National Laboratory (LANL) Radioactive Liquid Waste Treatment Facility. This facility processes chemical and radioactive wastewater from various Technical Areas (TAs) at LANL and discharges treated wastewater to a tributary of Mortandad Canyon, to mechanical evaporators and is proposing to discharge to a solar evaporative tank system in the future. NMED has given this facility the permit number DP-1132. An application for a Ground Water Discharge Permit for this facility was first received by NMED on April 16, 1996 and LANL has submitted copious information concerning the facility over the intervening years. On February 16, 2012, LANL submitted a revised application for the Radioactive Liquid Waste Treatment Facility along with supplemental information on August 10, 2012.

With the information contained in LANL's submittals and a series of technical meetings with LANL, NMED has prepared a *preliminary* draft Discharge Permit (copy enclosed). In accordance with NMED's Tribal Communication and Collaboration Policy (2009), NMED is extending this invitation to the Pueblo to discuss any comments or concerns regarding this preliminary draft Discharge Permit prior to the formal public notification and comment period. It is NMED's hope that engaging the Pueblo now will allow for meaningful and constructive discussions, before the draft Discharge Permit is published for formal public comment.

NMED's goal is to publish notice of the availability of a draft Discharge Permit and begin the formal public notice and comment period in August 2013. At that time, Jemez Pueblo will have the opportunity to provide formal comments, or request that a hearing be held on the draft Discharge Permit.

Should you have any questions or if Jemez Pueblo is interested in meeting with NMED staff to discuss the preliminary draft, please contact the technical reviewer for this site, Jennifer Fullam at (505) 827-2909 (jennifer.fullam@state.nm.us) or Robert George, Domestic Waste Team Leader for the Ground Water Quality Bureau at (505) 476-3648 (robert.george@state.nm.us).

Sincerely,

for Jerry Schoeppner

Jerry Schoeppner, Chief
Ground Water Quality Bureau

JS:RG/rjg

Encls: Preliminary Draft Discharge Permit DP-1132, LANL-RLWTF dated June 14, 2013

cc: Greg Kaufman, Director, Department of Resource Protection, P.O. Box 100, Jemez Pueblo, NM 87024
Jennifer Fullam, GWQB Tribal Contact (via email, without enclosure)
Mary Rose, NMED Tribal Liaison (without enclosure)

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SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
Lieutenant Governor

NEW MEXICO
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The Honorable J. Le
Pueblo of Cochiti
P.O. Box 70
Cochiti Pueblo, NM
PS Form 3800, August 2006

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

June 14, 2013

The Honorable J. Leroy Arquero, Governor
Pueblo of Cochiti
P.O. Box 70
Cochiti Pueblo, NM 87072

RE: Preliminary Draft Ground Water Discharge Permit for the Los Alamos National Laboratory Radioactive Liquid Waste Treatment Facility, DP-1132

Dear Governor Arquero:

The purpose of this letter is to inform you that the New Mexico Environment Department (NMED) Ground Water Quality Bureau (GWQB) has been in the process of drafting a ground water Discharge Permit for the Los Alamos National Laboratory (LANL) Radioactive Liquid Waste Treatment Facility. This facility processes chemical and radioactive wastewater from various Technical Areas (TAs) at LANL and discharges treated wastewater to a tributary of Mortandad Canyon, to mechanical evaporators and is proposing to discharge to a solar evaporative tank system in the future. NMED has given this facility the permit number DP-1132. An application for a Ground Water Discharge Permit for this facility was first received by NMED on April 16, 1996 and LANL has submitted copious information concerning the facility over the intervening years. On February 16, 2012, LANL submitted a revised application for the Radioactive Liquid Waste Treatment Facility along with supplemental information on August 10, 2012.

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NMED's goal is to publish notice of the availability of a draft Discharge Permit and begin the formal public notice and comment period in August 2013. At that time, Cochiti Pueblo will have the opportunity to provide formal comments, or request that a hearing be held on the draft Discharge Permit.

Should you have any questions or if Cochiti Pueblo is interested in meeting with NMED staff to discuss the preliminary draft, please contact the technical reviewer for this site, Jennifer Fullam at (505) 827-2909 (jennifer.fullam@state.nm.us) or Robert George, Domestic Waste Team Leader for the Ground Water Quality Bureau at (505) 476-3648 (robert.george@state.nm.us).

Sincerely,

JPRott for Jerry Schoeppner

Jerry Schoeppner, Chief
Ground Water Quality Bureau

JS:RG/rjg

Encls: Preliminary Draft Discharge Permit DP-1132, LANL-RLWTF dated June 14, 2013

cc: Jacob Pecos, Director, Dept. of Natural Resources and Conservation, P.O. Box 70, 255 Cochiti Street, Cochiti Pueblo, NM87072
Jennifer Fullam, GWQB Tribal Contact (via email)
Mary Rose, NMED Tribal Liaison

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NEW MEXICO
ENVIRONMENT DEPARTMENT

Ground Water Quality Bureau

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Lieutenant Governor

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The Honorable J. B
Pueblo of Santa Cl
P.O. Box 580
Espanola, NM 875
PS Form 3800, August 2006

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CERTIFIED MAIL – RETURN RECEIPT REQUESTED

June 14, 2013

The Honorable J. Bruce Tafoya, Governor
Pueblo of Santa Clara
P.O. Box 580
Espanola, NM 87532

RE: Preliminary Draft Ground Water Discharge Permit for the Los Alamos National Laboratory Radioactive Liquid Waste Treatment Facility, DP-1132

Dear Governor Tafoya:

The purpose of this letter is to inform you that the New Mexico Environment Department (NMED) Ground Water Quality Bureau (GWQB) has been in the process of drafting a ground water Discharge Permit for the Los Alamos National Laboratory (LANL) Radioactive Liquid Waste Treatment Facility. This facility processes chemical and radioactive wastewater from various Technical Areas (TAs) at LANL and discharges treated wastewater to a tributary of Mortandad Canyon, to mechanical evaporators and is proposing to discharge to a solar evaporative tank system in the future. NMED has given this facility the permit number DP-1132. An application for a Ground Water Discharge Permit for this facility was first received by NMED on April 16, 1996 and LANL has submitted copious information concerning the facility over the intervening years. On February 16, 2012, LANL submitted a revised application for the Radioactive Liquid Waste Treatment Facility along with supplemental information on August 10, 2012.

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NMED's goal is to publish notice of the availability of a draft Discharge Permit and begin the formal public notice and comment period in August 2013. At that time, Santa Clara Pueblo will have the opportunity to provide formal comments, or request that a hearing be held on the draft Discharge Permit.

Should you have any questions or if Santa Clara Pueblo is interested in meeting with NMED staff to discuss the preliminary draft, please contact the technical reviewer for this site, Jennifer Fullam at (505) 827-2909 (jennifer.fullam@state.nm.us) or Robert George, Domestic Waste Team Leader for the Ground Water Quality Bureau at (505) 476-3648 (robert.george@state.nm.us).

Sincerely,

for Jerry Schoeppner

Jerry Schoeppner, Chief
Ground Water Quality Bureau

JS:RG/rjg

Encls: Preliminary Draft Discharge Permit DP-1132, LANL-RLWTF dated June 14, 2013

cc: Joseph Chavarria, Director, Office of Environmental Affairs, Santa Clara Pueblo, P.O. Box 580, Espanola, NM 87532
Jennifer Fullam, GWQB Tribal Contact (via email, without enclosure)
Mary Rose, NMED Tribal Liaison (without enclosure)

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