NEW MEXICO
ENVIRONMENT DEPARTMENT

Ground Water Quality Bureau
1190 South St. Francis Drive (87505)
P.O. Box 5469, Santa Fe, New Mexico 87502-5469
Phone (505) 827-2900 Fax (505) 827-2965
www.env.nm.gov

MICHELLE LUJAN GRISHAM
Governor

HOWIE C. MORALES
Lieutenant Governor

CERTIFIED MAIL – RETURN RECEIPT REQUEST

January 30, 2019

Taunia S. Van Valkenburg
Group Leader
Environmental Protection & Compliance
Triad National Security, LLC
PO Box 1663, K490
Los Alamos, New Mexico 87545

Karen E. Armijo
Permitting and Compliance Program Manager
National Nuclear Security Administration
U.S. Department of Energy
3747 West Jemez Road, A316
Los Alamos, New Mexico 87544

RE: Approval, Soil Moisture Monitoring System Workplan, Los Alamos National Laboratory Radioactive Liquid Waste Treatment Facility, DP-1132

Dear Ms. Van Valkenburg and Ms. Armijo:

On October 31, 2018, the New Mexico Environment Department (NMED) Ground Water Quality Bureau (GWQB) received a workplan from the U.S. Department of Energy and Triad National Security, LLC (DOE/Triad or Permittees) pursuant to Condition #30 of Discharge Permit 1132 (DP-1132) for the installation of a moisture monitoring system at the TA-52 Solar Evaporation Tank (SET) System.

As explained in the workplan, the primary objective of the moisture monitoring system is for early leak detection through periodic neutron logging of boreholes beneath the SET. A numerical model simulating potential leak scenarios was utilized to evaluate the geometry and spreading of wetting fronts that may develop under different conditions and was developed to support the design of the moisture monitoring system. The moisture monitoring system will consist of eight boreholes directionally drilled at 45°, seven of which will be drilled perpendicular to the axis of the SET and will be approximately 34.5 m long and drilled to a total design depth of approximately 24.4 m below ground surface. Neutron logs will be run when the boreholes have been drilled to total depth and completed with aluminum conduit. Baseline soil moisture condition for all boreholes will be established from initial neutron moisture logging conducted within seven days of completion of the moisture monitoring boreholes. Upon completion of the construction and testing of the soil moisture monitoring system, a final construction reporting shall be submitted to NMED for approval in accordance with Condition #30 of DP-1132.

The information submitted in the workplan satisfies Condition #30 of the Discharge Permit. The installation of the soil moisture monitoring system must be implemented as described in the workplan. The Permittees shall take every precaution to preclude moisture from entering the boreholes during construction. The Soil Moisture Monitoring System Workplan is hereby approved.

Approval of this workplan does not relieve DOE/Triad of the responsibility to comply with any other applicable federal, state, and/or local laws and regulations. This approval does not relieve DOE/Triad of liability should operations associated with this workplan result in actual pollution of ground or surface waters.

If you have any questions, please contact Andrew Romero at (505) 827-0076. Thank you for your cooperation.

Sincerely,

Steve Pullen, Program Manager
Ground Water Quality Bureau

SP:ar

cc (e-version):
Steve Pullen, NMED/GWQB
Shelly Lemon, NMED/SWQB
John Kieling, NMED/HWB
Michael W. Hazen, ALDESHQSS
William H. Schwettmann, IPM
Raelynn Romero, PM6
Randal S. Johnson, DESHF-TA55
Denise C. Gelston, TA-55-RLW
Alvin M. Aragon, TA-55-RLW
John C. Del Signore, TA-55-RLW
Michael T. Saladen, EPC-CP
Robert S. Beers, EPC-CP
Steven G. Pearson, EPC-CP

Denise C. Gelston, TA-55-RLW
Alvin M. Arahon, TA-55-RLW
John C. Del Signore, TA-55-RLW
Michael T. Saladen, EPC-CP
Robert S. Beers, EPC-CP
Steven G. Pearson, EPC-CP

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P.O. Box 5469, Santa Fe, New Mexico 87502-5469
Phone (505) 827-2900 Fax (505) 827-2965
www.env.nm.gov

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

January 30, 2019

Enrique "Kiki" Torres
Division Leader
Environmental Protection & Compliance
Triad National Security, LLC
PO Box 1663, K490
Los Alamos, New Mexico 87545

Karen E. Armijo
Permitting and Compliance Program Manager
National Nuclear Security Administration
U.S. Department of Energy
3747 West Jemez Road, A316
Los Alamos, New Mexico 87544

RE: Approval of Alluvial Monitoring Wells Workplan, Los Alamos National Laboratory Radioactive Liquid Waste Treatment Facility, DP-1132

Dear Mr. Torres and Ms. Armijo:

On November 19, 2018, the New Mexico Environment Department (NMED) Ground Water Quality Bureau (GWQB) received a workplan from the U.S. Department of Energy and Triad National Security, LLC (DOE/Triad) associated with the TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF). The workplan is required by Condition #33 of Discharge Permit 1132 (DP-1132) for the installation of two replacement monitoring wells in the alluvial aquifer at a location hydrologically downgradient of Outfall 051, and incudes the proposed well locations, drilling methods, well specifications, and proposed schedule for construction.

The workplan proposes the installation of two new alluvial groundwater monitoring wells, RLW-A-1 and RLW-A-2, located in Mortandad Canyon above the confluence with Ten Site Canyon. Each borehole will be completed using hollow stem auger (HAS) drilling techniques. A 4-in inside diameter (ID) PVC well with a .010-in continuous wrap vee-wire screen will be installed in the boreholes. Two stainless steel centralizers shall be installed, one immediately above the screen and the second above the bentonite seal to centralize the well in the borehole. A 20/40 silica sand filter pack will be placed extending 1-foot below the completed well to 2-feet above the top of the screened interval.

The information submitted satisfies Condition #33 of your Discharge Permit, DP-1132, pursuant to Subsection A of 20.6.2.3107 NMAC. The Alluvial Monitoring Wells Workplan is hereby approved as described in the workplan and in accordance with DP-1132.

The alluvial groundwater monitoring wells shall be installed in accordance with the attachment *Ground Water Discharge Permit Monitoring Well Construction and Abandonment Conditions*, Revision 1.1, March 2011 (copy enclosed), and the approved work plan schedule. Construction and lithologic logs for the monitoring wells shall be submitted to NMED within 30 days of well completion. Groundwater discharges associated with the Work Plan shall be performed in accordance with the Work Plan and are subject to all conditions of DP-1132.

Well completion report (including the Office of the State Engineer permit), depth-to-most-shallow groundwater measurements, analytical results, including the laboratory QA/QC summary report, and a facility layout map showing the location and number of each well shall be submitted to NMED within 45 days of the installation of the monitoring wells.

Approval of this workplan does not relieve DOE/Triad of the responsibility to comply with any other applicable federal, state, and/or local laws and regulations. This approval does not relieve DOE/Triad of liability should operations associated with this workplan result in actual pollution of ground or surface waters.

If you have any questions, please contact Andrew Romero at (505) 827-0076. Thank you for your cooperation.

Sincerely,

Steve Pullen, Program Manager
Ground Water Quality Bureau

SP:ar

Encl: Ground Water Discharge Permit Monitoring Well Construction and Abandonment Conditions, Revision 1.1, March 2011

cc (e-version):
Steve Pullen, NMED/GWQB
Shelly Lemon, NMED/SWQB
John Kieling, NMED/HWB
Michael W. Hazen, ALDESHQSS
William H. Schwettmann, IPM
Raelynn Romero, PM6
Randal S. Johnson, DESHF-TA55

Los Alamos
NATIONAL LABORATORY
EST. 1943

Environmental Protection & Compliance Division
Environmental Compliance Programs (EPC-CP)
PO Box 1663, K490
Los Alamos, New Mexico 87545
(505) 667-0666

Symbol: EPC-DO: 19-021
LA-UR: 19-20574
Date: JAN 30 2019

Ms. Michelle Hunter, Bureau 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

Ms. Shelly Lemon, Bureau Chief
Surface Water Quality Bureau
New Mexico Environment Department
Harold Runnels Building, N2050
1190 St. Francis Drive
P.O. Box 5469
Santa Fe, New Mexico 87502

Subject: **Triad National Security, LLC (Triad) Quarterly Discharge Report (October 1, 2018 – December 31, 2018)**

Dear Ms. Hunter and Ms. Lemon:

Triad's Environmental Compliance Programs Group (EPC-CP) is submitting the Quarterly Discharge Report for October 1, 2018 through December 31, 2018, pursuant to the "*Discharge Reporting Guidance (Decision Tree)*" dated March 10, 2009. The Quarterly Discharge Report (Attachment 1) includes discharges of potable water, steam condensate, and line disinfection flushing water that are associated with various utility activities at the Laboratory.

Please contact Brian Iacona at (505) 664-0185 if additional information is necessary or would be helpful.

Sincerely,

Taunia S. Van Valkenburg
Group Leader
Environmental Protection & Compliance

TSV/MTS/BMI:jdm

Attachment(s): Attachment 1 Quarterly Discharge Report (October 1, 2018 – December 31, 2018)

Copy: Nancy Williams, USEPA/Region 6, williams.nancy@epa.gov,(E-File)
Steve Pullen, NMED/GWQB, steve.pullen@state.nm.us, (E-File)
Melanie Sandoval, NMED/GWQB, melanie.sandoval2@state.nm.us, (E-File)
Gerald L. Knutson, NMED/GWQB, gerald.knutson@state.nm.us, (E-File)
Andrew Romero, NMED/GWQB, andrewc.romero@state.nm.us, (E-File)
Sarah Holcomb, NMED-SWQB, sarah.holcomb@state.nm.us, (E-File)
Erin Shea, NMED-SWQB, erin.shea@state.nm.us, (E-File)
Karen E. Armijo, NA-LA, Karen.Armijo@nnsa.doe.gov, (E-File)
Michael W. Hazen, ALDESHQSS, mhazen@lanl.gov, (E-File)
William R. Mairson, ALDESHQSS, wmairson@lanl.gov, (E-File)
Enrique Torres, EPC-DO, etorres@lanl.gov, (E-File)
Michael T. Saladen, EPC-CP, saladen@lanl.gov, (E-File)
Brian M. Iacona, EPC-CP, biacona@lanl.gov, (E-File)
Steven G. Pearson, EPC-CP, spearson@lanl.gov, (E-File)
locatesteam@lanl.gov, (E-File)
epc-correspondence@lanl.gov, (E-File)

Attachment 1

Quarterly Discharge Report
(October 1, 2018 – December 31, 2018)

EPC-DO: 19-021

LA-UR-19-20574

Date: JAN 30 2019

14355

Quarterly Discharge Report
(October 1, 2018 - December 31, 2018)

Occurrence Date	Type of Release	Location	Organization	Comments
10/2/2018	Potable Water	TA-35-88; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/2/2018	Potable Water	TA-55-10; Fire Suppression System - Discharge Point-1469-59	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/2/2018	Potable Water	TA-55-11; Fire Suppression System - Discharge Point-1458-57	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/3/2018	Potable Water	TA-03-29-09; Fire Suppression System	TA-55	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/3/2018	Potable Water	TA-03-29-05; Fire Suppression System	TA-55	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/3/2018	Potable Water	TA-3-1690; Fire Suppression System-SPW	LOG-FP	~500 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/3/2018	Potable Water	TA-22; Hydrant-422	UI	~2,800 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.
10/3/2018	Potable Water	TA-22; Hydrant-903	UI	~2,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.
10/4/2018	Potable Water	TA-03-29-07; Fire Suppression System	TA-55	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/4/2018	Potable Water	TA-53-54; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/4/2018	Potable Water	TA-53-988; Fire Suppression System	LOG-FP	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/4/2018	Potable Water	TA-16-180; Fire Suppression System	LOG-FP	~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/4/2018	Potable Water	TA-33; Hydrant-456	UI	~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.
10/5/2018	Potable Water	TA-03-29-03; Fire Suppression System	TA-55	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/5/2018	Potable Water	TA-3-521; Fire Suppression System-SPW	LOG-FP	~275 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/9/2018	Potable Water	TA-55-11; Fire Suppression System - Discharge Point-1458-57	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/9/2018	Potable Water	TA-55-10; Fire Suppression System - Discharge Point-1469-59	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/9/2018	Potable Water	TA-35-88; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/9/2018	Potable Water	TA-16-969; Fire Suppression System-SPW	LOG-FP	~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/9/2018	Potable Water	TA-16-202; Fire Suppression System-SPW	LOG-FP	~275 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/9/2018	Potable Water	TA-46-535; Fire Suppression System-SPW	LOG-FP	~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.

14356

Quarterly Discharge Report
(October 1, 2018 - December 31, 2018)

Occurrence Date	Type of Release	Location	Organization	Comments
10/10/2018	Potable Water	TA-55-04; Fire Suppression System - Discharge Point-111	TA-55	~70 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/10/2018	Potable Water	TA-55-04; Fire Suppression System - Discharge Point-306	TA-55	~80 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/10/2018	Potable Water	TA-55-04; Fire Suppression System - North	TA-55	~20 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/10/2018	Potable Water	TA-55-04; Fire Suppression System - South	TA-55	~120 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/10/2018	Potable Water	TA-46-535; Fire Suppression System-SPW	LOG-FP	~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/10/2018	Potable Water	TA-16-450; Fire Suppression System-SPW	LOG-FP	~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/10/2018	Potable Water	TA-9-21; Fire Suppression System-SPW	LOG-FP	~375 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/10/2018	Potable Water	TA-39; Hydrant	UI	~4,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.
10/11/2018	Potable Water	TA-16-261; Fire Suppression System-SPW	LOG-FP	~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/11/2018	Potable Water	TA-16-263; Fire Suppression System-SPW	LOG-FP	~325 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/11/2018	Potable Water	TA-3-2322; Fire Suppression System-SPW	LOG-FP	~325 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/11/2018	Potable Water	TA-16-218; Fire Suppression System-SPW	LOG-FP	~275 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/11/2018	Potable Water	TA-16-180; Fire Suppression System	LOG-FP	~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/11/2018	Potable Water	TA-53-988; Fire Suppression System	LOG-FP	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/11/2018	Potable Water	TA-53-54; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/11/2018	Potable Water	TA-40; Hydrant-533	UI	~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.
10/12/2018	Potable Water	TA-16-304; Fire Suppression System-SPW	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/12/2018	Potable Water	TA-16-411; Fire Suppression System-SPW	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/12/2018	Potable Water	TA-16-304; Fire Suppression System-SPW	LOG-FP	~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/12/2018	Potable Water	TA-48-01; Fire Suppression System-SPW	LOG-FP	~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/12/2018	Potable Water	TA-33-114; Fire Suppression System-SPW	LOG-FP	~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.

Quarterly Discharge Report (October 1, 2018 - December 31, 2018)					14357
Occurrence Date	**Type of Release**	**Location**	**Organization**	**Comments**	
10/12/2018	Potable Water	TA-15; Hydrant-536	UI	~3,000 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	
10/12/2018	Potable Water	TA-15; Hydrant-932	UI	~2,700 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	
10/12/2018	Potable Water	TA-15; Hydrant-171	UI	~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	
10/15/2018	Potable Water	TA-16-824; Fire Suppression System-SPW	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/15/2018	Potable Water	TA-35-213; Fire Suppression System-SPW	LOG-FP	~325 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/15/2018	Potable Water	TA-3-200; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/15/2018	Potable Water	TA-3-132; Fire Suppression System-SPW	LOG-FP	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/16/2018	Potable Water	TA-55-11; Fire Suppression System - Discharge Point-1458-57	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/16/2018	Potable Water	TA-55-10; Fire Suppression System - Discharge Point-1469-59	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/16/2018	Potable Water	TA-35-88; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/16/2018	Potable Water	TA-46; Hydrant-673	UI	~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	
10/17/2018	Steam Condensate	TA-43-01; Steam Condensate Manhole-91	UI	~500 gallons of steam condensate was discharged to the environment from a steam condensate manhole.	
10/17/2018	Potable Water	TA-3-132; Fire Suppression System-SPW	LOG-FP	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/17/2018	Potable Water	TA-35-29; Fire Suppression System-SPW	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/17/2018	Potable Water	TA-3-39; Fire Suppression System-SPW	LOG-FP	~800 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/17/2018	Potable Water	TA-8-22; Fire Suppression System-SPW	LOG-FP	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-01; Fire Suppression System - Discharge Point-1390-1	TA-55	~25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-01; Fire Suppression System - Discharge Point-1390	TA-55	~55 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-10; Fire Suppression System - Discharge Point-1469-58	TA-55	~45 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-10; Fire Suppression System - Discharge Point-1469-59	TA-55	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-11; Fire Suppression System - Discharge Point-1458-46	TA-55	~20 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	

Quarterly Discharge Report (October 1, 2018 - December 31, 2018)					14358
Occurrence Date	**Type of Release**	**Location**	**Organization**	**Comments**	
10/18/2018	Potable Water	TA-55-11; Fire Suppression System - Discharge Point-1458	TA-55	~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-114; Fire Suppression System - Discharge Point-1252-1	TA-55	~20 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-53-54; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-53-988; Fire Suppression System	LOG-FP	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-03; Fire Suppression System - Discharge Point-B93	TA-55	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-03; Fire Suppression System - Discharge Point-1393	TA-55	~25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-314; Fire Suppression System - Discharge Point-2051-230	TA-55	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-314; Fire Suppression System - Discharge Point-2051	TA-55	~20 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-371; Fire Suppression System - Discharge Point-371-03	TA-55	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-05; Fire Suppression System - Discharge Point-1784-1	TA-55	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-08; Fire Suppression System - Discharge Point-904	TA-55	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-08; Fire Suppression System - Discharge Point-904	TA-55	~25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-06; Fire Suppression System - Discharge Point-1445	TA-55	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-06; Fire Suppression System - Discharge Point-1445-2	TA-55	~25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-05; Fire Suppression System - Discharge Point-1784	TA-55	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-42; Fire Suppression System - Discharge Point-1421	TA-55	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-42; Fire Suppression System - Discharge Point-1421	TA-55	~25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-39; Fire Suppression System - Discharge Point-1782	TA-55	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-39; Fire Suppression System - Discharge Point-1728	TA-55	~20 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-371; Fire Suppression System - Discharge Point-371-04	TA-55	~20 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/18/2018	Potable Water	TA-55-02; Fire Suppression System - Discharge Point-1391-1	TA-55	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	

14359

Quarterly Discharge Report
(October 1, 2018 - December 31, 2018)

Occurrence Date	Type of Release	Location	Organization	Comments
10/18/2018	Potable Water	TA-55-02; Fire Suppression System - Discharge Point-1391-2	TA-55	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/18/2018	Potable Water	TA-55-28; Fire Suppression System - Discharge Point-1466-N	TA-55	~40 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/18/2018	Potable Water	TA-55-03; Fire Suppression System - Discharge Point-1393	TA-55	~40 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/18/2018	Potable Water	TA-55-03; Fire Suppression System - Discharge Point-1393-1	TA-55	~25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/18/2018	Potable Water	TA-55-28; Fire Suppression System - Discharge Point-1466	TA-55	~40 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/18/2018	Potable Water	TA-55-02; Fire Suppression System - Discharge Point-1391	TA-55	~20 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/18/2018	Potable Water	TA-55-02; Fire Suppression System - Discharge Point-1391	TA-55	~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/18/2018	Potable Water	TA-55-114; Fire Suppression System - Discharge Point-1252-2	TA-55	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/18/2018	Potable Water	TA-16-180; Fire Suppression System	LOG-FP	~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/18/2018	Potable Water	TA-55-142; Fire Suppression System - Discharge Point-1929-210	TA-55	~5 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/18/2018	Potable Water	TA-55-114; Fire Suppression System - Discharge Point-1252	TA-55	~5 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/18/2018	Potable Water	TA-55-142; Fire Suppression System - Discharge Point-1929	TA-55	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/18/2018	Potable Water	TA-8-22; Fire Suppression System-SPW	LOG-FP	~500 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/18/2018	Potable Water	TA-3-132; Fire Suppression System-SPW	LOG-FP	~700 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/19/2018	Potable Water	TA-16-260; Fire Suppression System-SPW	LOG-FP	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/22/2018	Potable Water	TA-16-207; Fire Suppression System-SPW	LOG-FP	~650 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/22/2018	Potable Water	TA-3-440; Fire Suppression System-SPW	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/22/2018	Potable Water	TA-3-261; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/23/2018	Potable Water	TA-55-11; Fire Suppression System - Discharge Point-1458-57	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/23/2018	Potable Water	TA-55-10; Fire Suppression System - Discharge Point-1469-59	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
10/23/2018	Potable Water	TA-35-88; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.

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Occurrence Date	**Type of Release**	**Location**	**Organization**	**Comments**	
10/23/2018	Potable Water	TA-16-207; Fire Suppression System-SPW	LOG-FP	~500 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/23/2018	Potable Water	TA-16-267; Fire Suppression System-SPW	LOG-FP	~450 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/23/2018	Potable Water	TA-3-508; Fire Suppression System-SPW	LOG-FP	~400 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/25/2018	Potable Water	TA-55-371; Fire Suppression System - Discharge Point-904	TA-55	~25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/25/2018	Potable Water	TA-55-371; Fire Suppression System - Discharge Point-1445	TA-55	~25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/25/2018	Potable Water	TA-53-54; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/25/2018	Potable Water	TA-53-988; Fire Suppression System	LOG-FP	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/25/2018	Potable Water	TA-16-180; Fire Suppression System	LOG-FP	~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/26/2018	Potable Water	TA-3-1819; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/26/2018	Potable Water	TA-46-30; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/26/2018	Potable Water	TA-46-31; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/26/2018	Potable Water	TA-46-32; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/28/2018	Potable Water	TA-54-38; Fire Suppression System	TA-55	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/29/2018	Potable Water	TA-3-32; Fire Suppression System-SPW	LOG-FP	~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/29/2018	Potable Water	TA-46-158; Fire Suppression System-SPW	LOG-FP	~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/29/2018	Potable Water	TA-46-75; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/29/2018	Potable Water	TA-46-77; Fire Suppression System-SPW	LOG-FP	~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/29/2018	Potable Water	TA-46-154; Fire Suppression System-SPW	LOG-FP	~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/29/2018	Potable Water	TA-55-371; Fire Suppression System - Discharge Point-904	TA-55	~25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/29/2018	Potable Water	TA-55-371; Fire Suppression System - Discharge Point-1445	TA-55	~25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/30/2018	Potable Water	TA-55-11; Fire Suppression System - Discharge Point-1458-57	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	

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Occurrence Date	**Type of Release**	**Location**	**Organization**	**Comments**	
10/30/2018	Potable Water	TA-55-10; Fire Suppression System - Discharge Point-1469-59	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/30/2018	Potable Water	TA-35-88; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/30/2018	Potable Water	TA-3-123; Fire Suppression System-SPW	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/30/2018	Potable Water	TA-46-200; Fire Suppression System-SPW	LOG-FP	~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/30/2018	Potable Water	TA-46-250; Fire Suppression System-SPW	LOG-FP	~325 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
10/30/2018	Potable Water	TA-46-161; Fire Suppression System-SPW	LOG-FP	~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/1/2018	Potable Water	TA-33-114; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/1/2018	Potable Water	TA-3-422; Fire Suppression System-SPW	LOG-FP	~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/1/2018	Potable Water	TA-53-54; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/1/2018	Potable Water	TA-53-988; Fire Suppression System	LOG-FP	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/1/2018	Potable Water	TA-16-180; Fire Suppression System	LOG-FP	~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/1/2018	Potable Water	TA-03-29 NW; Fire Suppression System	TA-55	~4,500 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/1/2018	Potable Water	TA-03-29 SE; Fire Suppression System	TA-55	~4,500 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/5/2018	Potable Water	TA-48-01; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/5/2018	Potable Water	TA-60-245; Fire Suppression System-SPW	LOG-FP	~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/5/2018	Potable Water	TA-36-01; Water Line	UI	~900 gallons of potable water discharged to the environment from a water line leak at TA-36-01. The water line was isolated upon discovery to stop the discharge and repairs were completed. The release did not reach a watercourse, cause erosion, or adversely impact any SWMUs or AOCs.	
11/5/2018	Potable Water	TA-3-3093; Fire Suppression System-SPW	LOG-FP	~275 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/5/2018	Potable Water	TA-49-153; Water Line	UI	~3,000 gallons of potable water discharged from a broken water line near TA-49-153. The water line was isolated upon discovery of the release to stop the discharge and repairs were completed. The discharge did not cause erosion, reach a watercourse, or adversely impact any SWMUs or AOCs.	
11/6/2018	Potable Water	TA-55-11; Fire Suppression System - Discharge Point-1458-57	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	

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Occurrence Date	**Type of Release**	**Location**	**Organization**	**Comments**	
11/6/2018	Potable Water	TA-55-10; Fire Suppression System - Discharge Point-1469-59	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/6/2018	Potable Water	TA-54-38; Fire Suppression System	TA-55	~5,000 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/6/2018	Potable Water	TA-35-88; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/6/2018	Potable Water	TA-48-01; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/7/2018	Potable Water	TA-55-10; Fire Suppression System - Discharge Point-1469-59	TA-55	~60 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/7/2018	Potable Water	TA-55-11; Fire Suppression System - Discharge Point-1458-47	TA-55	~60 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/7/2018	Potable Water	TA-48-01; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/7/2018	Potable Water	TA-54-38; Fire Suppression System	TA-55	~80 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/7/2018	Potable Water	TA-63-147; Fire Suppression System	TA-55	~100 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/7/2018	Potable Water	TA-22; Hydrant-422	UI	~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	
11/7/2018	Potable Water	TA-22; Hydrant-903	UI	~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	
11/7/2018	Potable Water	TA-33; Hydrant-456	UI	~4,000 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	
11/8/2018	Potable Water	TA-63-147; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/8/2018	Potable Water	TA-53-988; Fire Suppression System	LOG-FP	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/8/2018	Potable Water	TA-16-180; Fire Suppression System	LOG-FP	~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/8/2018	Potable Water	TA-03-141; Fire Suppression System-SPW	LOG-FP	~375 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/8/2018	Potable Water	TA-39; Hydrant	UI	~4,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	
11/8/2018	Potable Water	TA-53-54; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/9/2018	Potable Water	TA-15; Hydrant-536	UI	~3,000 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	
11/9/2018	Potable Water	TA-15; Hydrant-932	UI	~3,000 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	
11/9/2018	Potable Water	TA-15; Hydrant-171	UI	~2,700 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	

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Occurrence Date	**Type of Release**	**Location**	**Organization**	**Comments**	
11/13/2018	Potable Water	TA-55-11; Fire Suppression System - Discharge Point-1458-57	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/13/2018	Potable Water	TA-55-10; Fire Suppression System - Discharge Point-1469-59	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/13/2018	Potable Water	TA-16-260; Fire Suppression System-SPW	LOG-FP	~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/13/2018	Potable Water	TA-9-29; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/13/2018	Potable Water	TA-6-124; Fire Suppression System-SPW	LOG-FP	~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/13/2018	Potable Water	TA-46; Hydrant-673	UI	~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	
11/13/2018	Potable Water	TA-3-410; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/13/2018	Potable Water	TA-3-1411; Fire Suppression System-SPW	LOG-FP	~375 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/14/2018	Potable Water	TA-55-04; Fire Suppression System - Discharge Point-111	TA-55	~90 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/14/2018	Potable Water	TA-55-04; Fire Suppression System - Discharge Point-306	TA-55	~90 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/14/2018	Potable Water	TA-55-04; Fire Suppression System - North	TA-55	~20 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/14/2018	Potable Water	TA-55-04; Fire Suppression System - South	TA-55	~90 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/14/2018	Potable Water	TA-51; Water Line	UI	~900 gallons of potable water discharged to the environment from a water line leak at TA-51. The water line was isolated upon discovery to stop the discharge and repairs were completed. The release did not reach a watercourse, cause erosion, or adversely impact any SWMUs or AOCs.	
11/14/2018	Potable Water	TA-8-70; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/14/2018	Potable Water	TA-9-29; Fire Suppression System-SPW	LOG-FP	~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/14/2018	Potable Water	TA-3-2327; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/14/2018	Potable Water	TA-3-2010; Fire Suppression System-SPW	LOG-FP	~375 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/14/2018	Potable Water	TA-63-147; Fire Suppression System	TA-55	~80 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
11/14/2018	Potable Water	TA-40; Hydrant-533	UI	~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	
11/15/2018	Potable Water	TA-53-54; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	

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Occurrence Date	**Type of Release**	**Location**	**Organization**	**Comments**
11/15/2018	Potable Water	TA-53-988; Fire Suppression System	LOG-FP	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/15/2018	Potable Water	TA-16-180; Fire Suppression System	LOG-FP	~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/15/2018	Potable Water	TA-15-183; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/15/2018	Potable Water	TA-63-121; Fire Suppression System-SPW	LOG-FP	~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/16/2018	Potable Water	TA-16-414; Fire Suppression System-SPW	LOG-FP	~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/16/2018	Potable Water	TA-3-102; Fire Suppression System-SPW	LOG-FP	~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/16/2018	Potable Water	TA-3-1410; Fire Suppression System-SPW	LOG-FP	~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/16/2018	Potable Water	TA-63-111; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/19/2018	Potable Water	TA-15-285; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/19/2018	Potable Water	TA-3-1420; Fire Suppression System-SPW	LOG-FP	~500 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/19/2018	Potable Water	TA-3-40; Fire Suppression System-SPW	LOG-FP	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/20/2018	Potable Water	TA-55-10; Fire Suppression System - Discharge Point-1469-59	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/20/2018	Potable Water	TA-55-11; Fire Suppression System - Discharge Point-1458-57	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/20/2018	Potable Water	TA-49; Water Line	UI	~ 600 gallons of potable water discharged from a broken water line at TA-49. The water line was isolated upon discovery of the release to stop the discharge and repairs were completed. The release did not reach a watercourse, cause erosion, or adversely impact any SWMUs or AOCs.
11/20/2018	Potable Water	TA-63-147; Fire Suppression System	TA-55	~80 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/26/2018	Potable Water	TA-15-280; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/26/2018	Potable Water	TA-22-115; Fire Suppression System-SPW	LOG-FP	~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/26/2018	Potable Water	TA-3-40; Fire Suppression System-SPW	LOG-FP	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/26/2018	Potable Water	TA-6-124; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/26/2018	Potable Water	TA-22-120; Fire Suppression System-SPW	LOG-FP	~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.

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Occurrence Date	Type of Release	Location	Organization	Comments
11/26/2018	Potable Water	TA-40-23; Fire Suppression System-SPW	LOG-FP	~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/26/2018	Potable Water	TA-03; Water Line	UI	~500 gallons of potable water discharged to the environment when a water line was inadvertently struck in a construction project. The water line was isolated upon discovery to stop the discharge and repairs were completed. The release did not cause erosion, reach a watercourse, or adversely impact any SWMUs or AOCs.
11/27/2018	Potable Water	TA-55-11; Fire Suppression System - Discharge Point-1458-57	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/27/2018	Potable Water	TA-55-10; Fire Suppression System - Discharge Point-1469-59	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/27/2018	Potable Water	TA-35-88; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/27/2018	Potable Water	TA-3-40; Fire Suppression System-SPW	LOG-FP	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/27/2018	Potable Water	TA-3-1076; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/27/2018	Potable Water	TA-3-562; Fire Suppression System-SPW	LOG-FP	~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/27/2018	Potable Water	TA-3-316; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/27/2018	Potable Water	TA-22-34; Fire Suppression System-SPW	LOG-FP	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/28/2018	Potable Water	TA-3-494; Fire Suppression System-SPW	LOG-FP	~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/28/2018	Potable Water	TA-3-40; Fire Suppression System-SPW	LOG-FP	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/28/2018	Potable Water	TA-63-147; Fire Suppression System	TA-55	~80 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/29/2018	Potable Water	TA-53-54; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/29/2018	Potable Water	TA-53-988; Fire Suppression System	LOG-FP	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
11/29/2018	Potable Water	TA-16-180; Fire Suppression System	LOG-FP	~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/3/2018	Potable Water	TA-3-1498; Fire Suppression System-SPW	LOG-FP	~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/3/2018	Potable Water	TA-46-335; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/4/2018	Potable Water	TA-55-11; Fire Suppression System - Discharge Point-1458-57	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/4/2018	Potable Water	TA-55-10; Fire Suppression System - Discharge Point-1469-59	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.

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Occurrence Date	**Type of Release**	**Location**	**Organization**	**Comments**
12/4/2018	Potable Water	TA-35-126; Water Line	STO	~40 gallons of potable water discharged to the environment when a water line at TA-35-126 broke. The water line was isolated upon discovery to stop the discharge and repairs were completed. The release did not cause erosion, reach a watercourse, or adversely impact any SWMUs or AOCs.
12/4/2018	Potable Water	TA-35-88; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/4/2018	Potable Water	TA-53-365; Fire Suppression System-SPW	LOG-FP	~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/4/2018	Potable Water	TA-3-38; Fire Suppression System-SPW	LOG-FP	~775 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/5/2018	Potable Water	TA-3-38; Fire Suppression System-SPW	LOG-FP	~775 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/5/2018	Potable Water	TA-22; Hydrant-422	UI	~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.
12/5/2018	Potable Water	TA-22; Hydrant-903	UI	~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.
12/6/2018	Potable Water	TA-53-54; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/6/2018	Potable Water	TA-53-988; Fire Suppression System	LOG-FP	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/6/2018	Potable Water	TA-16-180; Fire Suppression System	LOG-FP	~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/6/2018	Potable Water	TA-16-192; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/6/2018	Potable Water	TA-33; Hydrant-456	UI	~2,700 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.
12/7/2018	Potable Water	TA-22-34; Fire Suppression System-SPW	LOG-FP	~450 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/7/2018	Potable Water	TA-15-564; Fire Suppression System-SPW	LOG-FP	~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/7/2018	Potable Water	TA-15-312; Fire Suppression System-SPW	LOG-FP	~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/7/2018	Potable Water	TA-15; Hydrant-536	UI	~3,100 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.
12/7/2018	Potable Water	TA-15; Hydrant-932	UI	~2,900 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.
12/7/2018	Potable Water	TA-15; Hydrant-171	UI	~3,300 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.
12/10/2018	Potable Water	TA-22-34; Fire Suppression System-SPW	LOG-FP	~450 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/10/2018	Potable Water	TA-3-1400; Fire Suppression System-SPW	LOG-FP	~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.

Quarterly Discharge Report
(October 1, 2018 - December 31, 2018)

14367

Occurrence Date	Type of Release	Location	Organization	Comments
12/10/2018	Potable Water	TA-3-216; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/10/2018	Potable Water	TA-3-1409; Fire Suppression System-SPW	LOG-FP	~375 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/10/2018	Potable Water	TA-3-1437; Fire Suppression System-SPW	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/10/2018	Potable Water	TA-3-66; Fire Suppression System-SPW	LOG-FP	~775 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/11/2018	Potable Water	TA-55-11; Fire Suppression System - Discharge Point-1458-57	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/11/2018	Potable Water	TA-55-10; Fire Suppression System - Discharge Point-1469-59	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/11/2018	Potable Water	TA-35-88; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/11/2018	Potable Water	TA-22-118; Hydrant-904	LOG-FP	~1,000 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.
12/11/2018	Potable Water	TA-63-144; Fire Suppression System	TA-55	~120 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/11/2018	Potable Water	TA-46; Hydrant-673	UI	~2,500 gallons of dechlorinated potable water was discharged to the environment while connecting a water line.
12/12/2018	Potable Water	TA-3-763; Water Line	UI	~3,800 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.
12/12/2018	Potable Water	TA-39; Hydrant	UI	~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.
12/13/2018	Potable Water	TA-50-69; Fire Suppression System	TA-55	~100 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/13/2018	Potable Water	TA-16-88; Hydrant	UI	~100 gallons of potable water leaked from a hydrant at TA-16-88. The hydrant was readjusted to stop the discharge. The discharge did not cause erosion, reach a watercourse, or adversely impact any SWMUs or AOCs.
12/13/2018	Potable Water	TA-53-54; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/13/2018	Potable Water	TA-53-988; Fire Suppression System	LOG-FP	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/13/2018	Potable Water	TA-40; Hydrant-533	UI	~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.
12/13/2018	Potable Water	TA-16-180; Fire Suppression System	LOG-FP	~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/13/2018	Potable Water	TA-3-502; Fire Suppression System-SPW	LOG-FP	~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/13/2018	Potable Water	TA-3-66; Fire Suppression System-SPW	LOG-FP	~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/14/2018	Potable Water	TA-3-2011; Fire Suppression System-SPW	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.

Quarterly Discharge Report
(October 1, 2018 - December 31, 2018)

14368

Occurrence Date	Type of Release	Location	Organization	Comments
12/14/2018	Potable Water	TA-3-2009; Fire Suppression System-SPW	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/14/2018	Potable Water	TA-3-2008; Fire Suppression System-SPW	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/14/2018	Potable Water	TA-3-2007; Fire Suppression System-SPW	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/14/2018	Potable Water	TA-3-2006; Fire Suppression System-SPW	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/14/2018	Potable Water	TA-16-267; Fire Suppression System	WFO	~3 gallons of potable water discharged from the fire suppression system at TA-16-267 due to a pressure surge. The discharge was stopped upon discovery of the release and did not cause erosion, reach a watercourse, or adversely impact any SWMUs or AOCs.
12/15/2018	Potable Water	TA-3-680; Water Line	UI	~900 gallons of dechlorinated potable water was discharged to the environment while connecting a water line.
12/15/2018	Potable Water	TA-46-119; Water Line	UI	~3,500 gallons of dechlorinated potable water was discharged to the environment while connecting a water line.
12/16/2018	Potable Water	TA-46-778; Water Line	UI	~4,500 gallons of dechlorinated potable water was discharged to the environment while connecting a water line.
12/16/2018	Potable Water	TA-46-778; Water Line	UI	~4,000 gallons of dechlorinated potable water was discharged to the environment while connecting a water line.
12/17/2018	Potable Water	TA-3-29-2; Fire Suppression System	TA-55	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/17/2018	Potable Water	TA-3-29-7; Fire Suppression System	TA-55	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/17/2018	Potable Water	TA-16-200; Fire Suppression System-SPW	LOG-FP	~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/17/2018	Potable Water	TA-53-02; Fire Suppression System-SPH	LOG-FP	~400 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/17/2018	Potable Water	TA-63-144; Fire Suppression System	TA-55	~600 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/18/2018	Potable Water	TA-55-11; Fire Suppression System - Discharge Point-1458-57	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/18/2018	Potable Water	TA-55-10; Fire Suppression System - Discharge Point-1469-59	TA-55	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/18/2018	Potable Water	TA-3-29-1; Fire Suppression System	TA-55	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/18/2018	Potable Water	TA-3-29-4; Fire Suppression System	TA-55	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/18/2018	Potable Water	TA-60-17; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.
12/18/2018	Potable Water	TA-60-02; Fire Suppression System-SPW	LOG-FP	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.

Quarterly Discharge Report (October 1, 2018 - December 31, 2018)					14369
Occurrence Date	**Type of Release**	**Location**	**Organization**	**Comments**	
12/18/2018	Potable Water	TA-35-88; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
12/19/2018	Potable Water	TA-16-410; Fire Suppression System-SPW	LOG-FP	~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
12/19/2018	Potable Water	TA-3; Hydrant-67-653	UI	~2,355 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	
12/19/2018	Potable Water	TA-3; Hydrant-40-784	UI	~2,355 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	
12/19/2018	Potable Water	TA-22-34; Fire Suppression System-SPW	LOG-FP	~325 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
12/19/2018	Potable Water	TA-16-305; Fire Suppression System-SPW	LOG-FP	~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
12/20/2018	Potable Water	TA-18; Water Line	UI	~200 gallons of potable water discharged from a water line leak at TA-18. The water line was isolated upon discovery of the leak and repairs were completed. The discharge did not cause erosion, reach a watercourse, or adversely impact any SWMUs or AOCs.	
12/20/2018	Potable Water	TA-53-54; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
12/20/2018	Potable Water	TA-53-988; Fire Suppression System	LOG-FP	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
12/20/2018	Potable Water	TA-16-180; Fire Suppression System	LOG-FP	~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
12/27/2018	Potable Water	TA-53-54; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
12/27/2018	Potable Water	TA-53-988; Fire Suppression System	LOG-FP	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
12/27/2018	Potable Water	TA-16-180; Fire Suppression System	LOG-FP	~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
12/27/2018	Potable Water	TA-35-88; Fire Suppression System	LOG-FP	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	
12/29/2019	Potable Water	TA-3-22; Water Line	UI	~2,000 gallons of potable water was discharged at TA-3-22 from a water line break. The line was isolated upon discovery to stop the discharge. Repairs to the line are pending. The discharge did not cause erosion, reach a watercourse, or adversely impact any SWMUs or AOCs.	
10/3/2018 - 10/4/2018	Potable Water	TA-3-1651; Water Line	UI	~25 gallons of potable water discharged at TA-3-1651 from a water line leak. The leak was stopped upon discovery. The release did not cause erosion, reach a watercourse, or adversely impact any SWMUs or AOCs.	
10/10/2018- 11/27/2018	Potable Water	TA-55-314; Water Line	UI	~5 gallons of potable water leaked per day from a water leak near TA-55-314. The water line was isolated and repairs were completed at the site. The release did not cause erosion, reach a watercourse, or adversely impact any SWMUs or AOCs.	
11/3/2018 - 11/4/2018	Potable Water	TA-54-38; Fire Suppression System	TA-55	~1,000 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	

Environmental Protection & Compliance Division
Environmental Compliance Programs (EPC-CP)
PO Box 1663, K490
Los Alamos, New Mexico 87545
(505) 667-0666

National Nuclear Security Administration
Los Alamos Field Office
3747 West Jemez Road, A316
Los Alamos, New Mexico, 87544
(505) 665-7314 /Fax (505) 667-5948

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

Subject: **DP-1132, Annual Update and Fourth Quarter Monitoring Report for 2018**

Dear Ms. Hunter:

On August 29, 2018, the New Mexico Environment Department (NMED) issued Discharge Permit DP-1132 to the U.S. Department of Energy (DOE) and Los Alamos National Security, LLC for the TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF). Subsequently, on November 1, 2018, DP-1132 was transferred to DOE and Triad National Security, LLC (DOE/Triad).

Pursuant to permit Condition No. 4, *Monitoring Reports,* DOE/Triad is required to submit a quarterly monitoring report by February 1, 2019, for the period October 1 to December 31, 2018. In addition, the February 1st monitoring report must include the information required by permit Condition No. 1, *Annual Update*. The following permit conditions require the submittal of information in the February 1st monitoring report:

- Quarterly Monitoring Report
  - ✓ Condition No. 13: Maintenance and Repair
  - ✓ Condition No. 25: Influent Volumes RLW
  - ✓ Condition No. 26: Influent Volumes TRU
  - ✓ Condition No. 27: Discharge Volumes
  - ✓ Condition No. 29: Effluent Sampling
  - ✓ Condition No. 30: Soil Moisture Monitoring System for the SET
  - ✓ Condition No. 36: Ground Water Monitoring

- Annual Update
  - ✓ Condition No. 1: Updated Facility Process Description
  - ✓ Condition No. 8: Water Tightness Test Results
  - ✓ Condition No. 10: Settled Solids Measurements
  - ✓ Condition No. 32: Ground Water Flow Report
  - ✓ Condition No. 42: Closure Plan

Information on each of the above conditions is presented below.

Condition No. 1: Annual Update
The Permittees shall submit to NMED an updated Facility Process Description annually by February 1 of each year in conjunction with the February Quarterly Report. The annual Facility Process Description shall include the following:

a. *A schematic of all major structures associated with the Facility, including all influent lines, buildings, exterior tanks, effluent lines, outfall and discharge locations identified in this Discharge Permit.*

✓ A schematic of all major structures at the RLWTF is provided as **Attachment 1.**

✓ A schematic showing treatment units to be stabilized is provided as **Attachment 2.**

b. *A comprehensive flow chart demonstrating the most current processes in operation for the collection, treatment and disposal of waste water for the Facility. The flow chart shall indicate any processes which have been bypassed, decommissioned, or are no longer used for the collection, treatment or final disposal of the waste water.*

✓ An overview flow chart of current treatment processes is provided as **Attachment 3**.

✓ A detailed flow chart of current treatment processes is provided as **Attachment 4.**

c. *An associated narrative describing each of the systems and treatment units outlined in the flow chart. This narrative shall include the collection system, primary treatment units, secondary treatment units and any systems used in the disposition of any associated waste streams at the Facility.*

✓ An updated narrative describing systems and treatment units is provided as **Attachment 5**. The attached description updates information submitted to NMED in the February 2012 Discharge Permit Application to reflect current operating conditions.

d. *The Annual Update shall also include the following documents to be submitted annually by February 1 of each year.*

1) Summary of maintenance and repairs made during the reporting period.

✓ A maintenance and repair summary is provided under Condition No. 13

2) *Water Tightness Testing results (VI.A.8).*

- ✓ **RLWTF to SET Pipeline**. Pursuant to **Condition No. 8**, water tightness testing of the pipeline from the RLWTF to the Solar Evaporation Tank (SET) must be completed by February 25, 2019. On October 31, 2018, DOE/LANS submitted a request to NMED for an extension of time for 15 months to complete water tightness testing of the pipeline from the RLWTF to the SET (EPC-DO-18-393). NMED approved the request in a November 13, 2018, email.

- ✓ **RLWTF to Outfall 051 Pipeline**. Pursuant to **Condition No. 8**, water tightness testing of the pipeline from the RLWTF to Outfall 051 must be completed by February 25, 2019. On January 23, 2019, DOE/Triad submitted a request to NMED for an extension of time until June 25, 2019, to complete the above-referenced water tightness testing of the pipeline from the RLWTF to Outfall 051 (EPC-DO-19-010). NMED approval of the request was pending at the time this report was prepared.

3) *Settled Solids measurements (VI.A.10).*

- ✓ The SET has not been placed in service. No treated effluent was discharged to the SET during the monitoring period.

4) *Ground Water Flow report (VI.A.32).*

- ✓ Pursuant to permit Condition No. 32, a ground water flow direction report is provided as **Attachment 6.**

Condition No. 10: Settled Solids; Settled Solids Removal
The Permittees shall inspect and measure the thickness of the settled solids in the SET on an annual basis.

- ✓ The SET has not been placed into service. No treated effluent was discharged to the SET during the monitoring period.

Condition No. 13: Maintenance and Repair
The Permittees shall submit to NMED a summary and description of the maintenance and repair activities performed on the Facility as part of the quarterly monitoring reports.

- ✓ **Attachment 7** provides a summary of the maintenance and repair activities conducted at the RLWTF during the monitoring period.

Condition No. 25: Influent Volumes RLW
The Permittees shall measure the volume of all RLW influent waste water being conveyed to the Facility on a daily basis using the flow meter required to be installed pursuant to this Discharge Permit.

✓ **Attachment 8** provides the total daily and monthly volumes of RLW influent wastewater received by the RLWTF during the monitoring period.

Condition No. 26: Influent Volumes TRU
The Permittees shall measure the daily volume of TRU influent waste water being conveyed to the Facility using electronic sensors which measure tank levels in both the acid waste and caustic waste influent tanks.

✓ **Attachment 8** provides the total daily and monthly volumes of TRU influent wastewater received by the RLWTF during the monitoring period.

Condition No. 27: Discharge Volumes
The Permittees shall measure and record the volume of treated waste water discharged to the SET, MES and Outfall 051 on a daily basis.

✓ **Attachment 8** provides the daily volume of treated effluent discharged to the MES during the monitoring period.

✓ No treated effluent was discharged to the SET during the monitoring period.

✓ No treated effluent was discharged to Outfall 051 during the monitoring period.

Condition No. 29: Effluent Sampling
The Permittees shall sample and analyze effluent waste streams discharged to Outfall 051, SET, and MES.

- *Treated effluent samples shall be collected once per calendar month for any month in which a discharge occurs to Outfall 051.*

  ✓ No treated effluent was discharged to Outfall 051 during the monitoring period.

- *Treated effluent samples shall be collected once per calendar month for any month in which a discharge occurs to the MES or SET. The Permittees shall collect a grab sample of treated effluent which shall be analyzed for TKN, NO_3-N, TDS, Cl, F and perchlorate.*

  ✓ No treated effluent was discharged to the SET during the monitoring period.

  ✓ Analytical results from sampling treated effluent discharged to the MES on September 24, 2018, were not available in time for submittal in the third quarter monitoring report (EPC-DO-18-375). The results for TKN, NO_3+NO_2-N, TDS, Cl, F, and perchlorate are provided in **Attachment 9, Table 1**. All results were less than the effluent limits specified in permit Condition No. 17.

Condition No. 29: Effluent Sampling (cont)

- ✓ Monthly sampling of treated effluent discharged to the MES was conducted on October 3, November 7, and December 5, 2018, for TKN, NO_3+NO_2-N, TDS, Cl, F and perchlorate. Analytical results are provided in **Attachment 9, Tables 2, 3, and 4.** All results were less than the effluent limits specified in permit Condition No. 17.

- *The Permittees shall collect and analyze effluent samples once per quarter for any quarterly period in which a discharge occurs to the MES or SET. The Permittees shall collect a grab sample of treated effluent which shall be analyzed for all water contaminants listed in 20.6.2.3103 NMAC and all toxic pollutants as defined in 20.6.2.7.WW NMAC.*

  - ✓ Quarterly sampling of treated effluent discharged to the MES was conducted on October 3, 2018, for all water contaminants listed in 20.6.2.3103 NMAC and all Toxic Pollutants, as defined in 20.6.2.7.WW NMAC. Analytical results are provided in **Attachment 9, Table 5**. All results were less than the effluent limits specified in permit Condition No. 17.

    The following organic constituent was detected in the October 3rd sample from the MES:

    - ➢ Chloroform was detected at a concentration of 1.29 µg/L. The NMWQCC Regulation 3103 Ground Water Standard for chloroform is 100 µg/L.

Condition No. 30: Soil Moisture Monitoring System for the SET
Upon approval or approval with conditions by NMED of the completed installation and soil moisture action level, discharge to the SET can commence. The Permittees shall perform quarterly soil moisture monitoring in the moisture monitoring boreholes, and shall provide this information in the quarterly reports required by Condition VI.B.24 (Monitoring Reports).

- ✓ On October 31, 2018, DOE/Triad submitted a work plan for the SET Soil Moisture Monitoring System for NMED approval (EPC-DO-18-366). Approval by NMED was pending at the time this report was prepared. Quarterly soil moisture monitoring results will be reported to NMED once the system is approved by NMED and becomes operational.

Condition No. 36: Ground Water Monitoring-Quarterly
The Permittees shall collect ground water samples from the following ground water monitoring wells on a quarterly basis and analyze the samples for TKN, NO3-N, TDS, Cl, F and perchlorate. The Permittees shall prepare ground water monitoring reports describing, in detail, the sampling and analytical methods used. The ground water monitoring report shall be submitted to NMED with the quarterly monitoring report required in this Discharge Permit.

- *Replacement Alluvial Wells #1 and #2 Quarterly.*

  - ✓ A work plan for the installation of two replacement monitoring wells was submitted to NMED on November 19, 2018 (EPC-DO-18-414). Following NMED approval of the plan, the replacement alluvial wells will be installed. Sampling will begin following well installation.

- *MCOI-6 Quarterly.*

  ✓ **Attachment 10** provides the complete groundwater monitoring report, including Chain-of-Custody and analytical results, from the quarterly sampling of perched/intermediate groundwater monitoring well MCOI-6 on November 8, 2018. Quarterly results for TKN, NO_3+NO_2-N, TDS, chloride, and fluoride are provided in **Table 1.** All results from the November 8th sampling at MCOI-6 were below NMWQCC Regulation 3103 Ground Water Standards (20.6.2.3103 NMAC) with the exception of the following:

  - Nitrate-Nitrite as Nitrogen (NO_3+NO_2-N) was detected at a concentration of 11.2 mg/L; the NMWQCC Regulation 3103 Ground Water Standard is 10 mg/L. The average NO_3+NO_2-N concentration at MCOI-6 during the 5-yr period from 2014 through 2018 was 9.0 mg/L. The maximum NO_3+NO_2-N concentration during the referenced period was 11.5 mg/L. Detections of NO_3+NO_2-N at MCOI-6 at concentrations greater than the ground water standard were previously identified and reported to NMED. Monitoring well MCOI-6 will continue to be routinely sampled for NO_3+NO_2-N under Discharge Permit DP-1132 and, pursuant to the Compliance Order on Consent (Consent Order, June 2016), the Chromium Investigation Monitoring Group.

  - Perchlorate was detected at a concentration of 124 µg/L; the NMED Risk Assessment Guidance Table A-1 Tap Water Limit is 13.8 µg/L. The average perchlorate concentration at MCOI-6 during the 5-yr period from 2014 through 2018 was 72.9 µg/L. The maximum perchlorate concentration during the referenced period was 124 µg/L. Detections of perchlorate at MCOI-6 at concentrations greater than the Table A-1 Tap Water Limit were previously identified and reported to NMED. Monitoring well MCOI-6 will continue to be routinely sampled for perchlorate under Discharge Permit DP-1132 and, pursuant to the Compliance Order on Consent (Consent Order, June 2016), the Chromium Investigation Monitoring Group.

Condition No. 36: Ground Water Monitoring-Annual
The Permittees shall collect ground water samples from the following ground water monitoring wells on an annual basis and analyze the samples for all water contaminants listed in 20.6.2.3103 NMAC and all toxic pollutants listed in 20.6.2.7.WW.

- *Replacement Alluvial Well #1 and #2 Annual.*

  ✓ Annual sampling at replacement alluvial wells #1 and #2 will begin following installation.

- *MCOI-6 Annual*

  ✓ **Attachment 10** provides the complete groundwater monitoring report, including Chain-of-Custody and analytical results, from annual sampling at MCOI-6 on November 8, 2018. All results in **Table 2** were below NMWQCC Regulation 3103 Ground Water Standards (20.6.2.3103 NMAC) and the limits for Toxic Pollutants (20.6.2.7.WW NMAC) listed in the NMED Risk Assessment Guidance Table A-1 (Tap Water, March 2017) with the exception of the following:

- Chromium was detected at a concentration of 68.2 µg/L; the NMWQCC Regulation 3103 Ground Water Standard is 50 µg/L. The average chromium concentration at MCOI-6 during the 5-yr period from 2014 through 2018 was 73.4 µg/L. The maximum Cr concentration during the referenced period was 86.6 µg/L. Detections of chromium at MCOI-6 at concentrations greater than the ground water standard were previously identified and reported to NMED. Monitoring well MCOI-6 will continue to be routinely sampled for chromium under Discharge Permit DP-1132 and, pursuant to the Compliance Order on Consent (Consent Order, June 2016), the Chromium Investigation Monitoring Group.

✓ The following organic constituent was detected at MCOI-6:

- Dioxane[1,4-] was detected at a concentration of 12.9 µg/L. Dioxane[1,4-] is not a Toxic Pollutant as defined in 20.6.2.7.WW NMAC. The NMED Risk Assessment Guidance Table A-1 Tap Water Limit for dioxane[1,4-] is 4.59 µg/L. Detections of dioxane[1,4-] at MCOI-6 at concentrations greater than the Table A-1 Tap Water Limit were previously identified and reported to NMED. Monitoring well MCOI-6 will continue to be routinely sampled for dioxane[1,4-] under Discharge Permit DP-1132 and, pursuant to the Compliance Order on Consent (Consent Order, June 2016), the Chromium Investigation Monitoring Group.

- *R-1 Annual*

✓ **Attachment 11** provides the complete groundwater monitoring report, including Chain-of-Custody and analytical results, from annual sampling at R-1 on November 8, 2018. All results in **Table 1** were below NMWQCC Regulation 3103 Ground Water Standards (20.6.2.3103 NMAC) and the limits for Toxic Pollutants (20.6.2.7.WW NMAC) listed in the NMED Risk Assessment Guidance Table A-1 (Tap Water, March 2017).

The following organic constituent was detected at R-1:

- Bis(2-ethylhexyl)phthalate was detected at a concentration of 0.39J µg/L (Note: the "J" flag was assigned by the analytical laboratory is indicate the reported result is an estimated value). Bis(2-ethylhexyl)phthalate is a Toxic Pollutant as defined in 20.6.2.7.WW NMAC. The NMED Risk Assessment Guidance Table A-1 Tap Water Limit (cancer) for bis(2-ethylhexyl)phthalate is 55.6 µg/L. Bis(2-ethylhexyl)phthalate is a common plasticizer.

- *R-14 Screen 1 Annual*

✓ **Attachment 12** provides the complete groundwater monitoring report, including Chain-of-Custody and analytical results, from the annual sampling at R-14 Screen 1 (S1) on November 9, 2018. R-14 was originally constructed as a two-screen well but the bottom screen was abandoned in 2008. All results in **Table 1** were below NMWQCC Regulation 3103 Ground Water Standards (20.6.2.3103 NMAC) and the limits for Toxic Pollutants (20.6.2.7.WW NMAC) listed in the NMED Risk Assessment Guidance Table A-1 (Tap Water, March 2017). No organic constituents were detected in the sample from R-14 S1.

- *R-46 Annual*

✓ **Attachment 13** provides the complete groundwater monitoring report, including Chain-of-Custody and analytical results, from the annual sampling at R-46 on November 13, 2018. All results in **Table 1** were below NMWQCC Regulation 3103 Ground Water Standards (20.6.2.3103 NMAC) and the limits for Toxic Pollutants (20.6.2.7.WW NMAC) listed in the NMED Risk Assessment Guidance Table A-1 (Tap Water, March 2017).

The following organic constituents were detected at R-46:

- Bis(2-ethylhexyl)phthalate was detected at a concentration of 0.35J µg/L (Note: the "J" flag was assigned by the analytical laboratory is indicate the reported result is an estimated value). Bis(2-ethylhexyl)phthalate is a Toxic Pollutant as defined in 20.6.2.7.WW NMAC. The NMED Risk Assessment Guidance Table A-1 Tap Water Limit (cancer) for bis(2-ethylhexyl)phthalate is 55.6 µg/L. Bis(2-ethylhexyl)phthalate is a common plasticizer.

- Benzoic Acid was detected at a concentration of 14.4J µg/L (Note: the "J" flag was assigned by the analytical laboratory is indicate the reported result is an estimated value). Benzoic Acid is not a Toxic Pollutant as defined in 20.6.2.7.WW NMAC. There is no NMED Risk Assessment Guidance Table A-1 Tap Water Limit for benzoic acid.

- Acetone was detected at a concentrations of 2.7J µg/L (Note: the "J" flag was assigned by the analytical laboratory is indicate the reported result is an estimated value). Acetone is not a Toxic Pollutant as defined in 20.6.2.7.WW NMAC. The NMED Risk Assessment Guidance Table A-1 Tap Water Limit for acetone is 14,100 µg/L.

- *R-60 Annual*

✓ **Attachment 14** provides the complete groundwater monitoring report, including Chain-of-Custody and analytical results, from the annual sampling at R-60 on November 13, 2018. All results in **Table 1** were below NMWQCC Regulation 3103 Ground Water Standards (20.6.2.3103 NMAC) and the limits for Toxic Pollutants (20.6.2.7.WW NMAC) listed in the NMED Risk Assessment Guidance Table A-1 (Tap Water, March 2017).

The following organic constituent was tentatively detected at R-60:

- Acetone was detected at a concentration of 2.21J µg/L in the field sample (Note: the "J" flag was assigned by the analytical laboratory is indicate the reported result is an estimated value). However, acetone was also detected in a field blank sample at a concentration of 2.74J µg/L. Acetone is not a Toxic Pollutant as defined in 20.6.2.7.WW NMAC. The NMED Risk Assessment Guidance Table A-1 Tap Water Limit for acetone is 14,100 µg/L.

✓ A map showing the location of ground water monitoring wells MCOI-6, R-1, R-14, R-46 and R-60 is provided in **Attachment 6.**

Condition No. 42: Closure Plan Annual Updates
Permittees will provide annual updates to NMED describing modifications to the Closure Plan.

✓ No modifications to the Closure Plan are required at this time.

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

Sincerely,

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

Sincerely,

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

ET/KEA/MTS/RSB:jdm

Attachment(s): Attachment 1 Updated schematic of all major structures at the RLWTF
Attachment 2 Schematic showing treatment units to be stabilized at the RLWTF
Attachment 3 Flow chart showing an overview of current treatment processes at the RLWTF
Attachment 4 Flow chart showing a detailed view of the current treatment process at the RLWTF
Attachment 5 Updated narrative describing systems and treatment units at the RLWTF
Attachment 6 Ground water flow direction report
Attachment 7 Summary of maintenance and repair activities conducted at the RLWTF
Attachment 8 Daily volume of RLW influent wastewater received by the RLWTF
Attachment 9 Monthly and quarterly treated effluent monitoring results
Attachment 10 MCOI-6 quarterly and annual ground water monitoring report
Attachment 11 R-1 annual ground water monitoring report
Attachment 12 R-14 S1 annual ground water monitoring report
Attachment 13 R-46 annual ground water monitoring report
Attachment 14 R-60 annual ground water monitoring report

Copy: Shelly Lemon, NMED/SWQB, Shelly.Lemon@state.nm.us, (E-File)
John E. Kieling, NMED/HWB, john.kieling@state.nm.us, (E-File)
Gerald Knutson, NMED/GWQB, Gerald.Knutson@state.nm.us, (E-File)
Andrew Romero, NMED/GWQB, AndrewC.Romero@state.nm.us, (E-File)
Karen E. Armijo, NA-LA, Karen.Armijo@nnsa.doe.gov, (E-File)
Michael W. Hazen, ALDESHQSS, mhazen@lanl.gov, (E-File)
William R. Marison, ADESHQSS, wmairson@lanl.gov, (E-File)
Enrique Torres, EPC-DO, etorres@lanl.gov, (E-File)
William H. Schwettmann, IPM, bills@lanl.gov, (E-File)
Raelynn Romero, PM6, raelynn@lanl.gov, (E-File)
Randal S. Johnson, DESHF-TA55, randyj@lanl.gov, (E-File)
Denise C. Gelston, TA-55-RLW, dgelston@lanl.gov, (E-File)
Alvin M. Aragon, TA-55-RLW, alaragon@lanl.gov, (E-File)
John C. Del Signore, TA-55-RLW, jcds@lanl.gov, (E-File)
Michael T. Saladen, EPC-CP, saladen@lanl.gov, (E-File)
Robert S. Beers, EPC-CP, bbeers@lanl.gov, (E-File)
locatesteam@lanl.gov, (E-File)
epc-correspondence@lanl.gov, (E-File)

ATTACHMENT 1

Updated schematic of all major structures at the RLWTF

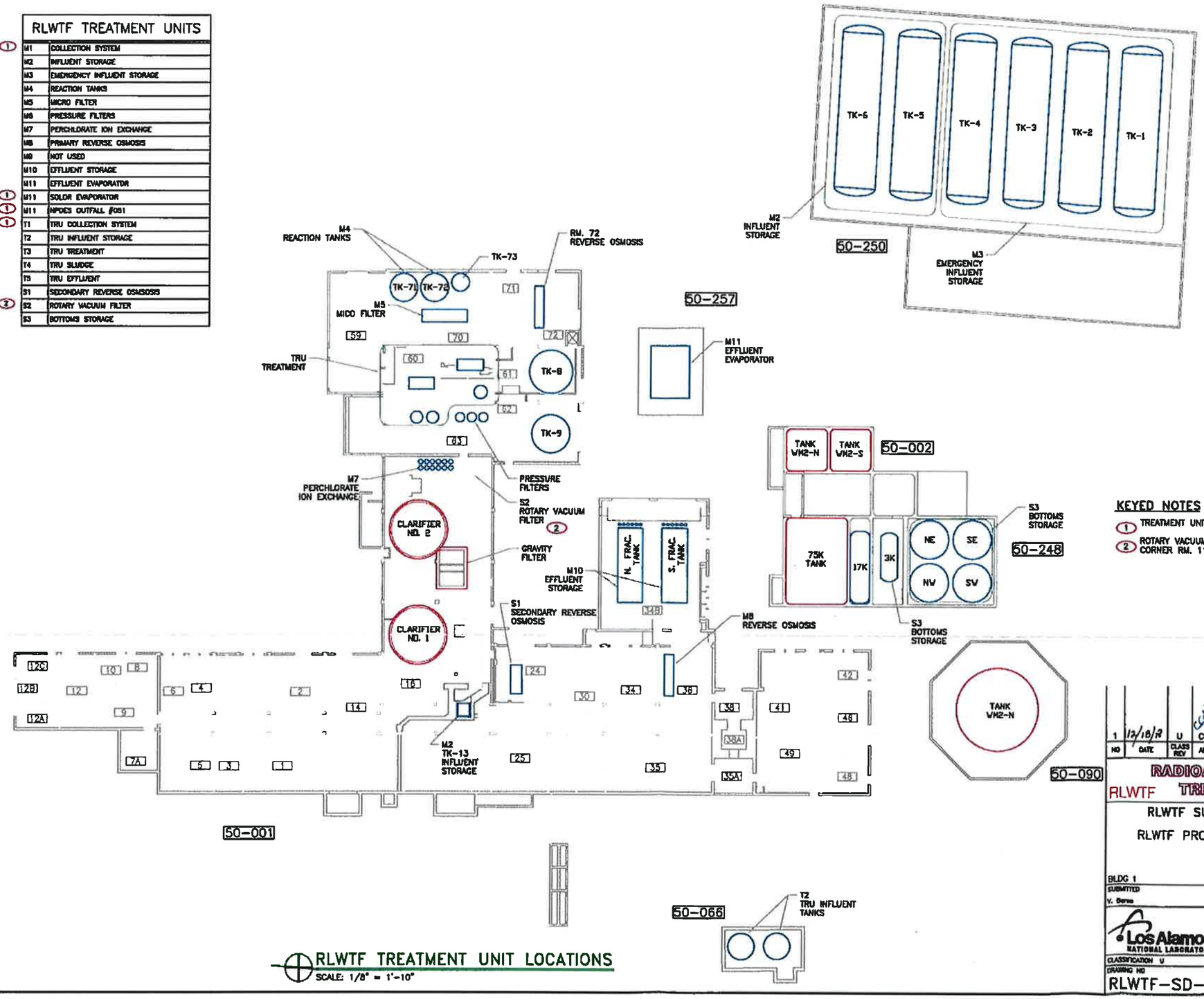
EPC-DO: 19-018

LA-UR-19-20526

Date: JAN 3 1 2019

RLWTF TREATMENT UNITS		
(1)	M1	COLLECTION SYSTEM
	M2	INFLUENT STORAGE
	M3	EMERGENCY INFLUENT STORAGE
	M4	REACTION TANKS
	M5	MICRO FILTER
	M6	PRESSURE FILTERS
	M7	PERCHLORATE ION EXCHANGE
	M8	PRIMARY REVERSE OSMOSIS
	M9	NOT USED
	M10	EFFLUENT STORAGE
	M11	EFFLUENT EVAPORATOR
(1)	M11	SOLDR EVAPORATOR
(1)	M11	NPDES OUTFALL #051
(1)	T1	TRU COLLECTION SYSTEM
	T2	TRU INFLUENT STORAGE
	T3	TRU TREATMENT
	T4	TRU SLUDGE
	T5	TRU EFFLUENT
	S1	SECONDARY REVERSE OSMOSIS
(2)	S2	ROTARY VACUUM FILTER
	S3	BOTTOMS STORAGE

TRANSURANIC TREATMENT SECONDARY TREATMENT



RLWTF TREATMENT UNIT LOCATIONS
SCALE: 1/8" = 1'-10"

KEYED NOTES
(1) TREATMENT UNIT NOT SHOWN ON SKETCH.
(2) ROTARY VACUUM FILTER LOCATED NEAR THIS AREA SOUTH-EAST CORNER RM. 116A.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	CHKD	CSE	APP
1	12/18/17	U	CCD	2018 GWP UPDATE	MT	RWS	CD	CCD

RADIOACTIVE LIQUID WASTE TREATMENT FACILITY
RLWTF ES-55

RLWTF SUPPORT DRAWING
RLWTF PROCESS SCHEMATIC

DRAWN V. Barss
CHK V. Barss
CHECKED J. DEL SIGNORE
DATE 12/19/2017

BLDG 1 TA-50
SUBMITTED V. Barss
APPROVED FOR RELEASE C. Dansvare

Los Alamos NATIONAL LABORATORY PO Box 1663 Los Alamos, New Mexico 87545

SHEET 3 OF 4
CLASSIFICATION U
REVIEWER JOHN C DEL SIGNORE DATE 12/19/2017
DRAWING NO RLWTF-SD-PFD-001 REV 1

Plotted By:##### Plot Date:December 18, 2018
RLWTF-SD-PFD-001 PG.2 12-18-18.DWG

ATTACHMENT 2

Schematic showing treatment units to be stabilized at the RLWTF

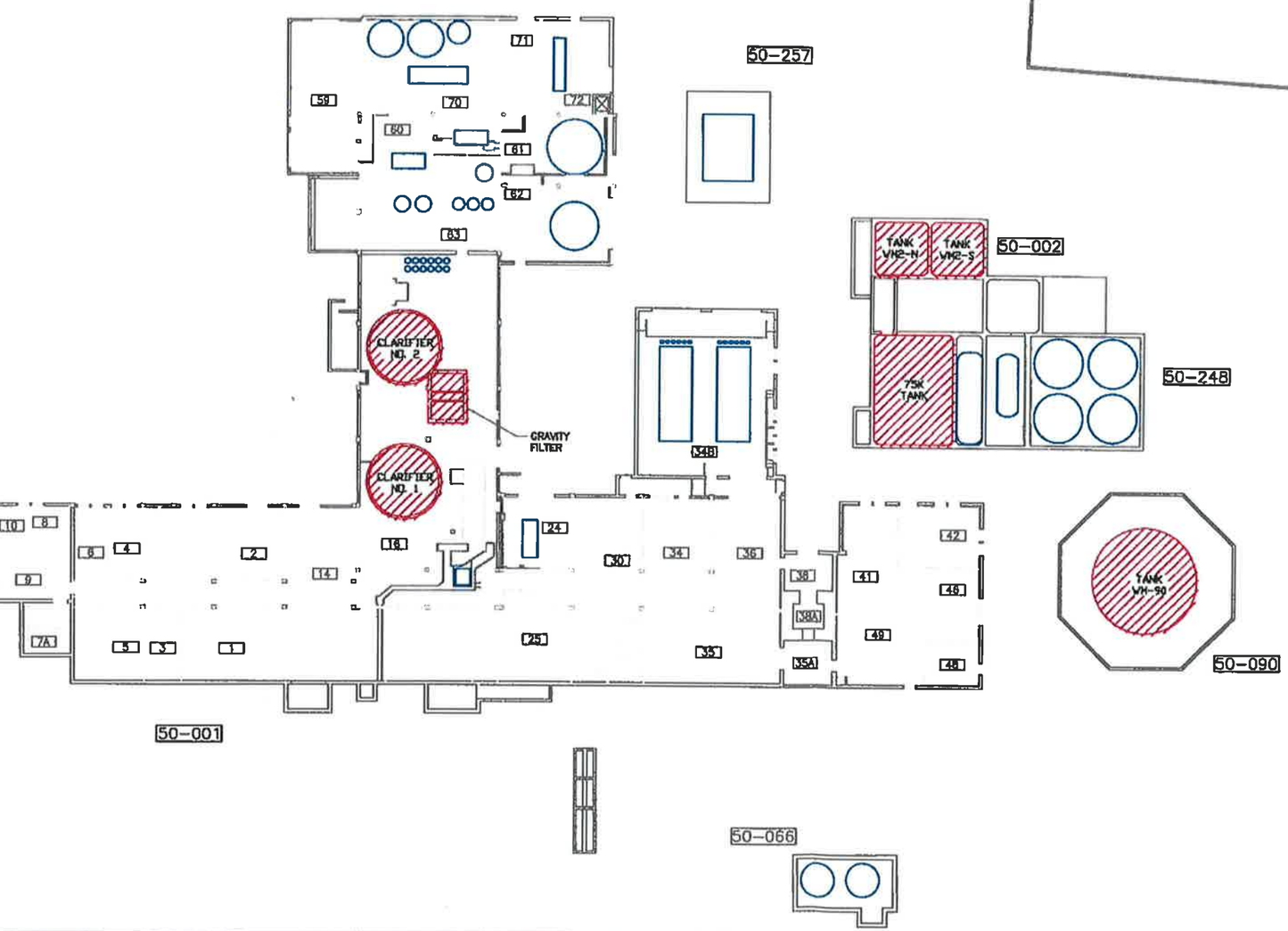
EPC-DO: 19-018

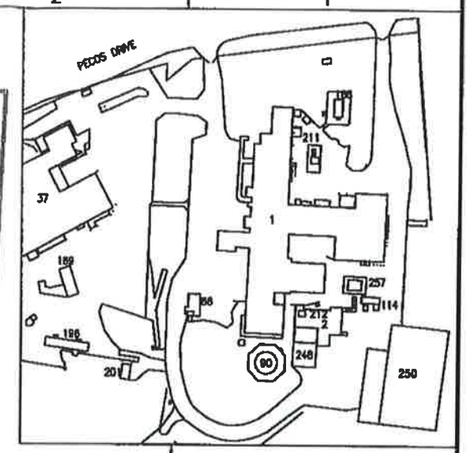
LA-UR-19-20526

Date: JAN 3 1 2019

RLWTF PROCESS: TREATMENT UNITS TO BE STABILIZED

SCALE: 1/8" = 1'-10"





LOCATION PLAN
SCALE: NONE TA-50

GENERAL NOTES

1. IF SHEET IS NOT AN 11X17, THEN IT IS A REDUCED OR ENLARGED SIZE PLOT. USE INDICATED SCALE APPROPRIATELY.
2. SCALE APPLIES TO BUILDING STRUCTURES AND RELATIVE BUILDING LOCATIONS WITHIN THE SITE. DEPICTED SIZE OF TREATMENT UNITS AND STORAGE TANKS ARE FOR REFERENCE ONLY.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	CHKD	CSE	APP

RADIOACTIVE LIQUID WASTE TREATMENT FACILITY

RLWTF ES-55

RLWTF SUPPORT DRAWING

RLWTF PROCESS: TREATMENT UNITS TO BE STABILIZED

BLDG 1 TA-50

DRAWN	M. Trujillo
CSE	V. Borrego
CHECKED	R. Espinosa
DATE	07/11/2018
SUBMITTED	V. Borrego
APPROVED FOR RELEASE	C. Donovan

Los Alamos NATIONAL LABORATORY PO Box 1663 Los Alamos, New Mexico 87545

SHEET 004 4 OF 4

CLASSIFICATION U REVIEWER M. Martinez DATE 7-25-18

DRAWING NO RLWTF-SD-PFD-001 REV 0

ATTACHMENT 3

Flow chart showing an overview of current treatment processes at the RLWTF

EPC-DO: 19-018

LA-UR-19-20526

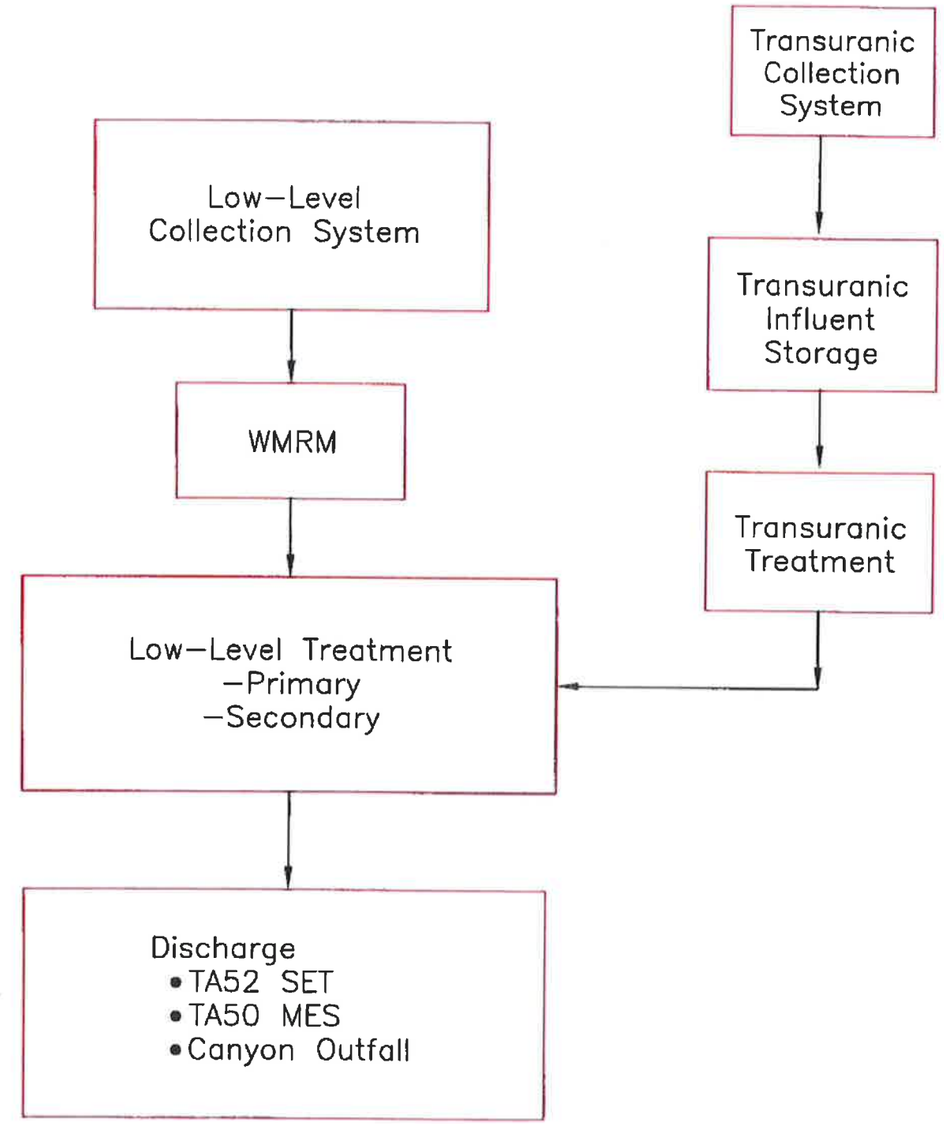
Date: JAN 3 1 2019

GENERAL NOTES

1. NONE

KEYED NOTES

(1) NONE



RLWTF PROCESS: FACILITY OVERVIEW

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	CHKD	CSE	APP
1	7/25/18	U	M.M.	ADMINISTRATIVE CHANGE– NO CHANGE TO DRAWING	M.T.	V.B.	V.B.	C.D.

RADIOACTIVE LIQUID WASTE TREATMENT FACILITY

RLWTF ES-55

RLWTF SUPPORT DRAWING

RLWTF PROCESS: FACILITY OVERVIEW

BLDG 1 TA–50

DRAWN	M. Trujillo
CSE	V. Baros
CHECKED	R. Stringfield
DATE	07/11/2018

SUBMITTED: V. Baros

APPROVED FOR RELEASE: CLARK DENEVERS

Los Alamos NATIONAL LABORATORY PO Box 1663 Los Alamos, New Mexico 87545

SHEET 001

1 OF 4

CLASSIFICATION U REVIEWER M. Martinez DATE

DRAWING NO RLWTF–SD–PFD–001 REV 1

Plotted By: ##### Plot Date=July 25, 2018
RLWTF PROCESS SCHEMATIC.DWG

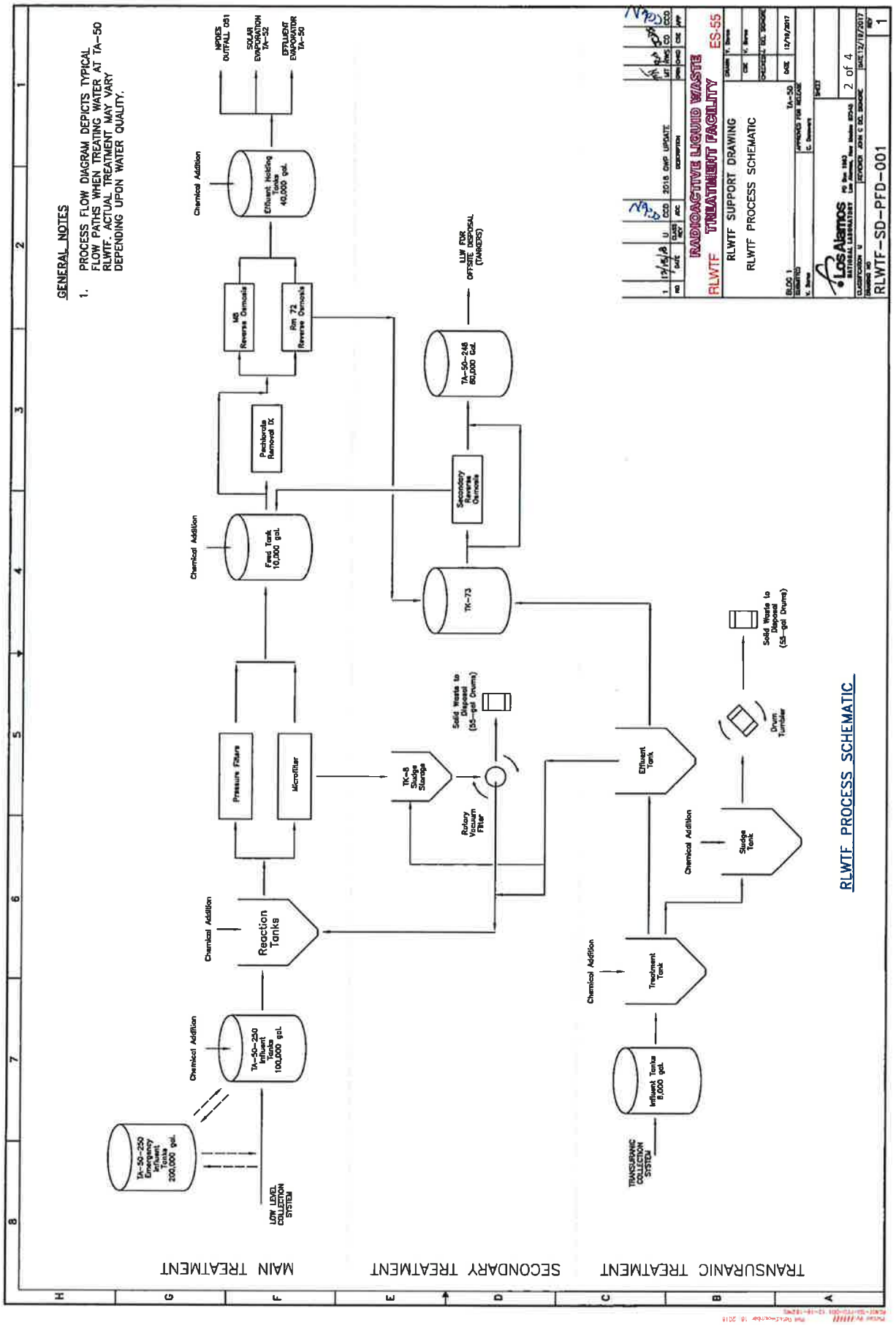
ATTACHMENT 4

Flow chart showing a detailed view of the current treatment process at the RLWTF

EPC-DO: 19-018

LA-UR-19-20526

Date: JAN 3 1 2019


GENERAL NOTES
1. PROCESS FLOW DIAGRAM DEPICTS TYPICAL FLOW PATHS WHEN TREATING WATER AT TA-50 RLWTF. ACTUAL TREATMENT MAY VARY DEPENDING UPON WATER QUALITY.
MAIN TREATMENT
SECONDARY TREATMENT
TRANSURANIC TREATMENT
TA-50-250 Emergency Influent Tanks 200,000 gal.
LOW LEVEL COLLECTION SYSTEM
TA-50-250 Influent Tanks 100,000 gal.
Chemical Addition
Reaction Tanks
Pressure Filters
Microfilter
Feed Tank 10,000 gal.
Perchlorate Removal IX
M8 Reverse Osmosis
Rm 72 Reverse Osmosis
Chemical Addition
Effluent Holding Tanks 40,000 gal.
NPDES OUTFALL 051
SOLAR EVAPORATION TA-52
EFFLUENT EVAPORATOR TA-50
TK-6 Sludge Storage
Rotary Vacuum Filter
Solid Waste to Disposal (55-gal Drums)
TK-73
Secondary Reverse Osmosis
TA-50-248 60,000 Gal.
LLW FOR OFFSITE DISPOSAL (TANKERS)
TRANSURANIC COLLECTION SYSTEM
Influent Tanks 8,000 gal.
Chemical Addition
Treatment Tank
Chemical Addition
Sludge Tank
Effluent Tank
Drum Tumbler
Solid Waste to Disposal (55-gal Drums)
RLWTF PROCESS SCHEMATIC
RADIOACTIVE LIQUID WASTE
RLWTF TREATMENT FACILITY
ES-55
RLWTF SUPPORT DRAWING
RLWTF PROCESS SCHEMATIC
Los Alamos
NATIONAL LABORATORY
2 of 4
RLWTF-SD-PFD-001
1

ATTACHMENT 5

Updated narrative describing systems and treatment units at the RLWTF

EPC-DO: 19-018

LA-UR-19-20526

Date: JAN 3 1 2019

RLWTF Processes and Units

OVERVIEW

The Radioactive Liquid Waste Treatment Facility (RLWTF) includes (a) two underground collection systems that convey water to TA50 from generators at LANL, (b) structures at TA50, and (c) solar evaporation tanks at Technical Area 52. At Technical Area 50, Building 50-01 is the primary structure; it houses treatment equipment, process tanks, analytical laboratories, and offices. Adjacent TA50 structures provide for storage of influent and waste water, but not treatment: 50-66 (transuranic influent), 50-248 (secondary waters), and 50-250 (low-level influent).

The RLWTF receives and treats radioactive liquid waste (RLW) from generators at Los Alamos National Laboratory[A]. Treatment units have been grouped into a main treatment process for low-level RLW, a process for treating transuranic RLW, and a secondary treatment process for waste streams from both the low-level and transuranic processes. The units within each of these process lines are summarized in Table 1 and described in the paragraphs that follow. Table 2 provides additional information for each unit, including location, vessels, construction materials, capacity, and secondary containment.

TABLE 1: SUMMARY OF RLWTF TREATMENT UNITS

	Unit Operation	Tanks	Location
Main Treatment:			
M1	Collection system	----	TA-03, 35, 48, 50, 55, 59
M2	Influent storage	W5, W6	50-250
M3	Emergency influent storage	WMRM tanks (4)	50-250
M4	Reaction tanks	TK71, TK72	50-01
M5	Microfilter	----	50-01
M6	Pressure filters	---	50-01
M7	Perchlorate ion exchange	TK09	50-01
M8	Primary reverse osmosis	----	50-01
M9	Reserved	----	----
M10	Effluent storage	N.Frac, S.Frac	50-01
M11	Mechanical evaporator	----	50-257
M11	Solar evaporation	----	TA52
M11	NPDES Outfall #051	----	Mortandad Canyon
Transuranic:			
T1	TRU Collection system	----	TA50, 55
T2	TRU Influent storage	Acid tank, Caustic tank	50-66
T3	TRU Treatment	TK1, TK2	50-01
T4	TRU Solids	TK-7A	50-01
T5	TRU Effluent	TK3	50-01
Secondary Treatment:			
S1	Secondary reverse osmosis	TK73, TK25	50-01
S2	Vacuum filter	TK8	50-01
S3	Bottoms storage	17K, TK-NE,SE,SW,NW	50-248

[A] RLW includes small volumes, less than one percent of total influent, that are also characteristically hazardous for corrosivity, which are treated using elementary neutralization. Transuranic RLW may also include small volumes with characteristic metals, which are treated in the transuranic process line.

MAIN TREATMENT PROCESS

The main treatment process consists of the collection, storage, and treatment of low-level RLW, and the discharge of treated water to the environment. Process steps include treatment with chemicals in a reaction tank, filtration, ion exchange, and reverse osmosis. Discharge to the environment is via NPDES outfall, solar evaporation, or evaporation using natural gas. Two secondary streams are generated by primary treatment, low-level solids and reverse osmosis concentrate; they are sent to the secondary treatment process.

M1. Radioactive Liquid Waste Collection System

The majority of RLW is transferred by direct pipeline between generator facilities and the RLWTF [B]. The pipeline system, installed in 1982, connects the TA50 RLWTF to buildings in six Technical Areas using approximately four miles of underground, double-walled (pipeline within a pipeline) piping. Primary piping is six- or eight-inch-diameter polyethylene encased within 10- or 12-inch polyethylene secondary piping. The primary piping transitions to stainless steel in each of 63 underground valve stations (also referred to as vaults), then transitions back to polyethylene upon exit. Vaults are equipped with leak detection sensors that are linked electronically to the RLWTF operations center.

M2. Influent Storage

Influent flows by gravity from the collection system into storage tanks in Building 50-250. Two influent tanks in the basement of the building are dedicated to daily influent activities. Both are fiberglass, and each has a capacity of 50,000 gallons. After a tank is sampled, influent is fed to the low-level main treatment process in Building 50-01 via another underground, double-walled pipe.

M3. Emergency Influent Storage

Building 50-250, the Waste Management and Risk Mitigation (WMRM) facility, is located about 50 meters southeast of Building 50-01. WMRM houses six influent storage tanks with a capacity of 50,000 gallons each; four of these are held in reserve for emergencies. WMRM is a steel frame structure designed to withstand seismic, wind, and snow load criteria. The concrete basement houses the two influent and four emergency storage tanks, and acts as secondary containment. Tanks receive influent by gravity flow from the collection system.

M4. Reaction Tanks

Influent is mixed with treatment chemicals in reaction tanks TK71 and TK72 to remove insoluble constituents, including more than 90% of the radioactivity. The two reaction tanks are aboveground, carbon-steel vessels, ~10,000 gallons each. Influent and chemicals enter from above; the tank mixer brings the streams into contact. Chemicals such as sodium hydroxide and ferric sulfate are added to adjust pH, precipitate metals, and promote particle growth. Contaminants precipitate as solids, which are kept in suspension by the tank mixer. The solids-water mixture is fed to the next treatment step, the microfilter.

M5. Microfilter

From the reaction tanks, treated influent is pumped to a microfilter to remove solids from water. The microfilter employs polyvinylidene fluoride, or PVDF, membranes to separate the solids. The membranes can withstand pH ranges from 0-14, are non-plugging, and are chlorine resistant; they remove

[B] The remaining RLW, typically less than 2,000 gallons per month, is transferred from small generators via truck.

particles as small as 0.1 micron, and can handle feed streams with up to 5% solids. A periodic backpulse of air sends a reverse flow of filtrate across the membrane, dislodging contaminants and moving solids to the concentrate tank. A clean-in-place system enables periodic cleaning of membranes using chemicals such as acids, bases, or bleach.

Filtrate (water) from the microfilter is fed to TK9, and from TK9 to either perchlorate ion exchange or the primary reverse osmosis unit. Solids from the microfilter are periodically removed to TK8 for subsequent treatment in the vacuum filter.

M6. Pressure Filters

Three pressure media filters, which operate in parallel or singly, can also be used to remove suspended solids from water in the reaction tanks. Water is pumped from either TK71 or TK72, through the media in an enclosed steel vessel at a pressure of about 30 psig. Pressure filters are 30 inches in diameter and ~five feet high, and are constructed of carbon steel lined with plasite (an epoxy). The media in the pressure filter consists of coarse and fine particles of sand, garnet, coal, and gravel, and can remove particles as small as 10 microns. Backwashing is periodically necessary, to remove solids and to reconstitute the bed. Each filter can process up to 50 gallons per minute.

M7. Perchlorate Ion Exchange

Ion-exchange columns located in Room 16 are used to remove perchlorates. Three of the eight fiberglass reinforced plastic (FRP) ion exchange vessels are typically in service. Vessels range in size to nine cubic feet of ion exchange resin, and can treat up to 60 gallons of water per minute. The columns are installed downstream of TK9, and prior to treatment by the RO. TK9 is a 9000-gallon, carbon-steel, aboveground vessel located in Room 61. Resins are not re-generated. Instead, columns are drained of water, then disposed as solid radioactive waste.

M8. Primary Reverse Osmosis

Either of two reverse osmosis units can be used, the Room 72 single-pass unit, or the Room 36 double-pass unit (referred to as the M8 unit). The double-pass unit began operation in late 2018 in order to assure that treated water meets DP-1132 effluent limits.

RO units remove soluble contaminants, and produce a high quality effluent that approaches and sometimes meets EPA drinking water standards. The RO units use commercially available high-rejection membranes, typically rated at nominal NaCl rejection of 90-99%. The Room 72 unit has three 8-inch-diameter pressure vessels, and operates at pressures of about 400 psig. The M8 unit has three 8-inch-diameter pressure vessels (first pass) and six 4-inch-diameter pressure vessels (second pass). Permeate from either unit is sent to storage tanks in Room 34B; concentrate from either unit is processed through the secondary treatment process. The Room 72 RO unit has a capacity up to 60 gpm; the M8 unit has a capacity of 30 gpm.

M9. Reserved

The copper-zinc ion exchange treatment unit, described in the application for DP-1132, was removed from service in 2014.

M10. Effluent Storage

Two tanks are available for the storage of treated water, referred as the north frac tank and the south frac tank. Frac tanks are horizontal carbon steel tanks located in Room 34B; each has a capacity of ~20,000 gallons. The two tanks are operated in tandem. When the north tank is filled, the flow of reverse osmosis permeate is directed to the south tank. While the south tank is filling, water in the north tank is sampled, adjusted if necessary (e.g., pH adjustment), and then discharged to the environment. This practice helps to assure that treated water will meet effluent limits imposed by regulatory agencies.

M11. Discharge of Treated Water to the Environment

11a. Discharge Via Mechanical Evaporation

Treated water may be discharged to the environment via an effluent evaporator located outside Room 34 of Building 50-01. Water is heated using natural gas in a 4.5 million BTU/hr low NOx gas burner that can evaporate up to 400 gallons of water per hour. The unit is constructed of stainless steel, and has received a No Permit Required Determination from the NMED Air Quality Bureau.

11b. Discharge Via Solar Evaporation

A solar evaporation tank (SET) is located at Technical Area 52 of LANL. The site is approximately one acre in size, and about two-thirds of a mile from the TA50 RLWTF. The SET has two cells. Each cell has concrete walls approximately four feet high, and a double liner with leak detection. Each cell is approximately 70' x 250' in size, with a usable capacity of about 380,000 gallons. The SET pump house has the capability of returning the contents of either cell to the TA50 RLWTF for storage and retreatment, if necessary. Approximately 3500 feet of high-density polyethylene (HDPE) transfer piping connect the SET and the TA50 RLWTF.

11c. Discharge Via NPDES Outfall 051

Treated water that meets NPDES, NMED, and DOE discharge standards can be discharged to the environment via permitted outfall #051 in Mortandad Canyon. Water is pumped to the outfall through approximately 1400 feet of three-inch-diameter, carbon steel pipe. NPDES samples are collected at TA50 while water is discharging to the canyon.

TRANSURANIC TREATMENT PROCESS

The RLWTF receives and treats two separate influent streams, low-level radioactive liquid wastes (RLW), and transuranic RLW. Each influent stream has its own underground collection system, its own influent storage tanks, and its own treatment equipment. The two streams differ in several important ways, however:

- volumes: Approximately 99% of influent volume is low-level RLW.
- radioactivity: Typically, 90% comes from transuranic RLW.
- effluent: Treated transuranic RLW cannot be, and is not, discharged to the environment.

Two secondary streams are generated by the treatment of transuranic RLW, transuranic solids and low-level liquids. Solids are solidified as part of the transuranic treatment process. The liquid stream receives additional treatment in either the main treatment process or the secondary treatment process.

T1. Transuranic Collection System

The transuranic collection system runs from Building 55-04 through below-grade, double-walled transfer lines, through a valve pit at 50-201, and into influent storage tanks at Building 50-66. One transfer line is dedicated for acid waste, and a second for caustic waste. Both are two-inch-diameter pipes. The acid waste lines are constructed of polyvinylidene fluoride (PVDF); the caustic lines are constructed of polypropylene (PP).

TA55 and RLWTF personnel coordinate batch transfers of transuranic RLW. Once a transfer is coordinated, a batch of known volume, typically less than 100 gallons, is discharged through the collection system, flowing by gravity to the TRU influent storage tanks in Building 50-66. Transuranic influent is not trucked.

T2. Transuranic Influent Storage

Two influent storage tanks are located in Building 50-66, one for acid waste (~3900 gallons) and the other for caustic waste (~3000 gallons). Each tank has enough capacity to hold more than one year of transuranic influent. Both tanks are cylindrical, cone-bottomed tanks, and each has a mixer and a HEPA-filtered vent. The sump in Building 50-66 has a leak detection probe that communicates to the RLWTF operations center.

T3. Transuranic Treatment

Acid or caustic waste is pumped from Building 50-66 into TK1 in Room 60. Acid waste is neutralized by mixing with liquid sodium hydroxide (nominal 25%); other chemicals (ferric sulfate or polymer) may be added to promote particle growth. Caustic waste requires less sodium hydroxide, and is also treated with chemicals that will promote particle growth. Solids that form in the reaction tank TK1 are allowed to settle, and are then pumped to the solids storage tank, TK-7A. Clear liquid is pumped through a pressure filter into the effluent storage tank, TK3.

T4. Transuranic Solids

Solids collect in TK-7A, a 900-gallon carbon steel tank in Room 60. In order to facilitate particle growth, TK-7A may first be seeded with solids from a previous treatment campaign. Chemicals (lime, ferric sulfate, or polymer) may also be added to TK-7A for this purpose. Excess water is then decanted from TK-7A, and transferred to the effluent storage tank, TK3. Solids remaining in TK-7A are added to drums containing cement and sodium silicate, then tumbled and allowed to cure. After curing, drums of cemented solids are transported to a storage facility at TA46 to await shipment to and disposal at WIPP as a solid transuranic waste.

T5. Transuranic Effluent

Effluent from the transuranic treatment process is collected in TK3 in Room 60, a 1000-gallon, horizontal fiberglass tank. Having been treated, effluent is no longer transuranic waste. Effluent is not clean enough, however, to be discharged to the environment. Instead, the effluent either receives additional treatment or is sent to storage tanks in Building 50-248 for disposition as bottoms.

SECONDARY TREATMENT PROCESSES

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

S1. Secondary Reverse Osmosis

The secondary reverse osmosis unit reduces the volume of secondary radioactive liquid waste that must be shipped offsite to a subcontractor for further treatment. Feed to the unit consists of either concentrate from primary reverse osmosis or treated transuranic RLW. Treatment at the S1 unit splits the feed stream into two streams. Permeate is sent to the main treatment process for additional treatment; concentrate is sent to storage tanks in Building 50-248 to await shipment as bottoms.

The S1 unit is capable of producing 10 gpm permeate with 70% recovery; it has a maximum operating pressure of 1000 psi. The unit contains nine commercially available high-rejection membranes (8" X 40"), within three fiberglass pressure vessels.

S2. Vacuum Filter

Solids from the microflter (or pressure filters) are separated from water and then disposed as low-level radioactive solid waste. This solids filtration operation includes the TK8 storage tank (capacity of 8,000 gallons) in Room 61 and a rotary vacuum filter in Room 116. The solids contain more than 90% of the radioactivity present in low-level influent. Solids do not contain hazardous chemical constituents above RCRA limits, and are disposed as low-level radioactive waste.

S3. Bottoms Storage

RLWTF bottoms are stored in tanks in Building 50-248 until shipped to a commercial waste treatment facility using a commercial tanker truck. Shipments typically range from 4-5,000 gallons each. The commercial waste treatment facility processes bottoms to a solid form, and disposes of the solids as low-level radioactive waste at a DOE or commercial disposal site.

TABLE 2: VESSEL INFORMATION FOR RLWTF TREATMENT UNITS

Treatment Unit		Vessel(s)	Location	Vessel			Secondary Containment		
				Capacity	Category	Material	Structure	Material	Leak Detection
Main Treatment:									
M1	Collection system	Piping (~ 4 miles)	Six TAs	---	Inground	Polyethylene	Pipe	Polyethylene	63 alarms
		Vaults (63)	Six TAs	---	Inground	Concrete	Floor	Concrete	63 alarms
M2	Influent storage	WMRM tanks (2)	50-250-003	50,000 ea.	Aboveground	Fiberglass	Floor	Concrete	250_SMP3
		Xfer piping	50-250-004	---	Inground	Polyethylene	Pipe	Polyethylene	250_Inf, 250_Eff
		Xfer pump room	50-250-001	---	Aboveground	Steel	Floor	Concrete	PLC250_SMP1
M3	Emergency influent storage	WMRM tanks (4)	50-250-003	50,000 ea.	Aboveground	Fiberglass	Floor	Concrete	250_SMP3
M4	Reaction Tanks	TK71, TK72	50-01-70	10,000 ea.	Aboveground	Steel	Floor	Concrete	RUF_71A_A1
M5	Microfilter	Filter	50-01-70	40	Aboveground	Steel	Floor	Concrete	RUF_71A_A1
		Concentrate tank	50-01-70	500	Onground	Polyethylene	Floor	Concrete	RUF_71A_A1
		Cleaning tanks (2)	50-01-70	400	Onground	Polyethylene	Floor	Concrete	RUF_71A_A1
M6	Pressure filters	Filters (3)	50-01-63	300	Aboveground	Lined Steel	Floor	Concrete	SMP_16_A2
M7	Perchlorate ion exchange	IX vessels (8)	50-01-16	400	Aboveground	Fiberglass	Floor	Concrete	SMP_16_A2
		TK09	50-01-62	10,000	Aboveground	Steel	Floor	Concrete	ID
M8	Primary reverse osmosis	R72 RO unit	50-01-72	40	Aboveground	Steel	Floor	Concrete	RUF_71A_A1
		R72 CIP tank	50-01-72	500	Aboveground	Polyethylene	Floor	Concrete	RUF_71A_A1
		M8 RO unit	50-01-36	60	Aboveground	Fiberglass	Floor	Concrete	ID
		M8 CIP tank	50-01-36	300	Aboveground	Polyethylene	Floor	Concrete	ID
M9	Reserved								
M10	Effluent storage	N.Frac, S.Frac	50-01-34B	20,000	Aboveground	Steel	Floor	Concrete	SMP_34B_A1
M11	Effluent evaporator	----	50-257	1,200	Aboveground	S.Steel	Floor	Hypalon,	--
M11	Solar evaporation	E.Tank, W.Tank	TA52	380,000	Inground	HDPE	Liner	HDPE,	ID
M11	NPDES Outfall #051	----	Canyon	---	Inground	---	---	---	--
Transuranic:									
T1	TRU Collection system	Piping (~1 mile)	TA50, TA55	---	Inground	PVDF, PP	Pipe	PVDF, PP	CTL_WM57_A1
		Vaults (1)	50-201	---	Inground	Concrete	Floor	Concrete	CTL_WM57_A1
T2	TRU Influent storage	Acid tank	50-66	3,900	Aboveground	Steel	Floor	Concrete	CTL_WM66_A4
		Caustic tank	50-66	3,000	Aboveground	Steel	Floor	Concrete	CTL_WM66_A4
T3	TRU Treatment	TK1	50-01-60	900	Aboveground	Steel	Floor	Concrete	ID
		TK2	50-01-60	800	Aboveground	Fiberglass	Floor	Concrete	ID
T4	TRU Solids	TK-7A	50-01-60A	900	Aboveground	Steel	Floor	Concrete	ID
T5	TRU Effluent	TK3	50-01-60	1,000	Aboveground	Fiberglass	Floor	Concrete	ID

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TABLE 2: VESSEL INFORMATION FOR RLWTF TREATMENT UNITS (CONCLUDED)

Treatment Unit	Vessel(s)	Location	Vessel			Secondary Containment		
			Capacity	Category	Material	Structure	Material	Leak Detection
Secondary Treatment:								
S1 Secondary reverse osmosis	RO vessel	50-01-24	10	Aboveground	Fiberglass	Floor	Concrete	ID
	TK25	50-01-24	300	Aboveground	Polyethylene	Floor	Concrete	ID
	TK73	50-01-70	3,700	Aboveground	Steel	Floor	Concrete	RUF_71A_A1
S2 Vacuum filter	Vacuum filter	50-01-116	150	Aboveground	S.Steel	Floor	Concrete	SMP_16_A2
	TK14, TK15	50-01-116	800	Aboveground	Steel	Floor	Concrete	SMP_16_A2
	TK08	50-01-61	8,000	Aboveground	Steel	Floor	Concrete	ID
S3 Bottoms storage	TK-NE, SE, SW, NW	50-248	20,000 ea.	Aboveground	Steel	Floor	Concrete	SMP_TKF_A2
	3K tank	50-248	3,000	Aboveground	Steel	Floor	Concrete	SMP_TKF_A2
	17K tank	50-02	17,000	Aboveground	Steel	Floor	Concrete	SMP_WM2_A2

Notes:

1. Location: Technical Area-Bldg-Room
2. Vessel category per definition CC of DP-1132: Aboveground, On-ground, In-ground.
3. Collection systems: Each access vault is equipped with a sump and leak detection probe-alarm
4. Leak detection: ID means in design, as committed in LANL correspondence EPC-DO-18-402, 11-19-2018.

14396

ATTACHMENT 6

Ground water flow direction report

EPC-DO: 19-018

LA-UR-19-20526

Date: JAN 3 1 2019

DP-1132 Condition No. 32: Ground Water Flow Direction Report

Overview

Los Alamos National Laboratory (LANL) sits atop a thick zone of mainly unsaturated rock and sediments. Groundwater beneath the Pajarito Plateau occurs in three modes: (1) water in the near-surface sediments in the bottoms of some canyons (alluvial groundwater), (2) water in porous rock layers underlain by a more solid rock layer and therefore perched above the regional aquifer (intermediate perched groundwater), and (3) the regional aquifer in the saturated Santa Fe Group sediments.

- Perched alluvial groundwater is a limited area of saturated rocks and sediments directly below canyon bottoms. Surface water percolates through the alluvium until downward flow is disrupted by less permeable layers of rock, resulting in shallow perched bodies of groundwater. Most of the canyons on the Pajarito Plateau have infrequent surface water flow and, therefore, little or no alluvial groundwater.

- Perched-intermediate groundwater occurs within the lower part of the Bandelier Tuff and the underlying Puye Formation and Cerros del Rio basalt underneath some canyons. These intermediate-depth groundwater bodies are formed in part by water moving downward from alluvial groundwater until the water reaches a layer of relatively impermeable rock. Depths of the perched-intermediate groundwater zones vary. The depth to perched-intermediate groundwater is approximately 500 to 750 feet beneath Mortandad Canyon.

- The regional aquifer is a widespread area of mainly saturated sands and gravels that provide the water supply for Los Alamos County and LANL. The uppermost level of water in the regional aquifer (known as the water table) occurs at a depth of approximately 1,200 feet below ground surface along the western edge of the plateau and 600 feet below ground surface along the eastern edge. Groundwater in the regional aquifer generally flows east or southeast. The speed of groundwater flow varies but is typically around 30 feet per year. The regional aquifer is separated from alluvial and perched-intermediate groundwater by layers of unsaturated tuff, basalt, and sediment with generally low moisture content.

A ground water elevation contour map has been prepared only for the regional aquifer due to the discontinuous nature of alluvial and perched-intermediate groundwater beneath the Pajarito Plateau.

Regional Aquifer

The regional aquifer beneath LANL is a complex hydrogeological system. The top of the aquifer is predominantly under phreatic (water-table) conditions. Groundwater flow directions and fluxes that control groundwater flow and transport in the aquifer are largely dictated by the shape of the regional water table. The general shape of the regional water table beneath Pajarito Plateau is predominantly controlled by the areas of regional recharge to the west (the flanks of Sierra de los Valles and the Pajarito fault zone) and discharge to the east (the Rio Grande and the White Rock Canyon Springs).

Regional Aquifer (con't)

At more local scales, the structure of the regional phreatic flow is also expected to be influenced by (1) local infiltration zones (e.g., beneath canyons); (2) heterogeneity and anisotropy in the aquifer properties; and (3) discharge zones (municipal water-supply wells, springs; injection and extraction wells within the chromium contamination area will also impact the structure of groundwater flow). A long-term water decline of about 0.5-1 ft/yr is observed in the regional water levels throughout the aquifer beneath the Pajarito Plateau. The decline might be caused by long-term changes in the aquifer recharge and discharge conditions (including water-supply impacts). Groundwater in the regional aquifer generally flows east or southeast. The speed of groundwater flow varies but is typically around 30 feet per year.

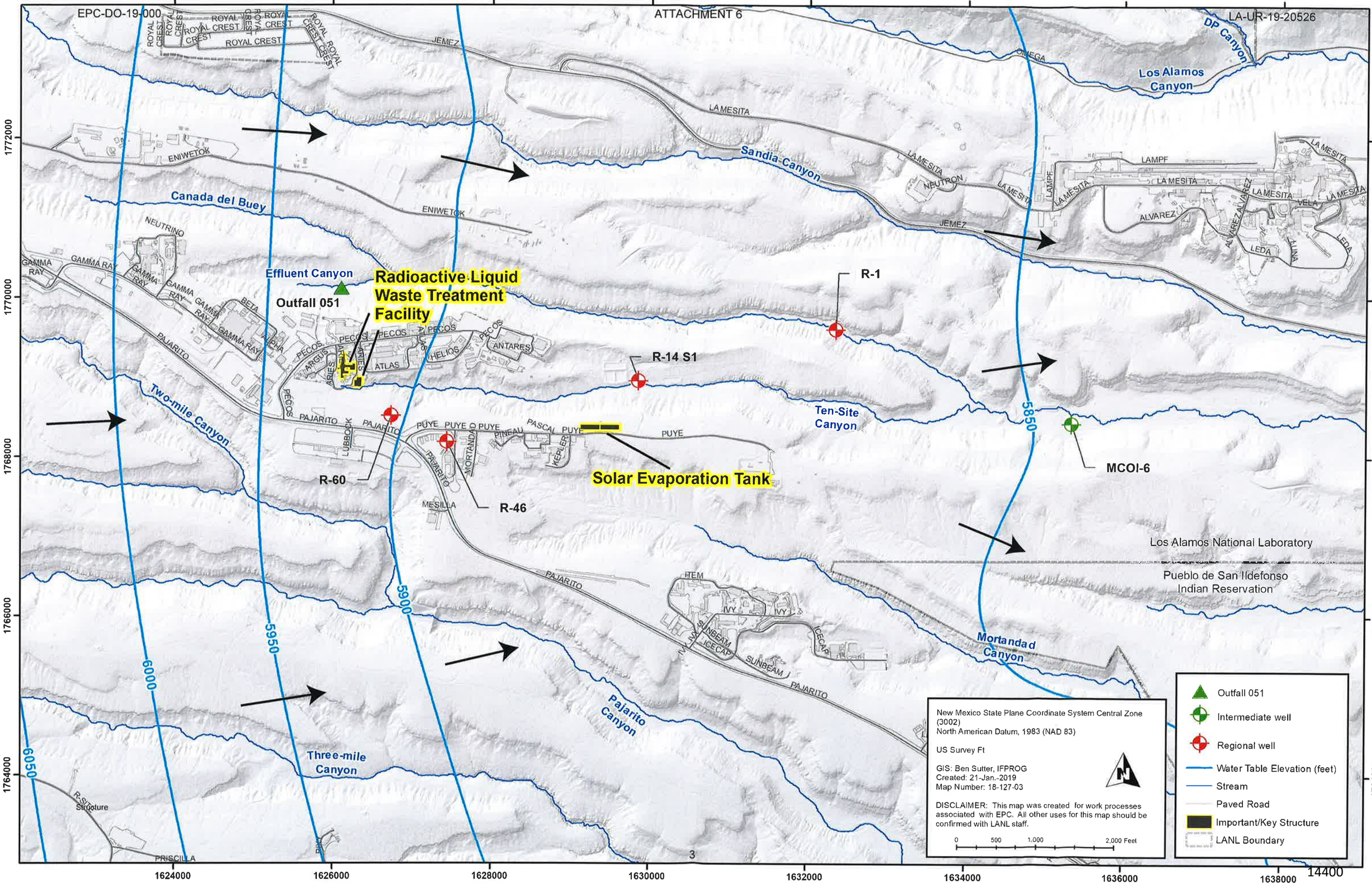
Because of the long-term declines and pumping transients described above, the water-level data and the respective water-table maps are time dependent and representative of specific periods of time. The attached water-table map used the monthly-averaged water-level data for February 2018. The averaged water levels are computed for the well screens near the water table.

Water-Table Contouring Process

The process of water-table contouring is theoretically constrained by conformity rules: (1) the contour lines should be perpendicular to the flowpaths; (2) the length and the width of the flownet cells formed by the contour lines between two adjacent flowpaths should have the same ratios. These rules are theoretically valid only for the case of two-dimensional (lateral) groundwater flow in a uniform, isotropic aquifer with no recharge/discharge sources within flownet cells. Deviations from the conformity rules are caused by three-dimensional flow effects, aquifer heterogeneity and anisotropy as well as groundwater recharge/discharge wells/zones. This water table map in is contoured by attempting to satisfy the following goals simultaneously: (1) to match the water-level data at the monitoring wells, (2) to generally preserve flownet conformity, (3) to account for pumping effects and (4) to account for conceptual models of groundwater flow in the regional aquifer. The contouring is performed using a combination of manual and automated techniques; the automated contouring is done using the Minimum Curvature Surface method (Smith and Wesse, 1990).

References

Smith, W H F, and P. Wessel. "Gridding with Continuous Curvature Splines in Tension." *Geophysics* 55, no. 3 (1990): 293. https://doi.org/10.1190/1.1442837.


1624000
1626000
1628000
1630000
1632000
1634000
1636000
1638000
1772000
1770000
1768000
1766000
1764000
Canada del Buey
Sandia Canyon
Los Alamos Canyon
DP Canyon
Two-mile Canyon
Ten-Site Canyon
Mortandad Canyon
Pajarito Canyon
Three-mile Canyon
Effluent Canyon
Outfall 051
Radioactive Liquid Waste Treatment Facility
R-1
R-14 S1
R-60
R-46
MCOI-6
Solar Evaporation Tank
Los Alamos National Laboratory
Pueblo de San Ildefonso Indian Reservation
5850
5900
5950
6000
6050
JEMEZ
ENIWETOK
LA MESITA
OMEGA
NEUTRINO
PAJARITO
PUYE
MESILLA
ITEM
LAMPF
ALVAREZ
LEDA
VELA
JALNA
PECOS
ARGUS
ATLAS
HELIOS
ANTARES
ROYAL CREST
R-S1 Structure
PRISCILLA
New Mexico State Plane Coordinate System Central Zone (3002)
North American Datum, 1983 (NAD 83)
US Survey Ft
GIS: Ben Sutter, IFPROG
Created: 21-Jan.-2019
Map Number: 18-127-03
DISCLAIMER: This map was created for work processes associated with EPC. All other uses for this map should be confirmed with LANL staff.
0 500 1,000 2,000 Feet
Outfall 051
Intermediate well
Regional well
Water Table Elevation (feet)
Stream
Paved Road
Important/Key Structure
LANL Boundary

ATTACHMENT 7

Summary of maintenance and repair activities conducted at the RLWTF

EPC-DO: 19-018

LA-UR-19-20526

Date: JAN 3 1 2019

DP-1132 Report: RLWTF Maintenance During Calendar Year 2018
(August 29 through December 31)

			Task Type				
Structures	**Description**	**Built**	**PM**	**CO**	**Mod**	**SR**	**Total**
Building 1	Original treatment bldg.	1963	51	10	3	1	65
Building 2	Original influent storage bldg.	1963	1	1	0	0	2
Building 66	TRU influent storage	1982	1	0	0	0	1
Building 248	Low-level bottoms storage	1996	3	0	0	0	3
Building 250	Low-level influent storage	2009	20	2	0	0	22
Building 257	Mechanical evaporator	2010	2	0	0	0	2
TA52	Solar evaporation	2011	14	0	0	0	14
	Totals		92	13	3	1	109

Task Types:

PM - preventive maintenance
CO-corrective maintenance
Mod - modification
SR-service request

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DP-1132 Report: RLWTF Maintenance During the 4th Quarter 2018 (Oct 1 through Dec 31)

			Task Type				
Structures	**Description**	**Built**	**PM**	**CO**	**Mod**	**SR**	**Total**
Building 1	Original treatment bldg.	1963	37	6	3	0	46
Building 2	Original influent storage bldg.	1963	0	1	0	0	1
Building 66	TRU influent storage	1982	0	0	0	0	0
Building 248	Low-level bottoms storage	1996	1	0	0	0	1
Building 250	Low-level influent storage	2009	15	2	0	0	17
Building 257	Mechanical evaporator	2010	2	0	0	0	2
TA52	Solar evaporation	2011	11	0	0	0	11
	Totals		66	9	3	0	78

Task Types:

PM - preventive maintenance

CO-corrective maintenance

Mod - modification

SR-service request

14403

TA-50-0001 Work Completion Report (10/01/2018-12/31/2018)

Unit	Work Order	Task	Task Type	Task Title
5000001	586048	01	CO	500001 REPLACE PRE & HEPA FILTERS ON EB-17 & EB-25
5000001	590699	03	MD	TA-50-POTHOLING SUPPORT EXECUTION
5000001	590699	02	MD	TA-50-POTHOLING SUPPORT PROCUREMENT
5000001	590699	01	MD	TA-50-POTHOLING SUPPORT SOW
5000001	591058	01	CO	500001 EVALUATE & INSTALL FOAM EDGE PROTECTORS AS NEEDED.
5000001	603761	01	PM	50001 & 248 LPT 1YR PM VISUAL
5000001	603936	01	PM	500001 EH (1YR) PM, ELEVATOR 3RD PARTY INSP
5000001	612612	01	PM	500001 BHW 1YR PM, INSPECTION & MAINTENANCE
5000001	615632	01	CO	500001 REPAIR THE SOUTH FRAC TANK LEVEL INSTRUMENTATION
5000001	616366	01	CO	500001 TROUBLE SHOOT AND REPAIR PV-02
5000001	616650	01	PM	500001 FE'S 1YR PM, (MECHANICAL) (11 EA)
5000001	617856	01	PM	500001 TCA 6MO PM, AUTO DUMP
5000001	617857	01	PM	500001 BHW 1YR PM, (START UP) AFTER LAY-UP
5000001	617867	01	PM	500001 MICROFILTER 3 MONTH PUMP MAINTENANCE
5000001	617870	01	PM	500001 ASE 3MO PM, EXHAUST STACK PUMP (3 EA)
5000001	617871	01	PM	500001 LTE 1MO PM
5000001	617873	01	PM	500001 LTET 1MO PM
5000001	617912	01	PM	500001 FEXT 1MO PM
5000001	617943	01	PM	500001 PERFORM WEEKLY EYEWASH/ SAFETY SHOWER TESTING
5000001	620074	01	PM	50-1 TK 3YR PM, 60/60A ULTRASONIC TANK INSPECT(VISUAL/EXTRNL)
5000001	620075	01	PM	500001 PV-008 1YR PM, (ELECTRICAL)
5000001	620076	01	PM	500001 DT 1YR PM, DRUM TUMBLER
5000001	620084	01	PM	500001 (A) SAFETY SHOWER PM (32 EA)
5000001	620089	01	PM	500001 DAD 6MO PM
5000001	620090	01	PM	500001 EH 6MO PM, ELEVATOR MECH/ELECT
5000001	620095	01	PM	500001 (6M) DEIONIZED WATER BOTTLE CHANGE OUT
5000001	620103	01	PM	50-1 PH ANALYZER 2MO CALIBRATION 2 EA
5000001	620108	01	PM	500001 PERFORM WEEKLY EYEWASH/ SAFETY SHOWER TESTING
5000001	620110	01	PM	500001 BHW 1MO PM (2 EA)
5000001	620137	01	PM	500001 FEXT 1MO PM
5000001	620160	01	PM	500001 LTE 1MO PM
5000001	620162	01	PM	500001 LTET 1MO PM
5000001	620800	01	CO	500001 RLW MICROFILTER EMERGENCY STOP REPLACEMENT
5000001	621923	01	PM	500001 CA'S 6MO PM, (MECHANICAL)
5000001	622767	01	PM	500001 LUBE 6MO PM, OPS EQUIPMENT LUBRICATION

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TA-50-0001 Work Completion Report (10/01/2018-12/31/2018)

Unit	Work Order	Task	Task Type	Task Title
5000001	622768	01	PM	500001 SPW 3 MO FIRE SUPPRRESSION SYSTEMS PM
5000001	622772	01	PM	500001 PV-008 3MO PM, (MECHANICAL)
5000001	622773	01	PM	500001 GFCI (6M) SERVICE INSPECTIONS
5000001	622794	01	PM	500001 LTET 1MO PM
5000001	622826	01	PM	500001 LTE 1MO PM
5000001	622839	01	PM	500001 BHW 1MO PM (2 EA)
5000001	622844	01	PM	500001 PERFORM WEEKLY EYEWASH/ SAFETY SHOWER TESTING
5000001	623456	01	PM	500001 PV-007 3 MO PM, (MECHANICAL)
5000001	623574	01	PM	500001 CONNECT/PURGE ARGON DEWAR
5000001	623838	01	CO	500001 FLUSH 14-VAC-07. TROUBLE SHOOT AND REPAIR.
5000001	629594	01	PM	500001 BHW 1MO PM (2 EA)

TA-50-0250 Work Completion Report (10/01/2018-12/31/2018)

Unit	Work Order	Task	Task Type	Task Title
500250	495946	01	CO	500250 WMRM REPLACE TANK OUTLET VALVES
500250	608848	01	CO	500250 REPLACE EMERGENCY LIGHT LTE-75 IN ROOM 003
500250	612617	01	PM	50-250 3MO DIESEL GENERATOR PM
500250	617864	01	PM	500250 SHS 3MO PM, SAFETY SHOWER
500250	617877	01	PM	500250 LTET 1MO PM
500250	617881	01	PM	500250 LTE 1MO PM
500250	617910	01	PM	500250 LTNT 1MO PM
500250	617937	01	PM	500250 FEXT 1MO PM
500250	620088	01	PM	500250 (A) BACKFLOW PREVENTER MAINTENANCE PM 2EA
500250	620102	01	PM	50-250 3MO DIESEL GENERATOR PM
500250	620135	01	PM	500250 LTNT 1MO PM
500250	620157	01	PM	500250 FEXT 1MO PM
500250	620164	01	PM	500250 LTET 1MO PM
500250	620167	01	PM	500250 LTE 1MO PM
500250	622771	01	PM	50-250 3MO SPW SYSTEM PM
500250	622825	01	PM	500250 FEXT 1MO PM

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TA-50-0002 Work Completion Report (10/01/2018-12/31/2018)

Unit	Work Order	Task	Task Type	Task Title
500002	613406	01	CO	500002 PRV TIGHTENING

TA-50-0066 Work Completion Report (10/01/2018-12/31/2018)

Unit	Work Order	Task	Task Type	Task Title
				*** NO DATA TO REPORT FOR LISTED PERIOD.

TA-50-0248 Work Completion Report (10/01/2018-12/31/2018)

Unit	Work Order	Task	Task Type	Task Title
500248	622780	01	PM	500248 PUMPS 3MO PM (2 EA.)

TA-50-0257 Work Completion Report (10/01/2018-12/31/2018)

Unit	Work Order	Task	Task Type	Task Title
500257	621187	01	PM	50-257 (A) EVAPORATOR FAN ELECTRICAL
500257	621316	01	PM	50-257 1YR MECHANICAL EVAPORATOR FAN PM

TA-52-SET Work Completion Report (10/01/2018-12/31/2018

Unit	Work Order	Task	Task Type	Task Title
520182	617944	01	PM	TA52-182 FEXT 1MO PM
520182	617945	01	PM	TA52-182 MONTHLY NON TRITIUM LIGHTS PM
520182	617947	01	PM	TA52-182 MONTHLY EMERGENCY LIGHTS PM
520182	620106	01	PM	TA52-182 MONTHLY EMERGENCY LIGHTS PM
520182	620177	01	PM	TA52-182 FEXT 1MO PM
520182	620178	01	PM	TA52-182 MONTHLY NON TRITIUM LIGHTS PM
520182	622840	01	PM	TA52-182 MONTHLY EMERGENCY LIGHTS PM
520182	622842	01	PM	TA52-182 MONTHLY NON TRITIUM LIGHTS PM
520182	622843	01	PM	TA52-182 FEXT 1MO PM
520182	626070	01	PM	52-0182 (3M) FENCE LINE VERIFICATION
520182	626071	01	PM	52-0182 (3M) SIGNAGE VERIFICATION FOR FENCE LINE

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Key to Acronyms

ASE	air sampler, exhaust
BHW	boiler, hot water
CA	compressed air
DAD	dessicant air dryer
EB	exhaust bank
EH	exhaust heater
FAR	filter, air replaceable
FE	fan, exhaust
FEXT	fire extinguisher
HEPA	high-efficiency particulate air
HUE	heater unit, electric
LPT	lightning protection
LTE	lights, emergency
LTET	lights, emergency, tritium
LTNT	lights, non-tritium
PRV	pressure reducing valve
PV	pump, vacuum
RCA	radiological control area
SHS	shower, safety
SPH	sprinkler pipe, dry
SPW	sprinkler pipe, wet
TCA	tank, compressed air

14407

ATTACHMENT 8

Daily volume of RLW influent wastewater
received by the RLWTF

EPC-DO: 19-018

LA-UR-19-20526

Date: JAN 3 1 2019

DP-1132 Report: Fourth Quarter 2018
RLWTF Daily Influent and Effluent

Date	Low-level Influent	Effluent MES	Effluent Outfall	Effluent SET	Transuranic Influent
Totals, 2018-Q4	810,397	895,069	0	0	78
Sub-total, Oct	263,116	360,867	0	0	0
Sub-total, Nov	305,949	261,888	0	0	0
Sub-total, Dec	241,332	272,314	0	0	78

All flows are in Liters.

1-Oct	14,342	14,478	0	0	0
2-Oct	8,458	14,765	0	0	0
3-Oct	9,840	11,478	0	0	0
4-Oct	7,490	6,396	0	0	0
5-Oct	7,069	15,447	0	0	0
6-Oct	6,739	15,073	0	0	0
7-Oct	7,097	14,407	0	0	0
8-Oct	7,425	7,969	0	0	0
9-Oct	7,356	0	0	0	0
10-Oct	7,215	5,859	0	0	0
11-Oct	7,785	10,674	0	0	0
12-Oct	7,312	13,876	0	0	0
13-Oct	6,474	14,217	0	0	0
14-Oct	5,177	14,217	0	0	0
15-Oct	5,349	5,430	0	0	0
16-Oct	7,048	7,354	0	0	0
17-Oct	8,695	14,789	0	0	0
18-Oct	8,937	14,842	0	0	0
19-Oct	9,296	9,422	0	0	0
20-Oct	7,305	14,828	0	0	0
21-Oct	5,043	13,984	0	0	0
22-Oct	5,314	14,227	0	0	0
23-Oct	6,011	14,355	0	0	0
24-Oct	7,773	13,961	0	0	0
25-Oct	9,398	7,638	0	0	0
26-Oct	13,732	14,045	0	0	0
27-Oct	5,307	14,501	0	0	0
28-Oct	6,734	14,501	0	0	0
29-Oct	15,556	8,885	0	0	0
30-Oct	11,749	5,266	0	0	0
31-Oct	20,091	13,983	0	0	0

DP-1132 Report: Fourth Quarter 2018
RLWTF Daily Influent and Effluent

Date	Low-level Influent	Effluent MES	Effluent Outfall	Effluent SET	Transuranic Influent
1-Nov	8,993	13,917	0	0	0
2-Nov	9,958	11,402	0	0	0
3-Nov	8,967	20,375	0	0	0
4-Nov	7,354	15,163	0	0	0
5-Nov	9,307	15,103	0	0	0
6-Nov	13,490	5,263	0	0	0
7-Nov	10,579	4,488	0	0	0
8-Nov	9,372	11,616	0	0	0
9-Nov	10,992	12,919	0	0	0
10-Nov	6,537	9,070	0	0	0
11-Nov	6,177	0	0	0	0
12-Nov	7,040	2,834	0	0	0
13-Nov	5,583	18,912	0	0	0
14-Nov	28,206	14,399	0	0	0
15-Nov	12,487	14,532	0	0	0
16-Nov	13,210	5,789	0	0	0
17-Nov	11,014	4,884	0	0	0
18-Nov	10,409	14,354	0	0	0
19-Nov	12,112	3,858	0	0	0
20-Nov	13,891	0	0	0	0
21-Nov	10,598	0	0	0	0
22-Nov	9,122	0	0	0	0
23-Nov	8,630	0	0	0	0
24-Nov	8,365	0	0	0	0
25-Nov	8,403	0	0	0	0
26-Nov	9,273	4,184	0	0	0
27-Nov	8,289	14,725	0	0	0
28-Nov	10,522	14,671	0	0	0
29-Nov	9,273	14,682	0	0	0
30-Nov	7,797	14,745	0	0	0

DP-1132 Report: Fourth Quarter 2018
RLWTF Daily Influent and Effluent

Date	Low-level Influent	Effluent MES	Effluent Outfall	Effluent SET	Transuranic Influent
1-Dec	7,494	14,900	0	0	0
2-Dec	6,359	14,900	0	0	0
3-Dec	7,646	6,916	0	0	0
4-Dec	8,062	1,469	0	0	0
5-Dec	8,857	4,383	0	0	0
6-Dec	8,365	541	0	0	0
7-Dec	13,134	5,972	0	0	0
8-Dec	6,737	15,382	0	0	0
9-Dec	6,586	14,520	0	0	0
10-Dec	7,078	14,813	0	0	0
11-Dec	8,251	15,017	0	0	0
12-Dec	8,213	13,776	0	0	0
13-Dec	9,311	15,100	0	0	0
14-Dec	7,532	15,083	0	0	0
15-Dec	6,775	7,808	0	0	0
16-Dec	5,791	14,917	0	0	0
17-Dec	6,548	15,356	0	0	0
18-Dec	11,998	11,772	0	0	0
19-Dec	9,046	15,188	0	0	0
20-Dec	9,084	13,854	0	0	78
21-Dec	11,696	4,469	0	0	0
22-Dec	6,775	0	0	0	0
23-Dec	5,905	0	0	0	0
24-Dec	5,640	0	0	0	0
25-Dec	5,791	0	0	0	0
26-Dec	5,375	0	0	0	0
27-Dec	5,450	0	0	0	0
28-Dec	5,526	0	0	0	0
29-Dec	5,905	6,968	0	0	0
30-Dec	14,686	14,605	0	0	0
31-Dec	5,715	14,605	0	0	0

ATTACHMENT 9

Monthly and quarterly treated effluent monitoring results

EPC-DO: 19-018

LA-UR-19-20526

Date: JAN 3 1 2019

Table 1. Analytical Results from Monthly Sampling RLWTF Treated Effluent Discharged to the MES, September 24, 2018, Permit Condition No. 29.

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Lab Qualifier	Detected	Filtered	Lab Method
NP051-18-158779	RLWTF_MES 01	09-24-2018	Chloride	33.3	mg/L		y	N	EPA:300.0
NP051-18-158778	RLWTF_MES 01	09-24-2018	Fluoride	0.198	mg/L		Y	Y	EPA:300.0
NP051-18-158779	RLWTF_MES 01	09-24-2018	Nitrate-Nitrite as Nitrogen	5.10	mg/L		Y	N	EPA:353.2
NP051-18-158779	RLWTF_MES 01	09-24-2018	Perchlorate	1.08	ug/L		Y	N	SW-846:6850
NP051-18-158779	RLWTF_MES 01	09-24-2018	Total Dissolved Solids	160	mg/L		Y	N	EPA:160.1
NP051-18-158779	RLWTF_MES 01	09-24-2018	Total Kjeldahl Nitrogen	0.988	mg/L		Y	N	EPA:351.2

Table 2. Analytical Results from Monthly Sampling RLWTF Treated Effluent Discharged to the MES, October 3, 2018, Permit Condition No. 29.

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Lab Qualifier	Detected	Filtered	Lab Method
NP051-18-163141	RLWTF_MES 01	10-03-2018	Chloride	13.5	mg/L		Y	N	EPA:300.0
NP051-18-163140	RLWTF_MES 01	10-03-2018	Fluoride	0.100	mg/L		Y	Y	EPA:300.0
NP051-18-163141	RLWTF_MES 01	10-03-2018	Nitrate-Nitrite as Nitrogen	4.24	mg/L		Y	N	EPA:353.2
NP051-18-163141	RLWTF_MES 01	10-03-2018	Perchlorate	0.13	ug/L	J	Y	N	SW-846:6850
NP051-18-163141	RLWTF_MES 01	10-03-2018	Total Dissolved Solids	87.1	mg/L		Y	N	EPA:160.1
NP051-18-163141	RLWTF_MES 01	10-03-2018	Total Kjeldahl Nitrogen	0.033	mg/L	U	N	N	EPA:351.2

Table 3. Analytical Results from Montyly Sampling RLWTF Treated Effluent Discharged to the MES, November 7, 2018, Permit Condition No. 29.

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Lab Qualifier	Detected	Filtered	Lab Method
RLWTF-19-164497	RLWTF_MES 01	11-07-2018	Chloride	13.1	mg/L		Y	N	EPA:300.0
RLWTF-19-164497	RLWTF_MES 01	11-07-2018	Fluoride	0.109	mg/L		Y	N	EPA:300.0
RLWTF-19-164497	RLWTF_MES 01	11-07-2018	Nitrate-Nitrite as Nitrogen	4.68	mg/L		Y	N	EPA:353.2
RLWTF-19-164497	RLWTF_MES 01	11-07-2018	Perchlorate	0.050	ug/L	U	N	N	SW-846:6850
RLWTF-19-164497	RLWTF_MES 01	11-07-2018	Total Dissolved Solids	124	mg/L		Y	N	EPA:160.1
RLWTF-19-164497	RLWTF_MES 01	11-07-2018	Total Kjeldahl Nitrogen	0.172	mg/L		Y	N	EPA:351.2

Table 4. Analytical Results from the Monthy Sampling RLWTF Treated Effluent Discharged to the MES, December 5, 2018, Permit Condition No. 29.

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Lab Qualifier	Detected	Filtered	Lab Method
RLWTF-19-164498	RLWTF_MES 01	12-05-2018	Chloride	10.8	mg/L		Y	N	EPA:300.0
RLWTF-19-164498	RLWTF_MES 01	12-05-2018	Fluoride	0.128	mg/L		Y	N	EPA:300.0
RLWTF-19-164498	RLWTF_MES 01	12-05-2018	Nitrate-Nitrite as Nitrogen	7.08	mg/L		Y	N	EPA:353.2
RLWTF-19-164498	RLWTF_MES 01	12-05-2018	Perchlorate	0.050	ug/L	U	N	N	SW-846:6850
RLWTF-19-164498	RLWTF_MES 01	12-05-2018	Total Dissolved Solids	103	mg/L		Y	N	EPA:160.1
RLWTF-19-164498	RLWTF_MES 01	12-05-2018	Total Kjeldahl Nitrogen	0.100	mg/L		Y	N	EPA:351.2

Table 5. Analytical Results from Quarterly Sampling RLWTF Treated Effluent Discharged to the MES, 4th Quarter 2018, Permit Condition No. 29.

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Lab Qualifier	Detected	Filtered	Sample Purpose	Lab Method	Method Category
NP051-18-163140	RLWTF_MES 01	10-03-2018	Sulfate	31.7	mg/L		Y	Y	REG	EPA:300.0	GEN CHEM
NP051-18-163140	RLWTF_MES 01	10-03-2018	Aluminum	19.3	ug/L	U	N	Y	REG	EPA:200.8	INORGANIC
NP051-18-163140	RLWTF_MES 01	10-03-2018	Arsenic	2.00	ug/L	U	N	Y	REG	EPA:200.8	INORGANIC
NP051-18-163140	RLWTF_MES 01	10-03-2018	Barium	0.798	ug/L	J	Y	Y	REG	EPA:200.8	INORGANIC
NP051-18-163140	RLWTF_MES 01	10-03-2018	Boron	37.2	ug/L	J	Y	Y	REG	EPA:200.7	INORGANIC
NP051-18-163140	RLWTF_MES 01	10-03-2018	Cadmium	0.300	ug/L	U	N	Y	REG	EPA:200.8	INORGANIC
NP051-18-163140	RLWTF_MES 01	10-03-2018	Chromium	3.00	ug/L	U	N	Y	REG	EPA:200.8	INORGANIC
NP051-18-163140	RLWTF_MES 01	10-03-2018	Cobalt	0.300	ug/L	U	N	Y	REG	EPA:200.8	INORGANIC
NP051-18-163140	RLWTF_MES 01	10-03-2018	Copper	5.64	ug/L		Y	Y	REG	EPA:200.8	INORGANIC
NP051-18-163140	RLWTF_MES 01	10-03-2018	Cyanide (Total)	0.00167	mg/L	U	N	Y	REG	EPA:335.4	INORGANIC
NP051-18-163140	RLWTF_MES 01	10-03-2018	Iron	60.4	ug/L	J	Y	Y	REG	EPA:200.7	INORGANIC
NP051-18-163140	RLWTF_MES 01	10-03-2018	Lead	0.500	ug/L	U	N	Y	REG	EPA:200.8	INORGANIC
NP051-18-163140	RLWTF_MES 01	10-03-2018	Manganese	14	ug/L		Y	Y	REG	EPA:200.7	INORGANIC
NP051-18-163140	RLWTF_MES 01	10-03-2018	Mercury	0.067	ug/L	U	N	Y	REG	EPA:245.2	INORGANIC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Mercury	0.067	ug/L	U	N	N	REG	EPA:245.2	INORGANIC
NP051-18-163140	RLWTF_MES 01	10-03-2018	Molybdenum	1.6	ug/L		Y	Y	REG	EPA:200.8	INORGANIC
NP051-18-163140	RLWTF_MES 01	10-03-2018	Nickel	7.18	ug/L		Y	Y	REG	EPA:200.8	INORGANIC
NP051-18-163140	RLWTF_MES 01	10-03-2018	Selenium	2.00	ug/L	U	N	Y	REG	EPA:200.8	INORGANIC
NP051-18-163140	RLWTF_MES 01	10-03-2018	Silver	0.300	ug/L	U	N	Y	REG	EPA:200.8	INORGANIC
NP051-18-163140	RLWTF_MES 01	10-03-2018	Uranium	0.521	ug/L		Y	Y	REG	EPA:200.8	INORGANIC
NP051-18-163140	RLWTF_MES 01	10-03-2018	Zinc	3.45	ug/L	J	Y	Y	REG	EPA:200.7	INORGANIC
NP051-18-163140	RLWTF_MES 01	10-03-2018	Radium-226	0.993	pCi/L		Y	Y	REG	EPA:903.1	RAD
NP051-18-163140	RLWTF_MES 01	10-03-2018	Radium-228	0.363	pCi/L	U	N	Y	REG	EPA:904	RAD
Field Measurement	RLWTF_MES 01	10-03-2018	pH	6.100	su			N		Field	
NP051-18-163141	RLWTF_MES 01	10-03-2018	HMX	0.0909	ug/L	U	N	N	REG	SW-846:8330B	LCMS/MS HE
NP051-18-163141	RLWTF_MES 01	10-03-2018	RDX	0.0909	ug/L	U	N	N	REG	SW-846:8330B	LCMS/MS HE
NP051-18-163141	RLWTF_MES 01	10-03-2018	Trinitrotoluene[2,4,6-]	0.0909	ug/L	U	N	N	REG	SW-846:8330B	LCMS/MS HE
NP051-18-163141	RLWTF_MES 01	10-03-2018	Aldrin	0.00792	ug/L	U	N	N	REG	SW-846:8081B	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	Aroclor-1016	0.0374	ug/L	U	N	N	REG	SW-846:8082	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	Aroclor-1221	0.0374	ug/L	U	N	N	REG	SW-846:8082	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	Aroclor-1232	0.0374	ug/L	U	N	N	REG	SW-846:8082	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	Aroclor-1242	0.0374	ug/L	U	N	N	REG	SW-846:8082	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	Aroclor-1248	0.0374	ug/L	U	N	N	REG	SW-846:8082	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	Aroclor-1254	0.0374	ug/L	U	N	N	REG	SW-846:8082	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	Aroclor-1260	0.0374	ug/L	U	N	N	REG	SW-846:8082	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	BHC[alpha-]	0.00792	ug/L	U	N	N	REG	SW-846:8081B	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	BHC[beta-]	0.00792	ug/L	U	N	N	REG	SW-846:8081B	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	BHC[gamma-]	0.00792	ug/L	U	N	N	REG	SW-846:8081B	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	Chlordane(alpha/gamma)	0.0911	ug/L	U	N	N	REG	SW-846:8081B	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	Chlordane[alpha-]	0.00792	ug/L	U	N	N	REG	SW-846:8081B	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	Chlordane[gamma-]	0.00792	ug/L	U	N	N	REG	SW-846:8081B	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	DDT[4,4'-]	0.0119	ug/L	U	N	N	REG	SW-846:8081B	PESTPCB

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Table 5. Analytical Results from Quarterly Sampling RLWTF Treated Effluent Discharged to the MES, 4th Quarter 2018, Permit Condition No. 29.

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Lab Qualifier	Detected	Filtered	Sample Purpose	Lab Method	Method Category
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dieldrin	0.0119	ug/L	U	N	N	REG	SW-846:8081B	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	Endosulfan I	0.00792	ug/L	U	N	N	REG	SW-846:8081B	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	Endosulfan II	0.0119	ug/L	U	N	N	REG	SW-846:8081B	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	Endrin	0.0119	ug/L	U	N	N	REG	SW-846:8081B	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	Heptachlor	0.00792	ug/L	U	N	N	REG	SW-846:8081B	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	Toxaphene (Technical Grade)	0.179	ug/L	U	N	N	REG	SW-846:8081B	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	Anthracene	0.300	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Azobenzene	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Benzidine	3.90	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Benzo(a)pyrene	0.300	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Benzo(b)fluoranthene	0.300	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Benzo(k)fluoranthene	0.300	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Bis(2-chloroethyl)ether	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Bis(2-ethylhexyl)phthalate	0.300	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dichlorobenzidine[3,3'-]	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dichlorophenol[2,4-]	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Diethylphthalate	0.38	ug/L	BJ	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dimethyl Phthalate	0.300	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Di-n-butylphthalate	0.300	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dinitro-2-methylphenol[4,6-]	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dinitrophenol[2,4-]	5.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dinitrotoluene[2,4-]	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dinitrotoluene[2,6-]	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Diphenylamine	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Fluoranthene	0.300	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Fluorene	0.300	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Hexachlorobenzene	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Hexachlorobutadiene	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Hexachlorocyclopentadiene	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Hexachloroethane	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Isophorone	3.50	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Methylnaphthalene[1-]	0.300	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Methylnaphthalene[2-]	0.300	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Naphthalene	0.300	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Nitrobenzene	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Nitrosodiethylamine[N-]	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Nitrosodimethylamine[N-]	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Nitroso-di-n-butylamine[N-]	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Nitrosopyrrolidine[N-]	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Oxybis(1-chloropropane)[2,2'-]	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Pentachlorobenzene	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Pentachlorophenol	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC

Table 5. Analytical Results from Quarterly Sampling RLWTF Treated Effluent Discharged to the MES, 4th Quarter 2018, Permit Condition No. 29.

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Lab Qualifier	Detected	Filtered	Sample Purpose	Lab Method	Method Category
NP051-18-163141	RLWTF_MES 01	10-03-2018	Phenanthrene	0.300	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Phenol	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Pyrene	0.300	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Tetrachlorobenzene[1,2,4,5]	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Total PAHs	0.0	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Trichlorophenol[2,4,5-]	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Trichlorophenol[2,4,6-]	3.00	ug/L	U	N	N	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Benzene	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Bromodichloromethane	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Bromoform	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Bromomethane	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Carbon Tetrachloride	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Chlorobenzene	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Chloroform	1.29	ug/L		Y	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Chloromethane	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dibromoethane[1,2-]	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dichlorobenzene[1,4-]	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dichlorodifluoromethane	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dichloroethane[1,1-]	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dichloroethane[1,2-]	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dichloroethene[1,1-]	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dichloroethene[cis-1,2-]	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dichloroethene[trans-1,2-]	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dichloropropene[cis/trans-1,3-]	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Ethylbenzene	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Methyl tert-Butyl Ether	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Methylene Chloride	1.00	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Tetrachloroethane[1,1,2,2-]	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Tetrachloroethene	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Toluene	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Trichloroethane[1,1,1-]	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Trichloroethane[1,1,2-]	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Trichloroethene	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Trichlorofluoromethane	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Vinyl Chloride	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Xylene (Total)	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Xylene[1,2-]	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Xylene[1,3-]+Xylene[1,4-]	0.300	ug/L	U	N	N	REG	SW-846:8260B	VOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Anthracene	0.353	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Azobenzene	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Benzidine	4.59	ug/L	U	N	N	FD	SW-846:8270D	SVOC

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Table 5. Analytical Results from Quarterly Sampling RLWTF Treated Effluent Discharged to the MES, 4th Quarter 2018, Permit Condition No. 29.

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Lab Qualifier	Detected	Filtered	Sample Purpose	Lab Method	Method Category
NP051-18-163142	RLWTF_MES 01	10-03-2018	Benzo(a)pyrene	0.353	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Benzo(b)fluoranthene	0.353	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Benzo(k)fluoranthene	0.353	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Bis(2-chloroethyl)ether	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Bis(2-ethylhexyl)phthalate	0.353	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Dichlorobenzidine[3,3'-]	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Dichlorophenol[2,4-]	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Diethylphthalate	0.353	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Dimethyl Phthalate	0.353	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Di-n-butylphthalate	0.353	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Dinitro-2-methylphenol[4,6-]	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Dinitrophenol[2,4-]	5.88	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Dinitrotoluene[2,4-]	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Dinitrotoluene[2,6-]	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Diphenylamine	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Fluoranthene	0.353	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Fluorene	0.353	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Hexachlorobenzene	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Hexachlorobutadiene	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Hexachlorocyclopentadiene	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Hexachloroethane	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Isophorone	4.12	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Methylnaphthalene[1-]	0.353	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Methylnaphthalene[2-]	0.353	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Naphthalene	0.353	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Nitrobenzene	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Nitrosodiethylamine[N-]	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Nitrosodimethylamine[N-]	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Nitroso-di-n-butylamine[N-]	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Nitrosopyrrolidine[N-]	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Oxybis(1-chloropropane)[2,2'-]	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Pentachlorobenzene	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Pentachlorophenol	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Phenanthrene	0.353	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Phenol	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Pyrene	0.353	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Tetrachlorobenzene[1,2,4,5]	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Total PAHs	0.0	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Trichlorophenol[2,4,5-]	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Trichlorophenol[2,4,6-]	3.53	ug/L	U	N	N	FD	SW-846:8270D	SVOC

Sample Purpose Notes:

REG means regular field sample

FD means field duplicate sample

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ATTACHMENT 10

MCOI-6 quarterly and annual
ground water monitoring report

EPC-DO: 19-018

LA-UR-19-20526

Date: JAN 3 1 2019

Table 1. Analytical Results from Quarterly Groundwater Sampling at Perched/Intermediate Ground Water Well MCOI-6, November 8, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method
CAMO-19-163970	MCOI-6	11-08-2018	Chloride	54.4	mg/L	Y		UF	REG	EPA:300.0
CAMO-19-163970	MCOI-6	11-08-2018	Fluoride	0.438	mg/L	Y		UF	REG	EPA:300.0
CAMO-19-163970	MCOI-6	11-08-2018	Nitrate-Nitrite as Nitrogen	11.2	mg/L	Y		UF	REG	EPA:353.2
CAMO-19-163970	MCOI-6	11-08-2018	Total Dissolved Solids	350	mg/L	Y		UF	REG	EPA:160.1
CAMO-19-163971	MCOI-6	11-08-2018	Total Kjeldahl Nitrogen	0.146	mg/L	Y		F	REG	EPA:351.2
CAMO-19-163970	MCOI-6	11-08-2018	Perchlorate	124	ug/L	Y		Y	REG	SW-846:6850

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Table 2. Analytical Results from Annual Groundwater Sampling at Perched/Intermediate Ground Water Well MCOI-6, November 8, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-163970	MCOI-6	11-08-2018	Aluminum	68.0	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-163970	MCOI-6	11-08-2018	Arsenic	2.36	ug/L	Y	J	F	REG	SW-846:6020	METALS
CAMO-19-163970	MCOI-6	11-08-2018	Barium	38.2	ug/L	Y		F	REG	SW-846:6010C	METALS
CAMO-19-163970	MCOI-6	11-08-2018	Boron	53.8	ug/L	Y		F	REG	SW-846:6010C	METALS
CAMO-19-163970	MCOI-6	11-08-2018	Cadmium	0.300	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-163970	MCOI-6	11-08-2018	Chromium	68.2	ug/L	Y		F	REG	SW-846:6020	METALS
CAMO-19-163970	MCOI-6	11-08-2018	Cobalt	1.00	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-163970	MCOI-6	11-08-2018	Copper	3.88	ug/L	Y	J	F	REG	SW-846:6010C	METALS
CAMO-19-163971	MCOI-6	11-08-2018	Cyanide (Total)	0.00235	mg/L	Y	J	UF	REG	EPA:335.4	METALS
CAMO-19-163970	MCOI-6	11-08-2018	Iron	30.0	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-163970	MCOI-6	11-08-2018	Lead	0.500	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-163970	MCOI-6	11-08-2018	Manganese	2.07	ug/L	Y	J	F	REG	SW-846:6010C	METALS
CAMO-19-163970	MCOI-6	11-08-2018	Mercury	0.067	ug/L	N	U	F	REG	EPA:245.2	METALS
CAMO-19-163971	MCOI-6	11-08-2018	Mercury	0.067	ug/L	N	U	UF	REG	EPA:245.2	METALS
CAMO-19-163970	MCOI-6	11-08-2018	Molybdenum	2.13	ug/L	Y		F	REG	SW-846:6020	METALS
CAMO-19-163970	MCOI-6	11-08-2018	Nickel	21.1	ug/L	Y		F	REG	SW-846:6020	METALS
CAMO-19-163970	MCOI-6	11-08-2018	Selenium	2.00	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-163970	MCOI-6	11-08-2018	Silver	0.300	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-163970	MCOI-6	11-08-2018	Uranium	0.802	ug/L	Y		F	REG	SW-846:6020	METALS
CAMO-19-163970	MCOI-6	11-08-2018	Zinc	27	ug/L	Y		F	REG	SW-846:6010C	METALS
CAMO-19-163970	MCOI-6	11-08-2018	Sulfate	53.6	mg/L	Y		UF	REG	EPA:300.0	GEN_CHEM
Field Measurement	MCOI-6	11-08-2018	pH	7.19	su			UF	REG	Field	
CAMO-19-163970	MCOI-6	11-08-2018	Perchlorate	124	ug/L	Y		Y	REG	SW-846:6850	LCMS/MS
CAMO-19-164107	MCOI-6	11-08-2018	Radium-226	4.73	pCi/L	Y		F	REG	EPA:903.1	RAD
CAMO-19-164107	MCOI-6	11-08-2018	Radium-228	0.545	pCi/L	N	U	F	REG	EPA:904	RAD
CAMO-19-164108	MCOI-6	11-08-2018	Aldrin	0.007	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164108	MCOI-6	11-08-2018	Aroclor-1016	0.0351	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164108	MCOI-6	11-08-2018	Aroclor-1221	0.0351	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164108	MCOI-6	11-08-2018	Aroclor-1232	0.0351	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164108	MCOI-6	11-08-2018	Aroclor-1242	0.0351	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164108	MCOI-6	11-08-2018	Aroclor-1248	0.0351	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164108	MCOI-6	11-08-2018	Aroclor-1254	0.0351	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164108	MCOI-6	11-08-2018	Aroclor-1260	0.0351	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164108	MCOI-6	11-08-2018	BHC[alpha-]	0.007	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164108	MCOI-6	11-08-2018	BHC[beta-]	0.007	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164108	MCOI-6	11-08-2018	BHC[gamma-]	0.007	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164108	MCOI-6	11-08-2018	Chlordane(alpha/gamma)	0.0805	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164108	MCOI-6	11-08-2018	Chlordane[alpha-]	0.007	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB

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Table 2. Analytical Results from Annual Groundwater Sampling at Perched/Intermediate Ground Water Well MCOI-6, November 8, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164108	MCOI-6	11-08-2018	Chlordane[gamma-]	0.007	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164108	MCOI-6	11-08-2018	DDT[4,4'-]	0.0105	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164108	MCOI-6	11-08-2018	Dieldrin	0.0105	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164108	MCOI-6	11-08-2018	Endosulfan I	0.007	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164108	MCOI-6	11-08-2018	Endosulfan II	0.0105	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164108	MCOI-6	11-08-2018	Endrin	0.0105	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164108	MCOI-6	11-08-2018	Heptachlor	0.007	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164108	MCOI-6	11-08-2018	Toxaphene (Technical Grade)	0.158	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-163971	MCOI-6	11-08-2018	Acenaphthene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Acenaphthylene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Aniline	4.38	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Anthracene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Atrazine	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Azobenzene	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Benzidine	4.06	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Benzo(a)anthracene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Benzo(a)pyrene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Benzo(b)fluoranthene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Benzo(g,h,i)perylene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Benzo(k)fluoranthene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Benzoic Acid	6.25	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Benzyl Alcohol	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Bis(2-chloroethoxy)methane	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Bis(2-chloroethyl)ether	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Bis(2-ethylhexyl)phthalate	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Bromophenyl-phenylether[4-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Butylbenzylphthalate	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Chloro-3-methylphenol[4-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Chloroaniline[4-]	3.44	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Chloronaphthalene[2-]	0.427	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Chlorophenol[2-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Chlorophenyl-phenyl[4-] Ether	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Chrysene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Dibenz(a,h)anthracene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Dibenzofuran	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Dichlorobenzene[1,2-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Dichlorobenzene[1,3-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Dichlorobenzene[1,4-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Dichlorobenzidine[3,3'-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Dichlorophenol[2,4-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC

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Table 2. Analytical Results from Annual Groundwater Sampling at Perched/Intermediate Ground Water Well MCOI-6, November 8, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-163971	MCOI-6	11-08-2018	Diethylphthalate	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Dimethyl Phthalate	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Dimethylphenol[2,4-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Di-n-butylphthalate	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Dinitro-2-methylphenol[4,6-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Dinitrophenol[2,4-]	5.21	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Dinitrotoluene[2,4-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Dinitrotoluene[2,6-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Di-n-octylphthalate	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Dinoseb	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Dioxane[1,4-]	12.9	ug/L	Y		UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Diphenylamine	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Fluoranthene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Fluorene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Hexachlorobenzene	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Hexachlorobutadiene	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Hexachlorocyclopentadiene	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Hexachloroethane	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Indeno(1,2,3-cd)pyrene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Isophorone	3.65	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Methylnaphthalene[1-]	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Methylnaphthalene[2-]	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Methylphenol[2-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Methylphenol[3-,4-]	3.85	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Naphthalene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Nitroaniline[2-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Nitroaniline[3-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Nitroaniline[4-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Nitrobenzene	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Nitrophenol[2-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Nitrophenol[4-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Nitrosodiethylamine[N-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Nitrosodimethylamine[N-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Nitroso-di-n-butylamine[N-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Nitroso-di-n-propylamine[N-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Nitrosopyrrolidine[N-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Oxybis(1-chloropropane)[2,2'-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Pentachlorobenzene	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Pentachlorophenol	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Phenanthrene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Phenol	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC

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Table 2. Analytical Results from Annual Groundwater Sampling at Perched/Intermediate Ground Water Well MCOI-6, November 8, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-163971	MCOI-6	11-08-2018	Pyrene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Pyridine	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Tetrachlorobenzene[1,2,4,5]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Tetrachlorophenol[2,3,4,6-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Trichlorobenzene[1,2,4-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Trichlorophenol[2,4,5-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Trichlorophenol[2,4,6-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-163971	MCOI-6	11-08-2018	Acetone	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Acetonitrile	8.00	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Acrolein	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Acrylonitrile	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Benzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Bromobenzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Bromochloromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Bromodichloromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Bromoform	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Bromomethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Butanol[1-]	15.0	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Butanone[2-]	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Butylbenzene[n-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Butylbenzene[sec-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Butylbenzene[tert-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Carbon Disulfide	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Carbon Tetrachloride	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Chloro-1,3-butadiene[2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Chloro-1-propene[3-]	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Chlorobenzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Chlorodibromomethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Chloroethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Chloroform	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Chloromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Chlorotoluene[2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Chlorotoluene[4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Dibromo-3-Chloropropane[1,2-]	0.500	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Dibromoethane[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Dibromomethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Dichlorobenzene[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Dichlorobenzene[1,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Dichlorobenzene[1,4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Dichlorodifluoromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC

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Table 2. Analytical Results from Annual Groundwater Sampling at Perched/Intermediate Ground Water Well MCOI-6, November 8, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-163971	MCOI-6	11-08-2018	Dichloroethane[1,1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Dichloroethane[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Dichloroethene[1,1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Dichloroethene[cis-1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Dichloroethene[trans-1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Dichloropropane[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Dichloropropane[1,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Dichloropropane[2,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Dichloropropene[1,1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Dichloropropene[cis-1,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Dichloropropene[trans-1,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Diethyl Ether	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Ethyl Methacrylate	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Ethylbenzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Hexachlorobutadiene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Hexanone[2-]	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Iodomethane	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Isobutyl alcohol	15.0	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Isopropylbenzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Isopropyltoluene[4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Methacrylonitrile	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Methyl Methacrylate	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Methyl tert-Butyl Ether	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Methyl-2-pentanone[4-]	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Methylene Chloride	1.00	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Naphthalene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Propionitrile	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Propylbenzene[1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Styrene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Tetrachloroethane[1,1,1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Tetrachloroethane[1,1,2,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Tetrachloroethene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Toluene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Trichloro-1,2,2-trifluoroethane[1,1,2-]	2.00	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Trichlorobenzene[1,2,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Trichlorobenzene[1,2,4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Trichloroethane[1,1,1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Trichloroethane[1,1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Trichloroethene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Trichlorofluoromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Trichloropropane[1,2,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC

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Table 2. Analytical Results from Annual Groundwater Sampling at Perched/Intermediate Ground Water Well MCOI-6, November 8, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-163971	MCOI-6	11-08-2018	Trimethylbenzene[1,2,4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Trimethylbenzene[1,3,5-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Vinyl acetate	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Vinyl Chloride	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Xylene[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-163971	MCOI-6	11-08-2018	Xylene[1,3-]+Xylene[1,4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164108	MCOI-6	11-08-2018	HMX	0.0833	ug/L	N	U	UF	REG	SW-846:8330B	LCMS/MS HE
CAMO-19-164108	MCOI-6	11-08-2018	RDX	0.0833	ug/L	N	U	UF	REG	SW-846:8330B	LCMS/MS HE
CAMO-19-164108	MCOI-6	11-08-2018	Trinitrotoluene[2,4,6-]	0.0833	ug/L	N	U	UF	REG	SW-846:8330B	LCMS/MS HE

SAMPLE PURPOSE KEY

REG means regular field sample

FD means field duplicate sample

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DP-1132, Condition No. 36, Groundwater Monitoring Report, MCOI-6, November 8, 2018.

a	Sample Date	11/8/2018
b	Sample Time	1252
c	Individuals collecting sample.	Stocker & Jaramillo (TPMC)
d	Monitoring well identification.	MCOI-6
e	Physical description of monitoring well location.	See Location Map, Attachment 15
f	Ground-water surface elevation. (ft below mean sea level (msl))	6145.5
g	Total depth of the well (ft below ground surface (bgs))	712.6
h	Total volume of water in the monitoring well prior to sample collection. (gal)	29.9
i	Total volume of water purged prior to sample collection (gal).	117
j	Physical parameters including temperature, conductivity, pH, oxidation/reduction potential.	DO (mg/L):7.48 Oxidation/Reduction Potential (MV): 327.5 Temp (deg C): 15.5 pH (SU): 7.19 Turbidity (NTU): 0.58 Specific Conductance (µS/cm): 556
k	Description of sample methods	See Attached Chain-of-Custody
l	Chain-of custody.	Attached
m	Location Map	Attachment 15

LANL SMO
Los Alamos NM

MCOI-6

Chain of Custody/Analysis Request

COC/Lab Request #: 2019-424
Page 1 of 1

Client Contact:

Lab Agreement #:

Project Number:

Site Name: N3B LANL

Analysis Turnaround Time:
24 Hour - ☐ Other - ☒
7 Days - ☐
14 Days - ☐
21 Days - ☐
28 Days - ☐

Rad Screening Info:

Lab Reporting Limit Type: Method Detection Limit

Field Sample ID	Sample Date	Sample Time	Sample Matrix	MSGP-Hg	WSP-8260B-VOA	WSP-8270C-SVOA	WSP-All Metals	WSP-CN(T)	WSP-GENINORG+PerChlorate	WSP-GrossA/B	WSP-H-3	WSP-N15/O18-NO3	WSP-NH3+NO3/NO2+PO4	WSP-RAD	WSP-TKN+TOC
CAMO-19-163970	Nov 8 2018	12:52	W				1		1			2	1		
CAMO-19-163971	Nov 8 2018	12:52	W	1	2	2		1		1	1			1	1
CAMO-19-163972	Nov 8 2018	12:52	W		2	2									
CAMO-19-163973	Nov 8 2018	12:52	W		1										

Special Instructions:

Relinquished by:	Print Name: Allisyn Stanfield	Date/Time: 11/8/18 1630	Received by:	Print Name:	Date/Time:
Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:
Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164108

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	11/8/2018	OK	**FIELD MATRIX:**	WG	OK
TIME COLLECTED (HH:MM):	1252		**MEDIA:**	OK	
PRS ID:	OK		**SAMPLE TECH CODE:**	~~RSP~~ GSP	
LOCATION ID:	MCOI-6		**FIELD PREP:**	UF	
LOCATION TYPE:	OK		**FIELD QC TYPE:**	REG	
TOP DEPTH:			**SAMPLE USAGE:**	INV	
BOTTOM DEPTH:			**EXCAVATED:**		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	DP-8082	1 LITER GLASS	3	ICE	Y	NA
	DP-TP-8081	1 LITER GLASS	3	ICE		
	DP-TP-8330	1 LITER AMBER GLASS	3	ICE		

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Sample Time	1252	HH:MM	Casing Volume	NA	UNITLESS	Discharge Rate	1.30	gal/min
Dissolved Oxygen	7.48	mg/L	Flow (in gpm)	1.30	GPM	Groundwater Elevation	NC	ft
Oxidation-Reduction Potential	327.5	MV	Period Purge Volume	NA	gal	pH	7.19	SU
Purge Volume	117	gal	Specific Conductance	556	uS/cm	Temperature	13.5	deg C
Total Volume Pumped	165.1	gal	Turbidity	0.58	NTU			

COLLECTED BY (PRINT): A. Stocker & D. Jaramillo

RELINQUISHED BY Tanner Benham **(Printed Name)** **(Signature)**	**Date/Time** 11/16/2018 1600	**RECEIVED BY** S. Sherwood **(Printed Name)** S. Sherwood **(Signature)**	**Date/Time** 11/8/18 1600
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164107

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	11/8/2018	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1252		MEDIA:	OK	
PRS ID:	OK		SAMPLE TECH CODE:	11/8/18 TB RSP GSP	
LOCATION ID:	MCOI-6		FIELD PREP:	F	
LOCATION TYPE:	OK		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	DP-Ra226+228	1 LITER POLY	4	HNO3		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time		HH:MM	Casing Volume		UNITLESS	Discharge Rate		gal/min
Dissolved Oxygen		mg/L	Flow (in gpm)		GPM	Groundwater Elevation		ft
Oxidation-Reduction Potential		MV	Period Purge Volume		gal	pH		SU
Purge Volume		gal	Specific Conductance		uS/cm	Temperature		deg C
Total Volume Pumped		gal	Turbidity		NTU			

11-8-2018 TB

COLLECTED BY (PRINT): A. Stocker & D. Scramillo

RELINQUISHED BY (Printed Name) Tanner Bonham (Signature)	Date/Time 11/8/2018 1600	RECEIVED BY (Printed Name) D. Sherwood (Signature) D. Sherwood	Date/Time 11/8/18 1600
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164494

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	11/8/2018	OK	**FIELD MATRIX:**	WG	OK
TIME COLLECTED (HH:MM):	1252		**MEDIA:**	OK	
PRS ID:	OK		**SAMPLE TECH CODE:**	11/8/18 TB RSP DC	
LOCATION ID:	MCOI-6		**FIELD PREP:**	UF	
LOCATION TYPE:	OK		**FIELD QC TYPE:**	FB	
TOP DEPTH:			**SAMPLE USAGE:**	QC	
BOTTOM DEPTH:			**EXCAVATED:**		YES / (NO) / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	DP-8082	1 LITER GLASS	3	ICE	Y	NA
↓	DP-TP-8081	1 LITER GLASS	3	ICE	↓	↓

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time		HH:MM	Casing Volume		UNITLESS	Discharge Rate		gal/min
Dissolved Oxygen		mg/L	Flow (in gpm)		GPM	Groundwater Elevation		ft
Oxidation-Reduction Potential		MV	Period Purge Volume		gal	pH		SU
Purge Volume		gal	Specific Conductance		uS/cm	Temperature		deg C
Total Volume Pumped		gal	Turbidity		NTU			

11-8-2018 TB

COLLECTED BY (PRINT): A. Stocker

RELINQUISHED BY (Printed Name) Tanner Bonham **(Signature)**	**Date/Time** 11/8/2018 1600	**RECEIVED BY (Printed Name)** S. Sherwood **(Signature)**	**Date/Time** 11/8/18 1600
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

ATTACHMENT 11

R-1 annual ground water monitoring report

EPC-DO: 19-018

LA-UR-19-20526

Date: JAN 3 1 2019

Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-1, November 8, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-163974	R-1	11-08-2018	Ammonia as Nitrogen	0.0361	mg/L	Y	J	F	REG	EPA:350.1	GEN_CHEM
CAMO-19-163974	R-1	11-08-2018	Chloride	1.88	mg/L	Y		F	REG	EPA:300.0	GEN_CHEM
CAMO-19-163975	R-1	11-08-2018	Cyanide (Total)	0.00167	mg/L	N	U	UF	REG	EPA:335.4	GEN_CHEM
CAMO-19-163974	R-1	11-08-2018	Fluoride	0.129	mg/L	Y		F	REG	EPA:300.0	GEN_CHEM
CAMO-19-163974	R-1	11-08-2018	Nitrate-Nitrite as Nitrogen	0.359	mg/L	Y		F	REG	EPA:353.2	GEN_CHEM
CAMO-19-163974	R-1	11-08-2018	Sulfate	2.31	mg/L	Y		F	REG	EPA:300.0	GEN_CHEM
CAMO-19-163974	R-1	11-08-2018	Total Dissolved Solids	123	mg/L	Y		F	REG	EPA:160.1	GEN_CHEM
CAMO-19-163975	R-1	11-08-2018	Total Kjeldahl Nitrogen	0.0455	mg/L	Y	J	UF	REG	EPA:351.2	GEN_CHEM
CAMO-19-163974	R-1	11-08-2018	Aluminum	68.0	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-163974	R-1	11-08-2018	Arsenic	2.28	ug/L	Y	J	F	REG	SW-846:6020	METALS
CAMO-19-163974	R-1	11-08-2018	Barium	13.9	ug/L	Y		F	REG	SW-846:6010C	METALS
CAMO-19-163974	R-1	11-08-2018	Beryllium	1.00	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-163974	R-1	11-08-2018	Boron	15.0	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-163974	R-1	11-08-2018	Cadmium	0.300	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-163974	R-1	11-08-2018	Chromium	5.75	ug/L	Y	J	F	REG	SW-846:6020	METALS
CAMO-19-163974	R-1	11-08-2018	Cobalt	1.00	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-163974	R-1	11-08-2018	Copper	3.00	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-163974	R-1	11-08-2018	Iron	30.0	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-163974	R-1	11-08-2018	Lead	0.500	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-163974	R-1	11-08-2018	Manganese	2.00	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-163975	R-1	11-08-2018	Mercury	0.067	ug/L	N	U	UF	REG	EPA:245.2	METALS
CAMO-19-163974	R-1	11-08-2018	Mercury	0.067	ug/L	N	U	F	REG	EPA:245.2	METALS
CAMO-19-163974	R-1	11-08-2018	Molybdenum	1.11	ug/L	Y		F	REG	SW-846:6020	METALS
CAMO-19-163974	R-1	11-08-2018	Nickel	2.77	ug/L	Y		F	REG	SW-846:6020	METALS
CAMO-19-163974	R-1	11-08-2018	Selenium	2.00	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-163974	R-1	11-08-2018	Silver	0.300	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-163974	R-1	11-08-2018	Uranium	0.764	ug/L	Y		F	REG	SW-846:6020	METALS
CAMO-19-163974	R-1	11-08-2018	Zinc	4.17	ug/L	Y	J	F	REG	SW-846:6010C	METALS
Field Measurement	R-1	11-08-2018	pH	7.78	su			UF	REG	Field	
CAMO-19-163974	R-1	11-08-2018	Perchlorate	0.391	ug/L	Y		F	REG	SW-846:6850	LCMS/MS
CAMO-19-164109	R-1	11/08/2018	Radium-226	0.619	pCi/L	Y		F	REG	EPA:903.1	RAD
CAMO-19-164109	R-1	11/08/2018	Radium-228	0.753	pCi/L	N	U	F	REG	EPA:904	RAD
CAMO-19-164110	R-1	11/08/2018	Aldrin	0.007	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164110	R-1	11/08/2018	BHC[alpha-]	0.007	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164110	R-1	11/08/2018	BHC[beta-]	0.007	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164110	R-1	11/08/2018	BHC[gamma-]	0.007	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Chlordane(alpha/gamma)	0.0805	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB

Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-1, November 8, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164110	R-1	11/08/2018	Chlordane[alpha-]	0.007	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Chlordane[gamma-]	0.007	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164110	R-1	11/08/2018	DDT[4,4'-]	0.0105	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Dieldrin	0.0105	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Endosulfan I	0.007	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Endosulfan II	0.0105	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Endrin	0.0105	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Heptachlor	0.007	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Toxaphene (Technical Grade)	0.158	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Aroclor-1016	0.0358	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Aroclor-1221	0.0358	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Aroclor-1232	0.0358	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Aroclor-1242	0.0358	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Aroclor-1248	0.0358	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Aroclor-1254	0.0358	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Aroclor-1260	0.0358	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Benzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Bromodichloromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Bromoform	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Bromomethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Carbon Tetrachloride	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Chlorobenzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Chloroform	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Chloromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Dibromoethane[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Dibromomethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Dichlorobenzene[1,4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Dichlorodifluoromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Dichloroethane[1,1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Dichloroethane[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Dichloroethene[1,1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Dichloroethene[cis-1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Dichloroethene[trans-1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Dichloropropene[cis/trans-1,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Ethylbenzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Methyl tert-Butyl Ether	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Methylene Chloride	1.00	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Tetrachloroethane[1,1,2,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Tetrachloroethene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Toluene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC

14433

Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-1, November 8, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164110	R-1	11/08/2018	Trichloroethane[1,1,1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Trichloroethane[1,1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Trichloroethene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Trichlorofluoromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Vinyl Chloride	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Xylene (Total)	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Xylene[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Xylene[1,3-]+Xylene[1,4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Anthracene	0.319	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Azobenzene	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Benzidine	4.15	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Benzo(a)pyrene	0.319	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Benzo(b)fluoranthene	0.319	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Benzo(k)fluoranthene	0.319	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Bis(2-chloroethyl)ether	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Bis(2-ethylhexyl)phthalate	0.394	ug/L	Y	J	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Dichlorobenzidine[3,3'-]	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Dichlorophenol[2,4-]	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Diethylphthalate	0.319	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Dimethyl Phthalate	0.319	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Di-n-butylphthalate	0.319	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Dinitro-2-methylphenol[4,6-]	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Dinitrophenol[2,4-]	5.32	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Dinitrotoluene[2,4-]	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Dinitrotoluene[2,6-]	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Diphenylamine	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Fluoranthene	0.319	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Fluorene	0.319	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Hexachlorobenzene	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Hexachlorobutadiene	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Hexachlorocyclopentadiene	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Hexachloroethane	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Isophorone	3.72	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Methylnaphthalene[1-]	0.319	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Methylnaphthalene[2-]	0.319	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Naphthalene	0.319	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Nitrobenzene	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Nitrosodiethylamine[N-]	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Nitrosodimethylamine[N-]	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Nitroso-di-n-butylamine[N-]	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC

14434

Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-1, November 8, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164110	R-1	11/08/2018	Nitrosopyrrolidine[N-]	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Oxybis(1-chloropropane)[2,2'-]	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Pentachlorobenzene	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Pentachlorophenol	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Phenanthrene	0.319	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Phenol	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Pyrene	0.319	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Tetrachlorobenzene[1,2,4,5]	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Total PAHs	0.0	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Trichlorophenol[2,4,5-]	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Trichlorophenol[2,4,6-]	3.19	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	HMX	0.087	ug/L	N	U	UF	REG	SW-846:8330B	LCMS/MS HE
CAMO-19-164110	R-1	11/08/2018	RDX	0.087	ug/L	N	U	UF	REG	SW-846:8330B	LCMS/MS HE
CAMO-19-164110	R-1	11/08/2018	Trinitrotoluene[2,4,6-]	0.087	ug/L	N	U	UF	REG	SW-846:8330B	LCMS/MS HE

SAMPLE PURPOSE KEY

REG means regular field sample

FD means field duplicate sample

14435

DP-1132, Condition No. 36, Groundwater Monitoring Report, R-1, November 8, 2018.

a	Sample Date	11/8/2018
b	Sample Time	1454
c	Individuals collecting sample.	Stocker & Jaramillo (TPMC)
d	Monitoring well identification.	R-1
e	Physical description of monitoring well location.	See Location Map, Attachment 15
f	Ground-water surface elevation. (ft below mean sea level (msl))	5872.41
g	Total depth of the well (ft below ground surface (bgs))	1080.1
h	Total volume of water in the monitoring well prior to sample collection. (gal)	60.85
i	Total volume of water purged prior to sample collection (gal).	198
j	Physical parameters including temperature, conductivity, pH, oxidation/reduction potential.	DO (mg/L): 5.90 Oxidation/Reduction Potential (MV): 300.2 Temp (deg C): 20.8 pH (SU): 7.75 Turbidity (NTU): 0.53 Specific Conductance (µS/cm): 139.3
k	Description of sample methods	See Attached Chain-of-Custody
l	Chain-of custody.	Attached
m	Location Map	Attachment 15

LANL SMO
Los Alamos NM

R-1

Chain of Custody/Analysis Request

COC/Lab Request #: 2019-423
Page 1 of 1

Client Contact:

Lab Agreement #:

Project Number:

Site Name: N3B LANL

Analysis Turnaround Time:
24 Hour - ☐ Other - ☒
7 Days - ☐
14 Days - ☐
21 Days - ☐
28 Days - ☐

Rad Screening Info:

Lab Reporting Limit Type: Method Detection Limit

Field Sample ID	Sample Date	Sample Time	Sample Matrix	MSGP-Hg	WSP-All Metals	WSP-CN(T)	WSP-GENINORG+PerChlorate	WSP-LL-H-3	WSP-N15/O18-NO3	WSP-NH3+NO3/NO2+PO4	WSP-TKN+TOC
CAMO-19-163974	Nov 8 2018	14:54	W		1		1		2	1	
CAMO-19-163975	Nov 8 2018	14:54	W	1		1		1			1

Special Instructions:

Relinquished by:	Print Name: Allisyn Stanfield	Date/Time: 11/8/18 1630	Received by:	Print Name:	Date/Time: 11/8/18 1630
Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:
Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:

14437

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164110

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	11/8/2019	OK	**FIELD MATRIX:**	WG	OK
TIME COLLECTED (HH:MM):	1454		**MEDIA:**	OK	
PRS ID:	OK		**SAMPLE TECH CODE:**	GSP	
LOCATION ID:	R-1		**FIELD PREP:**	UF	
LOCATION TYPE:	OK		**FIELD QC TYPE:**	REG	
TOP DEPTH:			**SAMPLE USAGE:**	INV	
BOTTOM DEPTH:			**EXCAVATED:**		YES / (NO) / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	DP-8082	1 LITER GLASS	3	ICE	Y	NA
	DP-TP-8081	1 LITER GLASS	3	ICE		
	DP-TP-8260	40 ML SEPTUM GLASS	2	ICE		
	DP-TP-8270	1 LITER AMBER GLASS	2	ICE		
	DP-TP-8330	1 LITER AMBER GLASS	3	ICE		

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Sample Time	1454	HH:MM	Casing Volume	NA	UNITLESS	Discharge Rate	3.30	gal/min
Dissolved Oxygen	5.90	mg/L	Flow (in gpm)	3.30	GPM	Groundwater Elevation	5872.41	ft
Oxidation-Reduction Potential	300.2	MV	Period Purge Volume	NA	gal	pH	7.75	SU
Purge Volume	198	gal	Specific Conductance	139.3	uS/cm	Temperature	20.8	deg C
Total Volume Pumped	277.2	gal	Turbidity	0.53	NTU			

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164110

WORK ORDER:

COLLECTED BY (PRINT): A. Stocker & D. Saromillo

RELINQUISHED BY (Printed Name) Tanner Barham (Signature)	**Date/Time** 11/5/2018 1600	**RECEIVED BY** (Printed Name) S. Sherwood (Signature)	**Date/Time** 11/8/18 1606
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY** (Printed Name) (Signature)	**Date/Time**

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164109

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	11/6/2018	ditto	FIELD MATRIX:	WG	ditto
TIME COLLECTED (HH:MM):	1454		MEDIA:	ditto	
PRS ID:	ditto		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-1		FIELD PREP:	F	
LOCATION TYPE:	ditto		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	DP-Ra226+228	1 LITER POLY	4	HNO3	Y	NA

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time		HH:MM	Casing Volume		UNITLESS	Discharge Rate	gal/min
Dissolved Oxygen		mg/L	Flow (in gpm)		GPM	Groundwater Elevation	ft
Oxidation-Reduction Potential		MV	Period Purge Volume		gal	pH	SU
Purge Volume		gal	Specific Conductance		uS/cm	Temperature	deg C
Total Volume Pumped		gal	Turbidity		NTU		

11-6-2018

COLLECTED BY (PRINT): A. Stocker & D. Scramlin

RELINQUISHED BY (Printed Name) Tonia Barham **(Signature)**	**Date/Time** 11/8/2018 1600	**RECEIVED BY (Printed Name)** S. Sherwood **(Signature)** Sherwood	**Date/Time** 11/8/18 1600
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164164

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	11/8/2018	ditto	FIELD MATRIX:	WG	ditto
TIME COLLECTED (HH:MM):	1454		MEDIA:	ditto	
PRS ID:	ditto		SAMPLE TECH CODE:	DC	
LOCATION ID:	R-1		FIELD PREP:	UF	
LOCATION TYPE:	ditto		FIELD QC TYPE:	FTB	
TOP DEPTH:			SAMPLE USAGE:	QC	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	DP-TP-8260	40 ML SEPTUM AMBER GLASS	1/2	HCL	Y	NA

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time		HH:MM	Casing Volume		UNITLESS	Discharge Rate		gal/min
Dissolved Oxygen		mg/L	Flow (in gpm)		GPM	Groundwater Elevation		ft
Oxidation-Reduction Potential		MV	Period Purge Volume	11-8-2018	gal	pH		SU
Purge Volume		gal	Specific Conductance		uS/cm	Temperature		deg C
Total Volume Pumped		gal	Turbidity		NTU			

COLLECTED BY (PRINT): A. Stoder & D. Jaramillo

RELINQUISHED BY (Printed Name) Tanner Banham **(Signature)**	**Date/Time** 11/8/2018 1600	**RECEIVED BY (Printed Name)** S. Sherwood **(Signature)** Sherwood	**Date/Time** 11/8/18 1600
RELINQUISHED BY (Printed Name) **(Signature)**	**Date/Time**	**RECEIVED BY (Printed Name)** **(Signature)**	**Date/Time**

ATTACHMENT 12

R-14 S1 annual ground water monitoring report

EPC-DO: 19-018

LA-UR-19-20526

Date: JAN 3 1 2019

Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-14 S1 (screen 1), November 9, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164050	R-14 S1	11-09-2018	Ammonia as Nitrogen	0.017	mg/L	N	U	F	REG	EPA:350.1	GEN_CHEM
CAMO-19-164050	R-14 S1	11-09-2018	Chloride	1.67	mg/L	Y		F	REG	EPA:300.0	GEN_CHEM
CAMO-19-164050	R-14 S1	11-09-2018	Fluoride	0.127	mg/L	Y		F	REG	EPA:300.0	GEN_CHEM
CAMO-19-164050	R-14 S1	11-09-2018	Nitrate-Nitrite as Nitrogen	0.351	mg/L	Y		F	REG	EPA:353.2	GEN_CHEM
CAMO-19-164050	R-14 S1	11-09-2018	Sulfate	1.92	mg/L	Y		F	REG	EPA:300.0	GEN_CHEM
CAMO-19-164050	R-14 S1	11-09-2018	Total Dissolved Solids	137	mg/L	Y		F	REG	EPA:160.1	GEN_CHEM
CAMO-19-164051	R-14 S1	11-09-2018	Total Kjeldahl Nitrogen	0.033	mg/L	N	U	UF	REG	EPA:351.2	GEN_CHEM
CAMO-19-164050	R-14 S1	11-09-2018	Aluminum	68.0	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-164050	R-14 S1	11-09-2018	Arsenic	3.77	ug/L	Y	J	F	REG	SW-846:6020	METALS
CAMO-19-164050	R-14 S1	11-09-2018	Barium	24.5	ug/L	Y		F	REG	SW-846:6010C	METALS
CAMO-19-164050	R-14 S1	11-09-2018	Beryllium	1.00	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-164050	R-14 S1	11-09-2018	Boron	15.0	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-164050	R-14 S1	11-09-2018	Cadmium	0.300	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-164050	R-14 S1	11-09-2018	Chromium	15.0	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-164050	R-14 S1	11-09-2018	Cobalt	1.00	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-164050	R-14 S1	11-09-2018	Copper	3.00	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-164051	R-14 S1	11-09-2018	Cyanide (Total)	0.00167	mg/L	N	U	UF	REG	EPA:335.4	METALS
CAMO-19-164050	R-14 S1	11-09-2018	Iron	30.0	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-164050	R-14 S1	11-09-2018	Lead	0.500	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-164050	R-14 S1	11-09-2018	Manganese	2.00	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-164050	R-14 S1	11-09-2018	Mercury	0.067	ug/L	N	U	F	REG	EPA:245.2	METALS
CAMO-19-164051	R-14 S1	11-09-2018	Mercury	0.067	ug/L	N	U	UF	REG	EPA:245.2	METALS
CAMO-19-164050	R-14 S1	11-09-2018	Molybdenum	1.15	ug/L	Y		F	REG	SW-846:6020	METALS
CAMO-19-164050	R-14 S1	11-09-2018	Nickel	3.00	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-164050	R-14 S1	11-09-2018	Selenium	2.00	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-164050	R-14 S1	11-09-2018	Silver	0.300	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-164050	R-14 S1	11-09-2018	Uranium	0.644	ug/L	Y		F	REG	SW-846:6020	METALS
CAMO-19-164050	R-14 S1	11-09-2018	Zinc	3.30	ug/L	N	U	F	REG	SW-846:6010C	METALS
Field Measurement	R-14 S1	11-09-2018	pH	8.19	su			UF	REG	Field	
CAMO-19-164050	R-14 S1	11-09-2018	Perchlorate	0.348	ug/L	Y		F	REG	SW-846:6850	GEN_CHEM
CAMO-19-164168	R-14 S1	11-09-2018	Radium-226	0.366	pCi/L	N	U	F	REG	EPA:903.1	RAD
CAMO-19-164168	R-14 S1	11-09-2018	Radium-228	0.493	pCi/L	N	U	F	REG	EPA:904	RAD
CAMO-19-164159	R-14 S1	11-09-2018	Aldrin	0.00679	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164051	R-14 S1	11-09-2018	Aroclor-1016	0.0354	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164051	R-14 S1	11-09-2018	Aroclor-1221	0.0354	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164051	R-14 S1	11-09-2018	Aroclor-1232	0.0354	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164051	R-14 S1	11-09-2018	Aroclor-1242	0.0354	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB

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Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-14 S1 (screen 1), November 9, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164051	R-14 S1	11-09-2018	Aroclor-1248	0.0354	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164051	R-14 S1	11-09-2018	Aroclor-1254	0.0354	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164051	R-14 S1	11-09-2018	Aroclor-1260	0.0354	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164051	R-14 S1	11-09-2018	Aroclor-1262	0.0354	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	BHC[alpha-]	0.00679	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	BHC[beta-]	0.00679	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	BHC[gamma-]	0.00679	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	Chlordane(alpha/gamma)	0.0781	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	Chlordane[alpha-]	0.00679	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	Chlordane[gamma-]	0.00679	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	DDT[4,4'-]	0.0102	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	Dieldrin	0.0102	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	Endosulfan I	0.00679	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	Endosulfan II	0.0102	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	Endrin	0.0102	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	Heptachlor	0.00679	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	Toxaphene (Technical Grade)	0.153	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164051	R-14 S1	11-09-2018	Acenaphthene	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Acenaphthylene	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Aniline	4.57	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Anthracene	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Atrazine	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Azobenzene	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Benzidine	4.24	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Benzo(a)anthracene	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Benzo(a)pyrene	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Benzo(b)fluoranthene	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Benzo(g,h,i)perylene	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Benzo(k)fluoranthene	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Benzoic Acid	6.52	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Benzyl Alcohol	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Bis(2-chloroethoxy)methane	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Bis(2-chloroethyl)ether	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Bis(2-ethylhexyl)phthalate	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Bromophenyl-phenylether[4-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Butylbenzylphthalate	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Chloro-3-methylphenol[4-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Chloroaniline[4-]	3.59	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Chloronaphthalene[2-]	0.446	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Chlorophenol[2-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC

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Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-14 S1 (screen 1), November 9, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164051	R-14 S1	11-09-2018	Chlorophenyl-phenyl[4-] Ether	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Chrysene	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dibenz(a,h)anthracene	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dibenzofuran	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichlorobenzene[1,2-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichlorobenzene[1,3-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichlorobenzene[1,4-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichlorobenzidine[3,3'-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichlorophenol[2,4-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Diethylphthalate	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dimethyl Phthalate	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dimethylphenol[2,4-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Di-n-butylphthalate	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dinitro-2-methylphenol[4,6-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dinitrophenol[2,4-]	5.43	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dinitrotoluene[2,4-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dinitrotoluene[2,6-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Di-n-octylphthalate	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dinoseb	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dioxane[1,4-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Diphenylamine	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Fluoranthene	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Fluorene	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Hexachlorobenzene	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Hexachlorobutadiene	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Hexachlorocyclopentadiene	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Hexachloroethane	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Indeno(1,2,3-cd)pyrene	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Isophorone	3.80	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Methylnaphthalene[1-]	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Methylnaphthalene[2-]	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Methylphenol[2-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Methylphenol[3-,4-]	4.02	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Naphthalene	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Nitroaniline[2-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Nitroaniline[3-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Nitroaniline[4-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Nitrobenzene	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Nitrophenol[2-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Nitrophenol[4-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Nitrosodiethylamine[N-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC

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Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-14 S1 (screen 1), November 9, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164051	R-14 S1	11-09-2018	Nitrosodimethylamine[N-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Nitroso-di-n-butylamine[N-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Nitroso-di-n-propylamine[N-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Nitrosopyrrolidine[N-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Oxybis(1-chloropropane)[2,2'-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Pentachlorobenzene	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Pentachlorophenol	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Phenanthrene	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Phenol	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Pyrene	0.326	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Pyridine	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Tetrachlorobenzene[1,2,4,5]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Tetrachlorophenol[2,3,4,6-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Trichlorobenzene[1,2,4-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Trichlorophenol[2,4,5-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Trichlorophenol[2,4,6-]	3.26	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Acetone	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Acetonitrile	8.00	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Acrolein	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Acrylonitrile	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Benzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Bromobenzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Bromochloromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Bromodichloromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Bromoform	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Bromomethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Butanol[1-]	15.0	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Butanone[2-]	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Butylbenzene[n-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Butylbenzene[sec-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Butylbenzene[tert-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Carbon Disulfide	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Carbon Tetrachloride	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Chloro-1,3-butadiene[2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Chloro-1-propene[3-]	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Chlorobenzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Chlorodibromomethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Chloroethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Chloroform	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Chloromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC

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Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-14 S1 (screen 1), November 9, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164051	R-14 S1	11-09-2018	Chlorotoluene[2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Chlorotoluene[4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dibromo-3-Chloropropane[1,2-]	0.500	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dibromoethane[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dibromomethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichlorobenzene[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichlorobenzene[1,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichlorobenzene[1,4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichlorodifluoromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichloroethane[1,1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichloroethane[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichloroethene[1,1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichloroethene[cis-1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichloroethene[trans-1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichloropropane[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichloropropane[1,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichloropropane[2,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichloropropene[1,1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichloropropene[cis-1,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichloropropene[trans-1,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Diethyl Ether	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Ethyl Methacrylate	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Ethylbenzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Hexachlorobutadiene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Hexanone[2-]	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Iodomethane	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Isobutyl alcohol	15.0	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Isopropylbenzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Isopropyltoluene[4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Methacrylonitrile	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Methyl Methacrylate	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Methyl tert-Butyl Ether	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Methyl-2-pentanone[4-]	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Methylene Chloride	1.00	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Naphthalene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Propionitrile	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Propylbenzene[1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Styrene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Tetrachloroethane[1,1,1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Tetrachloroethane[1,1,2,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Tetrachloroethene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC

14447

Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-14 S1 (screen 1), November 9, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164051	R-14 S1	11-09-2018	Toluene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Trichloro-1,2,2-trifluoroethane[1,1,2-]	2.00	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Trichlorobenzene[1,2,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Trichlorobenzene[1,2,4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Trichloroethane[1,1,1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Trichloroethane[1,1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Trichloroethene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Trichlorofluoromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Trichloropropane[1,2,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Trimethylbenzene[1,2,4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Trimethylbenzene[1,3,5-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Vinyl acetate	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Vinyl Chloride	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Xylene[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Xylene[1,3-]+Xylene[1,4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164159	R-14 S1	11-09-2018	HMX	0.0851	ug/L	N	U	UF	REG	SW-846:8330B	LCMS/MS HE
CAMO-19-164159	R-14 S1	11-09-2018	RDX	0.0851	ug/L	N	U	UF	REG	SW-846:8330B	LCMS/MS HE
CAMO-19-164159	R-14 S1	11-09-2018	Trinitrotoluene[2,4,6-]	0.0851	ug/L	N	U	UF	REG	SW-846:8330B	LCMS/MS HE

SAMPLE PURPOSE KEY

REG means regular field sample

FD means field duplicate sample

14448

DP-1132, Condition No. 36, Groundwater Monitoring Report, R-14 S1, November 9, 2018.

a	Sample Date	11/9/2018
b	Sample Time	1015
c	Individuals collecting sample.	Tow & Jaramillo (TPMC)
d	Monitoring well identification.	R-14 Screen 1
e	Physical description of monitoring well location.	See Location Map, Attachment 15
f	Ground-water surface elevation. (ft below mean sea level (msl))	5870.47
g	Total depth of the well (ft below ground surface (bgs))	1244.7
h	Total volume of water in the monitoring well prior to sample collection. (gal)	51.03
i	Total volume of water purged prior to sample collection (gal).	149.94
j	Physical parameters including temperature, conductivity, pH, oxidation/reduction potential.	DO (mg/L): 5.80 Oxidation/Reduction Potential (MV): 167.6 Temp (deg C): 22.8 pH (SU): 8.18 Turbidity (NTU): 0.67 Specific Conductance (µS/cm): 127.4
k	Description of sample methods	See Attached Chain-of-Custody
l	Chain-of custody.	Attached
m	Location Map	Attachment 15

LANL SMO
Los Alamos NM

R-14

Chain of Custody/Analysis Request

COC/Lab Request #: 2019-429

Page 1 of 1

Client Contact:

Lab Agreement #:

Site Name: N3B LANL

Project Number:

Analysis Turnaround Time:
24 Hour - ☐ Other - ☒
7 Days - ☐
14 Days - ☐
21 Days - ☐
28 Days - ☐

Rad Screening Info:

Lab Reporting Limit Type: Method Detection Limit

Field Sample ID	Sample Date	Sample Time	Sample Matrix	MSGP-Hg	WSP-8082-PCB	WSP-8260B-VOA	WSP-8270C-SVOA	WSP-All Metals	WSP-CN(T)	WSP-GENINORG+PerChlorate	WSP-GrossA/B	WSP-LL-H-3	WSP-NH3+NO3/NO2+PO4	WSP-RAD	WSP-TKN+TOC
CAMO-19-164050	Nov 9 2018	10:15	W					1		1			1		
CAMO-19-164051	Nov 9 2018	10:15	W	1	3	2	2		1		1	1		1	1
CAMO-19-164052	Nov 9 2018	10:15	W			1									

Special Instructions:

Relinquished by: Tonner Bonham	Print Name: Tonner Bonham	Date/Time: 11/9/18 1405	Received by: Renee Ostdiek	Print Name: Renee Ostdiek	Date/Time: 11/9/18 1405
Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:
Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:

14450

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164159

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	11/7/2018	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1015		MEDIA:	OK	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-14 S1		FIELD PREP:	UF	
LOCATION TYPE:	OK		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / (NO) / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	DP-TP-8081	1 LITER GLASS	3	ICE	Y	NA
↓	DP-TP-8330	1 LITER AMBER GLASS	3	ICE	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Sample Time	1015	HH:MM	Casing Volume	NA	UNITLESS	Discharge Rate	7.14	gal/min
Dissolved Oxygen	5.80	mg/L	Flow (in gpm)	7.14	GPM	Groundwater Elevation	5870.47	ft
Oxidation-Reduction Potential	167.6	MV	Period Purge Volume	NA	gal	pH	8.18	SU
Purge Volume	149.94	gal	Specific Conductance	127.4	uS/cm	Temperature	22.8	deg C
Total Volume Pumped	26278.46	gal	Turbidity	0.67	NTU			

COLLECTED BY (PRINT): K. Tow & D. Jaramillo

RELINQUISHED BY (Printed Name) Tanner Barnhart (Signature)	**Date/Time** 11/9/2018 1330	**RECEIVED BY** (Printed Name) David M Sarracino (Signature) David M Sarracino	**Date/Time** 11/9/2018 1330
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY** (Printed Name) (Signature)	**Date/Time**

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164168

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	11/9/2018	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1015		MEDIA:	OK	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-14 S1		FIELD PREP:	F	
LOCATION TYPE:	OK		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / (NO) / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	DP-Ra226+228	1 LITER POLY	4	HNO3	Y	NA

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Sample Time		HH:MM	Casing Volume		UNITLESS	Discharge Rate		gal/min
Dissolved Oxygen		mg/L	Flow (in gpm)		GPM	Groundwater Elevation		ft
Oxidation-Reduction Potential		MV	Period Purge Volume		gal	pH		SU
Purge Volume		gal	Specific Conductance		uS/cm	Temperature		deg C
Total Volume Pumped		gal	Turbidity		NTU			

11/9/2018 TB

COLLECTED BY (PRINT): K. Tow & D. Jaramillo

RELINQUISHED BY (Printed Name) Tanner Bonham **(Signature)**	**Date/Time** 11/9/2018 ~~1533~~ 1330	**RECEIVED BY (Printed Name)** David M Sarracino **(Signature)** David M Sarracino	**Date/Time** 11/9/2018 1330 hr
RELINQUISHED BY (Printed Name) **(Signature)**	**Date/Time**	**RECEIVED BY (Printed Name)** **(Signature)**	**Date/Time**

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164165

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	11/9/2018	ok	**FIELD MATRIX:**	WG	ok
TIME COLLECTED (HH:MM):	0857		**MEDIA:**	ok	
PRS ID:	ok		**SAMPLE TECH CODE:**	DC	
LOCATION ID:	R-14 S1		**FIELD PREP:**	UF	
LOCATION TYPE:	ok		**FIELD QC TYPE:**	PEB	
TOP DEPTH:			**SAMPLE USAGE:**	QC	
BOTTOM DEPTH:			**EXCAVATED:**		YES / (NO) / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	DP-8082	1 LITER GLASS	3	ICE	Y	NA
	DP-ClO4	0.25 LITER POLY	1	ICE		
	DP-F+SO4	0.5 LITER POLY	1	ICE		
	DP-NO3NO2+TKN	1 LITER POLY	1	H2SO4 ICE		
	DP-Ra226+228	1 LITER POLY	4	HNO3		
	DP-TDS+Cl	1 LITER POLY	1	ICE		
	DP-TP-8081	1 LITER GLASS	3	ICE		
	DP-TP-8260	40 ML SEPTUM GLASS	2	ICE		
	DP-TP-8270	1 LITER AMBER GLASS	2	ICE		
	DP-TP-8330	1 LITER AMBER GLASS	3	ICE		

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164165

WORK ORDER:

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time		HH:MM	Casing Volume		UNITLESS	Discharge Rate		gal/min
Dissolved Oxygen		mg/L	Flow (in gpm)		GPM	Groundwater Elevation		ft
Oxidation-Reduction Potential		MV	Period Purge Volume		gal	pH		SU
Purge Volume		gal	Specific Conductance		uS/cm	Temperature		deg C
Total Volume Pumped		gal	Turbidity		NTU			

11-9-2018

COLLECTED BY (PRINT): D. Jaramillo & K. Tow

RELINQUISHED BY (Printed Name) Tanner Bonham **(Signature)**	**Date/Time** 11/9/18 1425	**RECEIVED BY (Printed Name)** David M Sarracino **(Signature)** David M Sarracino	**Date/Time** 11/9/18 1425 hr
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

ATTACHMENT 13

R-46 annual ground water monitoring report

EPC-DO: 19-018

LA-UR-19-20526

Date: JAN 3 1 2019

Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-46, November 13, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164053	R-46	11-13-2018	Ammonia as Nitrogen	0.017	mg/L	N	U	F	REG	EPA:350.1	GEN_CHEM
CAMO-19-164053	R-46	11-13-2018	Chloride	1.73	mg/L	Y		F	REG	EPA:300.0	GEN_CHEM
CAMO-19-164053	R-46	11-13-2018	Fluoride	0.140	mg/L	Y		F	REG	EPA:300.0	GEN_CHEM
CAMO-19-164053	R-46	11-13-2018	Nitrate-Nitrite as Nitrogen	0.374	mg/L	Y		F	REG	EPA:353.2	GEN_CHEM
CAMO-19-164053	R-46	11-13-2018	Sulfate	1.89	mg/L	Y		F	REG	EPA:300.0	GEN_CHEM
CAMO-19-164053	R-46	11-13-2018	Total Dissolved Solids	244	mg/L	Y		F	REG	EPA:160.1	GEN_CHEM
CAMO-19-164054	R-46	11-13-2018	Total Kjeldahl Nitrogen	0.0821	mg/L	Y	J	UF	REG	EPA:351.2	GEN_CHEM
CAMO-19-164055	R-46	11-13-2018	Ammonia as Nitrogen	0.0299	mg/L	N	J	F	FD	EPA:350.1	GEN_CHEM
CAMO-19-164055	R-46	11-13-2018	Chloride	1.73	mg/L	Y		F	FD	EPA:300.0	GEN_CHEM
CAMO-19-164055	R-46	11-13-2018	Fluoride	0.120	mg/L	Y		F	FD	EPA:300.0	GEN_CHEM
CAMO-19-164055	R-46	11-13-2018	Nitrate-Nitrite as Nitrogen	0.375	mg/L	Y		F	FD	EPA:353.2	GEN_CHEM
CAMO-19-164055	R-46	11-13-2018	Sulfate	1.89	mg/L	Y		F	FD	EPA:300.0	GEN_CHEM
CAMO-19-164055	R-46	11-13-2018	Total Dissolved Solids	170	mg/L	Y		F	FD	EPA:160.1	GEN_CHEM
CAMO-19-164056	R-46	11-13-2018	Total Kjeldahl Nitrogen	0.0715	mg/L	Y	J	UF	FD	EPA:351.2	GEN_CHEM
CAMO-19-164053	R-46	11-13-2018	Aluminum	68.0	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-164053	R-46	11-13-2018	Arsenic	2.22	ug/L	Y	J	F	REG	SW-846:6020	METALS
CAMO-19-164053	R-46	11-13-2018	Barium	21.6	ug/L	Y		F	REG	SW-846:6010C	METALS
CAMO-19-164053	R-46	11-13-2018	Beryllium	1.00	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-164053	R-46	11-13-2018	Boron	15.0	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-164053	R-46	11-13-2018	Cadmium	0.300	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-164053	R-46	11-13-2018	Chromium	5.23	ug/L	Y	J	F	REG	SW-846:6020	METALS
CAMO-19-164053	R-46	11-13-2018	Cobalt	1.00	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-164053	R-46	11-13-2018	Copper	3.00	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-164054	R-46	11-13-2018	Cyanide (Total)	0.00167	mg/L	N	U	UF	REG	EPA:335.4	METALS
CAMO-19-164053	R-46	11-13-2018	Iron	30.0	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-164053	R-46	11-13-2018	Lead	0.500	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-164053	R-46	11-13-2018	Manganese	2.00	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-164053	R-46	11-13-2018	Mercury	0.067	ug/L	N	U	F	REG	EPA:245.2	METALS
CAMO-19-164054	R-46	11-13-2018	Mercury	0.067	ug/L	N	U	UF	REG	EPA:245.2	METALS
CAMO-19-164053	R-46	11-13-2018	Molybdenum	1.01	ug/L	Y		F	REG	SW-846:6020	METALS
CAMO-19-164053	R-46	11-13-2018	Nickel	0.600	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-164053	R-46	11-13-2018	Selenium	2.00	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-164053	R-46	11-13-2018	Silver	0.300	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-164053	R-46	11-13-2018	Uranium	0.448	ug/L	Y		F	REG	SW-846:6020	METALS
CAMO-19-164053	R-46	11-13-2018	Zinc	5.21	ug/L	Y	J	F	REG	SW-846:6010C	METALS
Field Measurement	R-46	11-13-2018	pH	8.10	su			UF	REG	Field	
CAMO-19-164055	R-46	11-13-2018	Aluminum	68.0	ug/L	N	U	F	FD	SW-846:6010C	METALS
CAMO-19-164055	R-46	11-13-2018	Arsenic	2.00	ug/L	N	U	F	FD	SW-846:6020	METALS
CAMO-19-164055	R-46	11-13-2018	Barium	22.3	ug/L	Y		F	FD	SW-846:6010C	METALS

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Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-46, November 13, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164055	R-46	11-13-2018	Beryllium	1.00	ug/L	N	U	F	FD	SW-846:6010C	METALS
CAMO-19-164055	R-46	11-13-2018	Boron	15.0	ug/L	N	U	F	FD	SW-846:6010C	METALS
CAMO-19-164055	R-46	11-13-2018	Cadmium	0.300	ug/L	N	U	F	FD	SW-846:6020	METALS
CAMO-19-164055	R-46	11-13-2018	Chromium	5.6	ug/L	Y	J	F	FD	SW-846:6020	METALS
CAMO-19-164055	R-46	11-13-2018	Cobalt	1.00	ug/L	N	U	F	FD	SW-846:6010C	METALS
CAMO-19-164055	R-46	11-13-2018	Copper	3.00	ug/L	N	U	F	FD	SW-846:6010C	METALS
CAMO-19-164056	R-46	11-13-2018	Cyanide (Total)	0.00167	mg/L	N	U	UF	FD	EPA:335.4	METALS
CAMO-19-164055	R-46	11-13-2018	Iron	30.0	ug/L	N	U	F	FD	SW-846:6010C	METALS
CAMO-19-164055	R-46	11-13-2018	Lead	0.500	ug/L	N	U	F	FD	SW-846:6020	METALS
CAMO-19-164055	R-46	11-13-2018	Manganese	2.00	ug/L	N	U	F	FD	SW-846:6010C	METALS
CAMO-19-164055	R-46	11-13-2018	Mercury	0.067	ug/L	N	U	F	FD	EPA:245.2	METALS
CAMO-19-164056	R-46	11-13-2018	Mercury	0.067	ug/L	N	U	UF	FD	EPA:245.2	METALS
CAMO-19-164055	R-46	11-13-2018	Molybdenum	1.05	ug/L	Y		F	FD	SW-846:6020	METALS
CAMO-19-164055	R-46	11-13-2018	Nickel	0.600	ug/L	N	U	F	FD	SW-846:6020	METALS
CAMO-19-164055	R-46	11-13-2018	Selenium	2.00	ug/L	N	U	F	FD	SW-846:6020	METALS
CAMO-19-164055	R-46	11-13-2018	Silver	0.300	ug/L	N	U	F	FD	SW-846:6020	METALS
CAMO-19-164055	R-46	11-13-2018	Thallium	0.600	ug/L	N	U	F	FD	SW-846:6020	METALS
CAMO-19-164055	R-46	11-13-2018	Uranium	0.454	ug/L	Y		F	FD	SW-846:6020	METALS
CAMO-19-164055	R-46	11-13-2018	Zinc	4.97	ug/L	Y	J	F	FD	SW-846:6010C	METALS
CAMO-19-164053	R-46	11-13-2018	Perchlorate	0.288	ug/L	Y		F	REG	SW-846:6850	LCMS/MS ClO4
CAMO-19-164055	R-46	11-13-2018	Perchlorate	0.352	ug/L	Y		F	FD	SW-846:6850	LCMS/MS ClO4
CAMO-19-164169	R-46	11-13-2018	Radium-226	0.904	pCi/L	Y		F	REG	EPA:903.1	RAD
CAMO-19-164169	R-46	11-13-2018	Radium-228	0.642	pCi/L	N	U	F	REG	EPA:904	RAD
CAMO-19-164170	R-46	11-13-2018	Radium-226	0.419	pCi/L	Y		F	FD	EPA:903.1	RAD
CAMO-19-164170	R-46	11-13-2018	Radium-228	-0.0249	pCi/L	N	U	F	FD	EPA:904	RAD
CAMO-19-164160	R-46	11-13-2018	Aldrin	0.00679	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164054	R-46	11-13-2018	Aroclor-1016	0.0347	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164054	R-46	11-13-2018	Aroclor-1221	0.0347	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164054	R-46	11-13-2018	Aroclor-1232	0.0347	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164054	R-46	11-13-2018	Aroclor-1242	0.0347	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164054	R-46	11-13-2018	Aroclor-1248	0.0347	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164054	R-46	11-13-2018	Aroclor-1254	0.0347	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164054	R-46	11-13-2018	Aroclor-1260	0.0347	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164054	R-46	11-13-2018	Aroclor-1262	0.0347	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164160	R-46	11-13-2018	BHC[alpha-]	0.00679	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164160	R-46	11-13-2018	BHC[beta-]	0.00679	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164160	R-46	11-13-2018	BHC[gamma-]	0.00679	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164160	R-46	11-13-2018	Chlordane(alpha/gamma)	0.0781	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164160	R-46	11-13-2018	Chlordane[alpha-]	0.00679	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB

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Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-46, November 13, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164160	R-46	11-13-2018	Chlordane[gamma-]	0.00679	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164160	R-46	11-13-2018	DDT[4,4'-]	0.0102	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164160	R-46	11-13-2018	Dieldrin	0.0102	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164160	R-46	11-13-2018	Endosulfan I	0.00679	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164160	R-46	11-13-2018	Endosulfan II	0.0102	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164160	R-46	11-13-2018	Endrin	0.0102	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164160	R-46	11-13-2018	Heptachlor	0.00679	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164160	R-46	11-13-2018	Toxaphene (Technical Grade)	0.153	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164054	R-46	11-13-2018	Acenaphthene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Acenaphthylene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Aniline	4.38	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Anthracene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Atrazine	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Azobenzene	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Benzidine	4.06	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Benzo(a)anthracene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Benzo(a)pyrene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Benzo(b)fluoranthene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Benzo(g,h,i)perylene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Benzo(k)fluoranthene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Benzoic Acid	14.4	ug/L	Y	J	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Benzyl Alcohol	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Bis(2-chloroethoxy)methane	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Bis(2-chloroethyl)ether	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Bis(2-ethylhexyl)phthalate	0.354	ug/L	Y	J	UF	REG	SW-846:8270D	SVOC
CAMO-19-164056	R-46	11-13-2018	Bis(2-ethylhexyl)phthalate	0.326	ug/L	Y	J	UF	FD	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Bromophenyl-phenylether[4-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Butylbenzylphthalate	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Chloro-3-methylphenol[4-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Chloroaniline[4-]	3.44	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Chloronaphthalene[2-]	0.427	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Chlorophenol[2-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Chlorophenyl-phenyl[4-] Ether	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Chrysene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Dibenz(a,h)anthracene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Dibenzofuran	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Dichlorobenzene[1,2-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Dichlorobenzene[1,3-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Dichlorobenzene[1,4-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Dichlorobenzidine[3,3'-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Dichlorophenol[2,4-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC

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Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-46, November 13, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164054	R-46	11-13-2018	Diethylphthalate	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Dimethyl Phthalate	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Dimethylphenol[2,4-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Di-n-butylphthalate	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Dinitro-2-methylphenol[4,6-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Dinitrophenol[2,4-]	5.21	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Dinitrotoluene[2,4-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Dinitrotoluene[2,6-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Di-n-octylphthalate	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Dinoseb	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Dioxane[1,4-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Diphenylamine	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Fluoranthene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Fluorene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Hexachlorobenzene	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Hexachlorobutadiene	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Hexachlorocyclopentadiene	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Hexachloroethane	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Indeno(1,2,3-cd)pyrene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Isophorone	3.65	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Methylnaphthalene[1-]	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Methylnaphthalene[2-]	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Methylphenol[2-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Methylphenol[3-,4-]	3.85	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Naphthalene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Nitroaniline[2-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Nitroaniline[3-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Nitroaniline[4-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Nitrobenzene	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Nitrophenol[2-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Nitrophenol[4-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Nitrosodiethylamine[N-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Nitrosodimethylamine[N-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Nitroso-di-n-butylamine[N-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Nitroso-di-n-propylamine[N-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Nitrosopyrrolidine[N-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Oxybis(1-chloropropane)[2,2'-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Pentachlorobenzene	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Pentachlorophenol	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Phenanthrene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Phenol	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Pyrene	0.313	ug/L	N	U	UF	REG	SW-846:8270D	SVOC

Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-46, November 13, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164054	R-46	11-13-2018	Pyridine	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Tetrachlorobenzene[1,2,4,5]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Tetrachlorophenol[2,3,4,6-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Trichlorobenzene[1,2,4-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Trichlorophenol[2,4,5-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Trichlorophenol[2,4,6-]	3.13	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Acetone	2.5	ug/L	Y	J	UF	REG	SW-846:8260B	VOC
CAMO-19-164056	R-46	11-13-2018	Acetone	2.67	ug/L	Y	J	UF	FD	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Acetonitrile	8.00	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Acrolein	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Acrylonitrile	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Benzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Bromobenzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Bromochloromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Bromodichloromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Bromoform	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Bromomethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Butanol[1-]	15.0	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Butanone[2-]	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Butylbenzene[n-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Butylbenzene[sec-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Butylbenzene[tert-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Carbon Disulfide	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Carbon Tetrachloride	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Chloro-1,3-butadiene[2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Chloro-1-propene[3-]	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Chlorobenzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Chlorodibromomethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Chloroethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Chloroform	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Chloromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Chlorotoluene[2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Chlorotoluene[4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Dibromo-3-Chloropropane[1,2-]	0.500	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Dibromoethane[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Dibromomethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Dichlorobenzene[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Dichlorobenzene[1,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Dichlorobenzene[1,4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Dichlorodifluoromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Dichloroethane[1,1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC

14460

Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-46, November 13, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164054	R-46	11-13-2018	Dichloroethane[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Dichloroethene[1,1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Dichloroethene[cis-1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Dichloroethene[trans-1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Dichloropropane[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Dichloropropane[1,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Dichloropropane[2,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Dichloropropene[1,1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Dichloropropene[cis-1,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Dichloropropene[trans-1,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Diethyl Ether	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Ethyl Methacrylate	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Ethylbenzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Hexachlorobutadiene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Hexanone[2-]	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Iodomethane	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Isobutyl alcohol	15.0	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Isopropylbenzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Isopropyltoluene[4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Methacrylonitrile	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Methyl Methacrylate	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Methyl tert-Butyl Ether	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Methyl-2-pentanone[4-]	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Methylene Chloride	1.00	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Naphthalene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Propionitrile	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Propylbenzene[1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Styrene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Tetrachloroethane[1,1,1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Tetrachloroethane[1,1,2,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Tetrachloroethene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Toluene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Trichloro-1,2,2-trifluoroethane[1,1,2-]	2.00	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Trichlorobenzene[1,2,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Trichlorobenzene[1,2,4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Trichloroethane[1,1,1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Trichloroethane[1,1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Trichloroethene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Trichlorofluoromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Trichloropropane[1,2,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Trimethylbenzene[1,2,4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Trimethylbenzene[1,3,5-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC

14461

Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-46, November 13, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164054	R-46	11-13-2018	Vinyl acetate	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Vinyl Chloride	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Xylene[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Xylene[1,3-]+Xylene[1,4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164160	R-46	11-13-2018	HMX	0.086	ug/L	N	U	UF	REG	SW-846:8330B	LCMS/MS HE
CAMO-19-164160	R-46	11-13-2018	RDX	0.086	ug/L	N	U	UF	REG	SW-846:8330B	LCMS/MS HE
CAMO-19-164160	R-46	11-13-2018	Trinitrotoluene[2,4,6-]	0.086	ug/L	N	U	UF	REG	SW-846:8330B	LCMS/MS HE
CAMO-19-164166	R-46	11-13-2018	HMX	0.0842	ug/L	N	U	UF	FD	SW-846:8330B	LCMS/MS HE
CAMO-19-164166	R-46	11-13-2018	RDX	0.0842	ug/L	N	U	UF	FD	SW-846:8330B	LCMS/MS HE
CAMO-19-164166	R-46	11-13-2018	Trinitrotoluene[2,4,6-]	0.0842	ug/L	N	U	UF	FD	SW-846:8330B	LCMS/MS HE

SAMPLE PURPOSE KEY

REG means regular field sample

FD means field duplicate sample

14462

DP-1132, Condition No. 36, Groundwater Monitoring Report, R-46, November 13, 2018.

a	Sample Date	11/13/2018
b	Sample Time	1251
c	Individuals collecting sample.	Vigil & Tow (TPMC)
d	Monitoring well identification.	R-46
e	Physical description of monitoring well location.	See Location Map, Attachment 15
f	Ground-water surface elevation. (ft below mean sea level (msl))	5879.66
g	Total depth of the well (ft below ground surface (bgs))	1382.2
h	Total volume of water in the monitoring well prior to sample collection. (gal)	50.89
i	Total volume of water purged prior to sample collection (gal).	175
j	Physical parameters including temperature, conductivity, pH, oxidation/reduction potential.	DO (mg/L): 6.67 Oxidation/Reduction Potential (MV): 269.8 Temp (deg C): 21.1 pH (SU): 7.96 Turbidity (NTU): 0.36 Specific Conductance (µS/cm): 121.4
k	Description of sample methods	See Attached Chain-of-Custody
l	Chain-of custody.	Attached
m	Location Map	Attachment 15

LANL SMO
Los Alamos NM

R-46

Chain of Custody/Analysis Request

COC/Lab Request #: 2019-456
Page 1 of 1

Client Contact:

Lab Agreement #:

Site Name: N3B LANL

Project Number:

Analysis Turnaround Time:
24 Hour - ☐ Other - ☒
7 Days - ☐
14 Days - ☐
21 Days - ☐
28 Days - ☐

Rad Screening Info:

Lab Reporting Limit Type: Method Detection Limit

Field Sample ID	Sample Date	Sample Time	Sample Matrix	MSGP-Hg	WSP-8082-PCB	WSP-8260B-VOA	WSP-8270C-SVOA	WSP-All Metals	WSP-CN(T)	WSP-GENINORG+PerChlorate	WSP-GrossA/B	WSP-LL-H-3	WSP-NH3+NO3/NO2+PO4	WSP-RAD	WSP-TKN+TOC
CAMO-19-164053	Nov 13 2018	12:51	W					1		1			1		
CAMO-19-164055	Nov 13 2018	12:51	W					1		1			1		
CAMO-19-164054	Nov 13 2018	12:51	W	1	3	2	2		1		1	1		1	1
CAMO-19-164056	Nov 13 2018	12:51	W	1	3	2	2		1		1	1		1	1
CAMO-19-164057	Nov 13 2018	12:51	W			1									

Special Instructions:

Relinquished by: Allison Stanfield	Print Name:	Date/Time: 11/13/18 1430	Received by:	Print Name: Kate Ellers	Date/Time: 11.13.18 14:30
Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:
Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:

14464

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164160

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	11/13/18	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1251		MEDIA:	OK	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-46		FIELD PREP:	UF	
LOCATION TYPE:	OK		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / (NA)

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	DP-TP-8081	1 LITER GLASS	3	ICE	Y	NA
↓	DP-TP-8330	1 LITER AMBER GLASS	3	ICE	↓	↓

SAMPLE COMMENTS: Sampled about 40 ft. from running diesel generator

LOCATION COMMENTS: None

FIELD PARAMETERS:

Sample Time	1251	HH:MM	Casing Volume	3	UNITLESS	Discharge Rate	5.00	gal/min
Dissolved Oxygen	6.67	mg/L	Flow (in gpm)	5.00	GPM	Groundwater Elevation	5879.66	ft
Oxidation-Reduction Potential	269.8	MV	Period Purge Volume	NA	gal	pH	7.96	SU
Purge Volume	175.0	gal	Specific Conductance	121.4	uS/cm	Temperature	21.1	deg C
Total Volume Pumped	299.0	gal	Turbidity	0.36	NTU			

COLLECTED BY (PRINT): A. Vigil, K. Tow

RELINQUISHED BY (Printed Name) Allisyn Stanfield (Signature)	**Date/Time** 11/13/18 1345	**RECEIVED BY** (Printed Name) (Signature)	**Date/Time** 11/13/18 1345
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY** (Printed Name) (Signature)	**Date/Time**

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164169

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	11/13/18	ok	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1251		MEDIA:	OK	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-46		FIELD PREP:	F	
LOCATION TYPE:	OK		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / (NA)

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	DP-Ra226+228	1 LITER POLY	4	HNO3	Y	NA

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time		HH:MM	Casing Volume		UNITLESS	Discharge Rate	gal/min
Dissolved Oxygen		mg/L	Flow (in gpm)	11/13/18	GPM	Groundwater Elevation	ft
Oxidation-Reduction Potential		MV	Period Purge Volume		gal	pH	SU
Purge Volume		gal	Specific Conductance		uS/cm	Temperature	deg C
Total Volume Pumped		gal	Turbidity		NTU		

COLLECTED BY (PRINT): A. Vigil, K. Tow

RELINQUISHED BY (Printed Name) Allisyn Stanfield (Signature)	Date/Time 11/13/18 1345	**RECEIVED BY** (Printed Name) (Signature)	Date/Time 11/13/18 13:41
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	**RECEIVED BY** (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164166

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	11/13/18	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1251		MEDIA:	OK	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-46		FIELD PREP:	UF	
LOCATION TYPE:	OK		FIELD QC TYPE:	FD	
TOP DEPTH:			SAMPLE USAGE:	QC	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / (NA)

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	DP-TP-8081	1 LITER GLASS	3	ICE	Y	NA
↓	DP-TP-8330	1 LITER AMBER GLASS	3	ICE	↓	↓

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time	HH:MM	Casing Volume	11/13/18	UNITLESS	Discharge Rate		gal/min
Dissolved Oxygen	mg/L	Flow (in gpm)		GPM	Groundwater Elevation		ft
Oxidation-Reduction Potential	MV	Period Purge Volume		gal	pH		SU
Purge Volume	gal	Specific Conductance		uS/cm	Temperature		deg C
Total Volume Pumped	gal	Turbidity		NTU			

COLLECTED BY (PRINT): A. Vigil, K. Tow

RELINQUISHED BY (Printed Name) Allisyn Stanfield (Signature)	**Date/Time** 11/13/18 1345	**RECEIVED BY** (Printed Name) (Signature)	**Date/Time** 11/13/18 1345
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY** (Printed Name) (Signature)	**Date/Time**

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164170

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	11/13/18	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1251		MEDIA:	OK	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-46		FIELD PREP:	F	
LOCATION TYPE:	OK		FIELD QC TYPE:	FD	
TOP DEPTH:			SAMPLE USAGE:	QC	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / (NA)

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	DP-Ra226+228	1 LITER POLY	4	HNO3	Y	NA

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time	____ HH:MM	Casing Volume	____ UNITLESS	Discharge Rate	____ gal/min		
Dissolved Oxygen	____ mg/L	Flow (in gpm)	11/13/18 GPM	Groundwater Elevation	____ ft		
Oxidation-Reduction Potential	____ MV	Period Purge Volume	____ gal	pH	____ SU		
Purge Volume	____ gal	Specific Conductance	____ uS/cm	Temperature	____ deg C		
Total Volume Pumped	____ gal	Turbidity	____ NTU				

COLLECTED BY (PRINT): A. Vigil, K. Tow

RELINQUISHED BY (Printed Name) Allisyn Stanfield **(Signature)**	**Date/Time** 11/13/18 1345	**RECEIVED BY (Printed Name)** **(Signature)**	**Date/Time** 11/13/18 1345
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ATTACHMENT 14

R-60 annual ground water monitoring report

EPC-DO: 19-018

LA-UR-19-20526

Date: JAN 3 1 2019

Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-60, November 13, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164058	R-60	11-13-2018	Ammonia as Nitrogen	0.0338	mg/L	N	J	F	REG	EPA:350.1	GEN_CHEM
CAMO-19-164058	R-60	11-13-2018	Chloride	1.84	mg/L	Y		F	REG	EPA:300.0	GEN_CHEM
CAMO-19-164058	R-60	11-13-2018	Fluoride	0.124	mg/L	Y		F	REG	EPA:300.0	GEN_CHEM
CAMO-19-164058	R-60	11-13-2018	Nitrate-Nitrite as Nitrogen	0.409	mg/L	Y		F	REG	EPA:353.2	GEN_CHEM
CAMO-19-164058	R-60	11-13-2018	Sulfate	2.02	mg/L	Y		F	REG	EPA:300.0	GEN_CHEM
CAMO-19-164058	R-60	11-13-2018	Total Dissolved Solids	159	mg/L	Y		F	REG	EPA:160.1	GEN_CHEM
CAMO-19-164059	R-60	11-13-2018	Total Kjeldahl Nitrogen	0.033	mg/L	N	U	UF	REG	EPA:351.2	GEN_CHEM
CAMO-19-164058	R-60	11-13-2018	Aluminum	68.0	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-164058	R-60	11-13-2018	Arsenic	2.18	ug/L	Y	J	F	REG	SW-846:6020	METALS
CAMO-19-164058	R-60	11-13-2018	Barium	24.6	ug/L	Y		F	REG	SW-846:6010C	METALS
CAMO-19-164058	R-60	11-13-2018	Beryllium	1.00	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-164058	R-60	11-13-2018	Boron	15.0	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-164058	R-60	11-13-2018	Cadmium	0.300	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-164058	R-60	11-13-2018	Chromium	4.98	ug/L	Y	J	F	REG	SW-846:6020	METALS
CAMO-19-164058	R-60	11-13-2018	Cobalt	1.00	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-164058	R-60	11-13-2018	Copper	3.00	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-164059	R-60	11-13-2018	Cyanide (Total)	0.00167	mg/L	N	U	UF	REG	EPA:335.4	METALS
CAMO-19-164058	R-60	11-13-2018	Iron	30.0	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-164058	R-60	11-13-2018	Lead	0.500	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-164058	R-60	11-13-2018	Manganese	2.00	ug/L	N	U	F	REG	SW-846:6010C	METALS
CAMO-19-164058	R-60	11-13-2018	Mercury	0.067	ug/L	N	U	F	REG	EPA:245.2	METALS
CAMO-19-164059	R-60	11-13-2018	Mercury	0.067	ug/L	N	U	UF	REG	EPA:245.2	METALS
CAMO-19-164058	R-60	11-13-2018	Molybdenum	0.949	ug/L	Y		F	REG	SW-846:6020	METALS
CAMO-19-164058	R-60	11-13-2018	Nickel	0.600	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-164058	R-60	11-13-2018	Selenium	2.00	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-164058	R-60	11-13-2018	Silver	0.300	ug/L	N	U	F	REG	SW-846:6020	METALS
CAMO-19-164058	R-60	11-13-2018	Uranium	0.519	ug/L	Y		F	REG	SW-846:6020	METALS
CAMO-19-164058	R-60	11-13-2018	Zinc	3.30	ug/L	N	U	F	REG	SW-846:6010C	METALS
Field Measurement	R-60	11-13-2018	pH	8.23	su			UF	REG	Field	
CAMO-19-164058	R-60	11-13-2018	Perchlorate	0.348	ug/L	Y		F	REG	SW-846:6850	LCMS/MS
CAMO-19-164171	R-60	11-13-2018	Radium-226	0.147	pCi/L	N	U	F	REG	EPA:903.1	RAD
CAMO-19-164171	R-60	11-13-2018	Radium-228	0.475	pCi/L	N	U	F	REG	EPA:904	RAD
CAMO-19-164161	R-60	11-13-2018	Aldrin	0.00707	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164059	R-60	11-13-2018	Aroclor-1016	0.0354	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164059	R-60	11-13-2018	Aroclor-1221	0.0354	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164059	R-60	11-13-2018	Aroclor-1232	0.0354	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164059	R-60	11-13-2018	Aroclor-1242	0.0354	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB

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Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-60, November 13, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164059	R-60	11-13-2018	Aroclor-1248	0.0354	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164059	R-60	11-13-2018	Aroclor-1254	0.0354	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164059	R-60	11-13-2018	Aroclor-1260	0.0354	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164059	R-60	11-13-2018	Aroclor-1262	0.0354	ug/L	N	U	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164161	R-60	11-13-2018	BHC[alpha-]	0.00707	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	BHC[beta-]	0.00707	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	BHC[gamma-]	0.00707	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	Chlordane(alpha/gamma)	0.0814	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	Chlordane[alpha-]	0.00707	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	Chlordane[gamma-]	0.00707	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	DDT[4,4'-]	0.0106	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	Dieldrin	0.0106	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	Endosulfan I	0.00707	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	Endosulfan II	0.0106	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	Endrin	0.0106	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	Heptachlor	0.00707	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	Toxaphene (Technical Grade)	0.160	ug/L	N	U	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164059	R-60	11-13-2018	Acenaphthene	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Acenaphthylene	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Aniline	4.20	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Anthracene	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Atrazine	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Azobenzene	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Benzidine	3.90	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Benzo(a)anthracene	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Benzo(a)pyrene	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Benzo(b)fluoranthene	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Benzo(g,h,i)perylene	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Benzo(k)fluoranthene	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Benzoic Acid	6.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Benzyl Alcohol	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Bis(2-chloroethoxy)methane	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Bis(2-chloroethyl)ether	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Bis(2-ethylhexyl)phthalate	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Bromophenyl-phenylether[4-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Butylbenzylphthalate	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Chloro-3-methylphenol[4-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Chloroaniline[4-]	3.30	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Chloronaphthalene[2-]	0.410	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Chlorophenol[2-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC

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Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-60, November 13, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164059	R-60	11-13-2018	Chlorophenyl-phenyl[4-] Ether	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Chrysene	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Dibenz(a,h)anthracene	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Dibenzofuran	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Dichlorobenzene[1,2-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Dichlorobenzene[1,3-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Dichlorobenzene[1,4-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Dichlorobenzidine[3,3'-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Dichlorophenol[2,4-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Diethylphthalate	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Dimethyl Phthalate	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Dimethylphenol[2,4-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Di-n-butylphthalate	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Dinitro-2-methylphenol[4,6-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Dinitrophenol[2,4-]	5.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Dinitrotoluene[2,4-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Dinitrotoluene[2,6-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Di-n-octylphthalate	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Dinoseb	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Dioxane[1,4-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Diphenylamine	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Fluoranthene	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Fluorene	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Hexachlorobenzene	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Hexachlorobutadiene	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Hexachlorocyclopentadiene	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Hexachloroethane	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Indeno(1,2,3-cd)pyrene	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Isophorone	3.50	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Methylnaphthalene[1-]	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Methylnaphthalene[2-]	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Methylphenol[2-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Methylphenol[3-,4-]	3.70	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Naphthalene	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Nitroaniline[2-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Nitroaniline[3-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Nitroaniline[4-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Nitrobenzene	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Nitrophenol[2-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Nitrophenol[4-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Nitrosodiethylamine[N-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC

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Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-60, November 13, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164059	R-60	11-13-2018	Nitrosodimethylamine[N-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Nitroso-di-n-butylamine[N-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Nitroso-di-n-propylamine[N-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Nitrosopyrrolidine[N-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Oxybis(1-chloropropane)[2,2'-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Pentachlorobenzene	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Pentachlorophenol	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Phenanthrene	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Phenol	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Pyrene	0.300	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Pyridine	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Tetrachlorobenzene[1,2,4,5]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Tetrachlorophenol[2,3,4,6-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Trichlorobenzene[1,2,4-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Trichlorophenol[2,4,5-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Trichlorophenol[2,4,6-]	3.00	ug/L	N	U	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Acetone	2.21	ug/L	Y	J	UF	REG	SW-846:8260B	VOC
CAMO-19-164060	R-60	11-13-2018	Acetone	2.74	ug/L	Y	J	UF	FB	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Acetonitrile	8.00	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Acrolein	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Acrylonitrile	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Benzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Bromobenzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Bromochloromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Bromodichloromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Bromoform	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Bromomethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Butanol[1-]	15.0	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Butanone[2-]	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Butylbenzene[n-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Butylbenzene[sec-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Butylbenzene[tert-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Carbon Disulfide	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Carbon Tetrachloride	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Chloro-1,3-butadiene[2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Chloro-1-propene[3-]	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Chlorobenzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Chlorodibromomethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Chloroethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Chloroform	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC

Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-60, November 13, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164059	R-60	11-13-2018	Chloromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Chlorotoluene[2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Chlorotoluene[4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Dibromo-3-Chloropropane[1,2-]	0.500	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Dibromoethane[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Dibromomethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Dichlorobenzene[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Dichlorobenzene[1,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Dichlorobenzene[1,4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Dichlorodifluoromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Dichloroethane[1,1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Dichloroethane[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Dichloroethene[1,1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Dichloroethene[cis-1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Dichloroethene[trans-1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Dichloropropane[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Dichloropropane[1,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Dichloropropane[2,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Dichloropropene[1,1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Dichloropropene[cis-1,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Dichloropropene[trans-1,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Diethyl Ether	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Ethyl Methacrylate	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Ethylbenzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Hexachlorobutadiene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Hexanone[2-]	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Iodomethane	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Isobutyl alcohol	15.0	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Isopropylbenzene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Isopropyltoluene[4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Methacrylonitrile	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Methyl Methacrylate	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Methyl tert-Butyl Ether	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Methyl-2-pentanone[4-]	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Methylene Chloride	1.00	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Naphthalene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Propionitrile	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Propylbenzene[1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Styrene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Tetrachloroethane[1,1,1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Tetrachloroethane[1,1,2,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC

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Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-60, November 13, 2018, Condition No. 36

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample Purpose	Lab Method	Method Category
CAMO-19-164059	R-60	11-13-2018	Tetrachloroethene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Toluene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Trichloro-1,2,2-trifluoroethane[1,1,2-]	2.00	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Trichlorobenzene[1,2,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Trichlorobenzene[1,2,4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Trichloroethane[1,1,1-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Trichloroethane[1,1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Trichloroethene	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Trichlorofluoromethane	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Trichloropropane[1,2,3-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Trimethylbenzene[1,2,4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Trimethylbenzene[1,3,5-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Vinyl acetate	1.50	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Vinyl Chloride	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Xylene[1,2-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Xylene[1,3-]+Xylene[1,4-]	0.300	ug/L	N	U	UF	REG	SW-846:8260B	VOC
CAMO-19-164161	R-60	11-13-2018	HMX	0.086	ug/L	N	U	UF	REG	SW-846:8330B	LCMS/MS HE
CAMO-19-164161	R-60	11-13-2018	RDX	0.086	ug/L	N	U	UF	REG	SW-846:8330B	LCMS/MS HE
CAMO-19-164161	R-60	11-13-2018	Trinitrotoluene[2,4,6-]	0.086	ug/L	N	U	UF	REG	SW-846:8330B	LCMS/MS HE

SAMPLE PURPOSE KEY

REG means regular field sample

FD means field duplicate sample

14475

DP-1132, Condition No. 36, Groundwater Monitoring Report, R-60, November 13, 2018.

a	Sample Date	11/13/2018
b	Sample Time	1108
c	Individuals collecting sample.	Vigil & Tow (TPMC)
d	Monitoring well identification.	R-60
e	Physical description of monitoring well location.	See Location Map, Attachment 15
f	Ground-water surface elevation. (ft below mean sea level (msl))	5905.58
g	Total depth of the well (ft below ground surface (bgs))	1360.9
h	Total volume of water in the monitoring well prior to sample collection. (gal)	57.76
i	Total volume of water purged prior to sample collection (gal).	220.13
j	Physical parameters including temperature, conductivity, pH, oxidation/reduction potential.	DO (mg/L): 5.94 Oxidation/Reduction Potential (MV): 237.0 Temp (deg C): 22.6 pH (SU): 8.23 Turbidity (NTU): 2.09 Specific Conductance (µS/cm): 126.4
k	Description of sample methods	See Attached Chain-of-Custody
l	Chain-of custody.	Attached
m	Location Map	Attachment 15

LANL SMO
Los Alamos NM

R-60

Chain of Custody/Analysis Request

COC/Lab Request #: 2019-457
Page 1 of 1

Client Contact:

Lab Agreement #:

Project Number:

Site Name: N3B LANL

~~Analysis Turnaround Time:~~
24 Hour - ☐ Other - ☒
7 Days - ☐
14 Days - ☐
21 Days - ☐
28 Days - ☐

Rad Screening Info:

Lab Reporting Limit Type: Method Detection Limit

Field Sample ID	Sample Date	Sample Time	Sample Matrix	MSGP-Hg	WSP-8082-PCB	WSP-8260B-VOA	WSP-8270C-SVOA	WSP-All Metals	WSP-CN(T)	WSP-GENINORG+PerChlorate	WSP-GrossA/B	WSP-LL-H-3	WSP-NH3+NO3/NO2+PO4	WSP-RAD	WSP-TKN+TOC
CAMO-19-164058	Nov 13 2018	11:08	W					1		1			1		
CAMO-19-164059	Nov 13 2018	11:08	W	1	3	2	2		1		1	1		1	1
CAMO-19-164060	Nov 13 2018	11:08	W		3	2	2								
CAMO-19-164061	Nov 13 2018	11:08	W			1									

Special Instructions:

Relinquished by:	Print Name: Allison Stanfield	Date/Time: 11/13/18 1430	Received by:	Print Name: Kate Ellers	Date/Time: 11.13.18 4:30
Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:
Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:

14477

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164161

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	11/13/18	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1108	↓	MEDIA:	OK	↓
PRS ID:	OK	↓	SAMPLE TECH CODE:	GSP	↓
LOCATION ID:	R-60	↓	FIELD PREP:	UF	↓
LOCATION TYPE:	OK	↓	FIELD QC TYPE:	REG	↓
TOP DEPTH:	↓	↓	SAMPLE USAGE:	INV	↓
BOTTOM DEPTH:	↓	↓	EXCAVATED:		YES / NO / (NA)

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	DP-TP-8081	1 LITER GLASS	3	ICE	Y	NA
↓	DP-TP-8330	1 LITER AMBER GLASS	3	ICE	↓	

SAMPLE COMMENTS: Sampled ≈ 40 ft. from running diesel generator

LOCATION COMMENTS: None

FIELD PARAMETERS:

Sample Time	1108	HH:MM	Casing Volume	3	UNITLESS	Discharge Rate	3.61	gal/min
Dissolved Oxygen	5.94	mg/L	Flow (in gpm)	3.61	GPM	Groundwater Elevation	5894.44	ft
Oxidation-Reduction Potential	237.0	MV	Period Purge Volume	NA	gal	pH	8.23	SU
Purge Volume	126.35	gal	Specific Conductance	126.4	uS/cm	Temperature	22.6	deg C
Total Volume Pumped	220.13	gal	Turbidity	2.09	NTU			

COLLECTED BY (PRINT): A. Vigil, K. Tow

RELINQUISHED BY (Printed Name) Allisyn Stanfield (Signature)	**Date/Time** 11/13/18 13:45	**RECEIVED BY** (Printed Name) S. Sherwood (Signature) S. Sherwood	**Date/Time** 11/13/18 13:45
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY** (Printed Name) (Signature)	**Date/Time**

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164171

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	11/13/18	ok	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):	1108		MEDIA:	ok	
PRS ID:	ok		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-60		FIELD PREP:	F	
LOCATION TYPE:	ok		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / (NA)

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	DP-Ra226+228	1 LITER POLY	4	HNO3	Y	NA

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time		HH:MM	Casing Volume		UNITLESS	Discharge Rate	gal/min
Dissolved Oxygen		mg/L	Flow (in gpm)		GPM	Groundwater Elevation	ft
Oxidation-Reduction Potential		MV	Period Purge Volume		gal	pH	SU
Purge Volume		gal	Specific Conductance		uS/cm	Temperature	deg C
Total Volume Pumped		gal	Turbidity		NTU		

11/13/18

COLLECTED BY (PRINT): A. Vigil, K. Tow

RELINQUISHED BY (Printed Name) Allisyn Stanfield (Signature)	**Date/Time** 11/13/18 13:45	**RECEIVED BY** (Printed Name) Sherwood (Signature) Sherwood	**Date/Time** 11/13/18 13:45
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY** (Printed Name) (Signature)	**Date/Time**

New Mexico Environment Department
Ground Water Quality Bureau

Inspection Report

Inspection Date:	February 4, 2019	**DP #:**	1132
		Facility Name:	Radioactive Liquid Waste Treatment Facility

Facility Contact Information – Scheduling Inspection

☑ **Scheduled Inspection - provide contact information** ☐ **Unannounced Inspection**

Person Contacted: Bob Beers

Phone Number: 505-667-7969

Facility Description

Waste Type: Dom - WW High Strength

Directions to Facility: 1 mi South of Los Alamos, MS K491

Inspection Information

Start Time: 9:00 AM **End Time:** 12:00 PM

NMED Inspector(s): Andrew Romero, Melanie Sandoval

Verify that NMED identification was presented: ☑ Yes ☐ No

Facility Representative(s) present during the Inspection/Discussion: Bob Beers

Reason for Inspection: permit compliance assessment

If "other", describe reason for inspection:

Discussion, Observations and Information Obtained

NMED staff met with Bob Beers at Technical Area 50 (TA-50) for a tour of the Radioactive Liquid Waste Treatment Facility. The collection system operates via gravity flow and has a leak detection system. The system consists of an influent pipe and a secondary pipe which would collect leaking water and deliver it to a sump with leak detection. The RLWTF influent consists of high-level waste coming from TA-55 into two tanks outside TA-50 (WMRM), and low-level wastewater coming into a 75,000-gallon subsurface concrete influent tank. Wastewater is treated via ion exchange, with a new plant design to go online in 2020 (estimated) for the treatment of up to 9,000,000 L/year. Treated wastewater is then disposed of in either the Mechanical Evaporator System (MES) or Outfall 051. The Solar Evaporative Tanks (SET) have not been utilized to date.

Photographic Documentation

Photos Taken? ☐ Yes - see attached ☑ No

Sample Information

Samples Collected? ☐ Yes ☑ No

Samples Collected by: N/A

Sample Id #s and locations:

Were samples split between permittee and NMED? ☐ Yes ☐ No ☑ N/A

Did the Facility Representative request copies of NMED's sampling results? ☐ Yes ☐ No ☑ N/A

Monitoring Well Camera Inspection

Monitoring well camera inspection conducted? ☐ Yes - see attached report(s) ☑ No

Initials of Report Preparer: AR

Environmental Protection & Compliance Division
Environmental Compliance Programs (EPC-CP)
PO Box 1663, K490
Los Alamos, New Mexico 87545
(505) 667-0666

National Nuclear Security Administration
Los Alamos Field Office
3747 West Jemez Road, A316
Los Alamos, New Mexico, 87544
(505) 665-7314 /Fax (505) 667-5948

Symbol: EPC-DO: 19-052
LA-UR: 19-21332
Locates Action No.: U1801172
Date: FEB 2 6 2019

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

Subject: DP-1132, Status Update on Malfunctioning RLWTF Vault and Sump Alarms

Dear Ms. Hunter:

On August 29, 2018, the New Mexico Environment Department (NMED) issued Discharge Permit DP-1132 to the U.S. Department of Energy (DOE) and Los Alamos National Security, LLC for the TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF). On November 1, 2018, DP-1132 was transferred to DOE and Triad National Security, LLC (DOE/Triad).

Discharge Permit DP-1132, Condition No. 13, *Maintenance and Repair*, requires DOE/Triad to maintain the function and structural integrity of the RLWTF at all times except during maintenance and repair. Maintenance and repair required at a unit that could lead to an unauthorized discharge to the environment or pose a threat to human health shall be corrected as soon as possible but no later than 30 days from the date of the observed malfunction. Condition No. 13 allows NMED to approve a longer period, for good cause.

Pursuant to permit Condition No. 13, on October 15, 2018, DOE/Triad informed NMED that seven secondary containment alarms—located in vaults and sumps—were malfunctioning (Attachment 1). Repair of these seven alarms could not be completed within 30 days from the date of the observed malfunction.

On December 4, 2018, DOE/Triad provided NMED with a report on the status of the seven malfunctioning alarms (Attachment 2). DOE/Triad reported that two of the seven vault alarms remained out of service. Further, DOE/Triad committed to complete repairs to the two malfunctioning alarms by February 15, 2019.

On February 11, 2019, DOE/Triad informed NMED that one vault alarm remained out of service and would not be repaired by February 15, 2019 (personal communication, Mr. Robert Beers, DOE/Triad, and Mr. Andrew Romero, NMED). NMED requested that DOE/Triad document the status of the vault alarms in writing. This letter updates the status of the two alarms, PLC11_SM749 and PLC11_SM776.

Repair Completed

PLC11_SM749 had probable breaks in underground communication wiring. A new wireless communication device was installed, tested, and confirmed to be functioning on December 15, 2018.

Repair in Progress

PLC11_SM776 has probable breaks in underground communication wiring, and is to be upgraded with a wireless communication device. Installation and testing was to have been completed by February 15, 2019. However, there have been delays in receiving the device and, as a result, installation and testing will not be complete until March 31, 2019.

Interim Actions

Until communication is re-established with alarm PLC11_SM776, the RLWTF will continue to perform weekly visual inspections of this vault. If liquid is discovered during a weekly inspection, the liquid will be sampled to determine if the water is due to vault infiltration, or due to a leak in the primary pipe.

In closing, the list of seven malfunctioning secondary containment alarms has now been reduced to one. That final alarm is scheduled to be repaired by March 31, 2019.

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

Sincerely,

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

Sincerely,

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

ET/KEA/MTS/RSB:jdm

Attachment(s): Attachment 1 DP-1132 Condition No. 13, Maintenance and Repair (EPC-DO-18-365)
Attachment 2 DP-1132 Status Update on Malfunctioning RLWTF Vault and Sump Alarms (EPC-DO-18-432)

Copy: Shelly Lemon, NMED/SWQB, Shelly.Lemon@state.nm.us, (E-File)
John E. Kieling, NMED/HWB, john.kieling@state.nm.us, (E-File)
Gerald Knutson, NMED/GWQB, Gerald.Knutson@state.nm.us, (E-File)
Andrew Romero, NMED/GWQB, AndrewC.Romero@state.nm.us, (E-File)
Karen E. Armijo, NA-LA, Karen.Armijo@nnsa.doe.gov, (E-File)
Michael W. Hazen, ALDESHQSS, mhazen@lanl.gov, (E-File)
William R. Marison, ADESHQSS, wmairson@lanl.gov, (E-File)
Enrique Torres, EPC-DO, etorres@lanl.gov, (E-File)
William H. Schwettmann, IPM, bills@lanl.gov, (E-File)
Raelynn Romero, PM6, raelynn@lanl.gov, (E-File)
Randal S. Johnson, DESHF-TA55, randyj@lanl.gov, (E-File)
Denise C. Gelston, TA-55-RLW, dgelston@lanl.gov, (E-File)
Alvin M. Aragon, TA-55-RLW, alaragon@lanl.gov, (E-File)
John C. Del Signore, TA-55-RLW, jcds@lanl.gov, (E-File)
Michael T. Saladen, EPC-CP, saladen@lanl.gov, (E-File)
Robert S. Beers, EPC-CP, bbeers@lanl.gov, (E-File)
locatesteam@lanl.gov, (E-File)
epc-correspondence@lanl.gov, (E-File)

ATTACHMENT 1

DP-1132 Condition No. 13, Maintenance and Repair
(EPC-DO-18-365)

EPC-DO: 19-052

LA-UR-19-21332

Date: FEB 2 6 2019

Los Alamos NATIONAL LABORATORY EST 1943

COPY

Environmental Protection & Compliance Division
Environmental Compliance Programs (EPC-CP)
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) 667-5105/Fax (505) 667-5948

Date: OCT 1 1 2018
Symbol: EPC-DO-18-365
LA-UR: 18-29518
Locates Action No.: U1801172

GROUND WATER
OCT 15 2018
BUREAU

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

Dear Ms. Hunter:

Subject: Discharge Plan DP-1132, Condition No. 13, Maintenance and Repair

On August 29, 2018, the New Mexico Environment Department (NMED) issued Discharge Permit DP-1132 to the U.S. Department of Energy and Los Alamos National Security, LLC (DOE/LANS) for discharges of treated effluent from the TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF). Condition No. 13, Maintenance and Repair, requires DOE/LANS to maintain the function and structural integrity of the RLWTF at all times except during maintenance and repair. Maintenance and repair required at a unit that could lead to an unauthorized discharge to the environment or pose a threat to human health shall be corrected as soon as possible but no later than 30 days from the date of the observed malfunction. Condition No. 13 allows NMED to approve a longer period, for good cause.

Pursuant to Condition No. 13, DOE/LANS have identified seven secondary containment alarms—located in vaults and sumps—that are presently malfunctioning. Repair of these seven alarms will not be completed within 30 days from the date of observed malfunction. Table 1 below provides additional, detailed information on each alarm.

Table 1. List of RLWTF Vault and Sump Alarms Requiring Repair

Tag Name	Location	Alarm Type	Malfunction Type
PLC11_SM749	TA-03-029	RLWCS[1] vault	Communication Failure
PLC11_SM776	TA-03-029	RLWCS vault	Communication Failure
PLC14_SM758	TA-03-130	RLWCS vault	Communication Failure
PLC2_INF_16_A11	TA-50-001	Containment sump	Communication Failure
PLC2_INF_16_A41	TA-50-001	Containment sump	Communication Failure
PLC2_INF_16_A51	TA-50-001	Containment sump	Communication Failure
PLC2_SMP_34B_A1	TA-50-001	Containment sump	Communication Failure

[1]Radioactive Liquid Waste Collection System

DOE/LANS estimate that the task of identifying the root cause for each of the malfunctioning alarms will take approximately 30 days. Once the root cause is determined then DOE/LANS will provide NMED with a schedule for completing the required repairs.

In the interim, until the alarms are fully functional, DOE/LANS commit to implement the following contingencies to ensure that no unauthorized discharge occurs to the environment.

Vault Alarms

- Weekly visual inspection of the vaults with the malfunctioning alarms.
- If liquid is identified during a weekly inspection then the liquid will be sampled to confirm that the source of the liquid is infiltrated ground or storm water and not radioactive liquid waste.

Sump Alarms

- Daily visual inspection of the sumps with the malfunctioning alarms.
- Functioning tank-level alarms that respond to rapid changes in tank volumes.

In closing, DOE/LANS has identified seven secondary containment alarms that require repair; the time period to complete said repairs will extend beyond the 30-day allowable window specified in DP-1132 Condition No. 13. DOE/LANS request 30 days to determine the root cause of the malfunctioning alarms. Once the root cause is identified then a schedule for completing the repairs will be submitted to NMED. DOE/LANS request NMED approval of the proposed plan.

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

Sincerely,

Taunia S. Van Valkenburg
Group Leader

Sincerely,

Karen E. Armijo
Permitting and Compliance Program Manager

ARG:KEA:MTS:RSB/jdm

Copy: Shelly Lemon, NMED/SWQB, (E-File)
John E. Kieling, NMED/HWB, (E-File)
Jody M. Pugh, NA-LA, (E-File)
Karen E. Armijo, NA-LA, (E-File)
Kristen M. Dors, LASO-MA-LS, (E-File)
Craig S. Leasure, PADOPS, (E-File)
William R. Mairson, ADESH, (E-File)
Enrique Torres, EPC-DO, (E-File)
Randal S. Johnson, DESHF-TA55, (E-File)
Denise C. Gelston, TA-55-RLW, (E-File)
Alvin M. Aragon, TA-55-RLW, (E-File)
John C. Del Signore, TA-55-RLW, (E-File)
Michael T. Saladen, EPC-CP, (E-File)
Robert S. Beers, EPC-CP, (E-File)
locatesteam@lanl.gov, (E-File)
epc-correspondence@lanl.gov, (E-File)

ATTACHMENT 2

DP-1132 Status Update on Malfunctioning RLWTF
Vault and Sump Alarms
(EPC-DO-18-432)

EPC-DO: 19-052

LA-UR-19-21332

Date: FEB 2 6 2019

Los Alamos NATIONAL LABORATORY

COPY

Environmental Protection & Compliance Division
Environmental Compliance Programs (EPC-CP)
PO Box 1663, K490
Los Alamos, New Mexico 87545
(505) 667-0666

National Nuclear Security Administration
Los Alamos Field Office
3747 West Jemez Road, A316
Los Alamos, New Mexico, 87544
(505) 665-7314/Fax (505) 667-5948

Symbol: EPC-DO-18-432
LA-UR: 18-30938
Locates Action No.: U1801172
Date: DEC 0 4 2018

GROUND WATER
DEC 0 4 2018
BUREAU

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

Subject: DP-1132, Status Update on Malfunctioning RLWTF Vault and Sump Alarms

Dear Ms. Hunter:

On October 15, 2018, the U.S. Department of Energy (DOE) and Los Alamos National Security, LLC submitted to the New Mexico Environment Department (NMED) notification pursuant to Condition No. 13 of Discharge Permit DP-1132 that seven secondary containment alarms at the Radioactive Liquid Waste Treatment Facility (RLWTF) were malfunctioning (EPC-DO-18-365). Subsequently, DP-1132 was transferred to Triad National Security, LLC (Triad). A copy of the above-referenced letter is provided as Attachment 1. The intent of this letter is to provide NMED with an update on the status of the seven malfunctioning secondary containment alarms.

In the attached letter, DOE/Triad identified seven malfunctioning secondary containment alarms. Three of the malfunctioning alarms have been repaired; two were mistakenly identified as malfunctioning; and two will be repaired over the next four months. Table 1.0 below summarizes the updated alarm status.

Table 1.0. Status Update of Malfunctioning RLWTF Vault and Sump Alarms

Alarm Tag	Location	Alarm Type	Repair Status
PLC11_SM749	TA03-029	vault	in progress
PLC11_SM776	TA03-029	vault	in progress
PLC14_SM758	TA03-130	vault	repaired
PLC2_INF_16_A11	TA50-001	pump control	mistakenly identified
PLC2_INF_16_A41	TA50-001	pump control	mistakenly identified
PLC2_INF_16_A5	TA50-001	floor sump	repaired
PLC2_SMP_34B_A1	TA50-001	floor sump	repaired

Alarms Repaired

- PLC14_SM758: An electrical relay was discovered to be defective, was replaced, and was tested to confirm operability. Communication has been re-established.
- PLC2_INF_16_A5: The communication module for this alarm, a part of the Programmable Logic Controller, was determined to be defective, was replaced, and was tested to confirm operability. Communication has been re-established.
- PLC2_SMP_34B_A1: Wiring between the alarm and the Programmable Logic Controller was corroded. Wiring was replaced, and the alarm was tested to confirm operability. Communication has been re-established.

Alarms Mistakenly Identified as Malfunctioning

- PLC2_INF_16_A11 and PLC2_INF_16_A41 were both determined to be pump ON-OFF controls, not secondary alarms. They had been mistakenly identified during a recent modification to the RLWTF building alarm system.

Repair in Progress

- PLC11_SM749 and PLC11_SM776 have probable breaks in underground communication wiring. These will be upgraded with wireless communication devices. For alarm PLC11_SM749, installation and testing is scheduled to be completed by December 15, 2018. For alarm PLC11_SM776, installation and testing is scheduled to be completed February 15, 2019.

Interim Actions

Until communication is re-established with alarms PLC11_SM749 and PLC11_SM776, the RLWTF will continue to perform weekly visual inspections of these vaults. If liquid is discovered during a weekly inspection, the liquid will be sampled to determine if the water is due to vault infiltration, or due to a leak in the primary pipe.

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

Very truly yours,

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

Very truly yours,

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

ET/KEA/MTS/RSB:jdm

Attachment(s): Attachment 1 October 15, 2018, Letter to NMED RE: DP-1132, Condition No. 13

Copy: Shelly Lemon, NMED/SWQB, Shelly.Lemon@state.nm.us, (E-File)
John E. Kieling, NMED/HWB, john.kieling@state.nm.us, (E-File)
Gerald Knutson, NMED/GWQB, Gerald.Knutson@state.nm.us, (E-File)
Andrew Romero, NMED/GWQB, AndrewC.Romero@state.nm.us, (E-File)
Karen E. Armijo, NA-LA, Karen.Armijo@nnsa.doe.gov, (E-File)
Michael W. Hazen, ALDESHQSS, mhazen@lanl.gov, (E-File)
William R. Marison, ADESH, wmairson@lanl.gov, (E-File)
Enrique Torres, EPC-DO, etorres@lanl.gov, (E-File)
William H. Schwettmann, IPM, bills@lanl.gov, (E-File)
Raelynn Romero, PM6, raelynn@lanl.gov, (E-File)
Randal S. Johnson, DESHF-TA55, randyj@lanl.gov, (E-File)
Denise C. Gelston, TA-55-RLW, dgelston@lanl.gov, (E-File)
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John C. Del Signore, TA-55-RLW, jcds@lanl.gov, (E-File)
Michael T. Saladen, EPC-CP, saladen@lanl.gov, (E-File)
Robert S. Beers, EPC-CP, bbeers@lanl.gov, (E-File)
locatesteam@lanl.gov, (E-File)
epc-correspondence@lanl.gov, (E-File)

Beers, Bob

From: Romero, Andrew C, NMENV <AndrewC.Romero@state.nm.us>
Sent: Friday, March 8, 2019 2:06 PM
To: Beers, Bob
Subject: Alluvial Monitoring Wells Workplan Approval Discrepencies

Bob,

On December 21, 2018, the New Mexico Environment Department (NMED) issued an Approval of Discharge Permit 1132 (DP-1132), Condition No. 33, Alluvial Monitoring Wells Workplan. Stated within this approval was the requirement to submit a monitoring well completion report to NMED within 45 days of the installation of the monitoring wells. DP-1132, Condition No. 33, however, states that "a monitoring well completion report documenting the installation will be submitted to NMED within 60 days following completion." The Discharge Permit that was issued on August 29, 2018, states the correct submittal date of the monitoring well completion report (within 60 days of completion). NMED hereby provides the allowance of the monitoring well completion report within 60 days of the installation of the monitoring wells, as opposed to the 45 days that were inadvertently requested in the workplan approval letter.

Please contact me if you have any questions.

Regards,

Andrew C. Romero
Environmental Scientist, Pollution Prevention Section
Ground Water Quality Bureau
New Mexico Environment Department
(505) 827-0076

Environmental Protection & Compliance Division
Environmental Compliance Programs (EPC-CP)
PO Box 1663, K490
Los Alamos, New Mexico 87545
(505) 667-0666

National Nuclear Security Administration
Los Alamos Field Office
3747 West Jemez Road, A316
Los Alamos, New Mexico, 87544
(505) 665-7314/Fax (505) 667-5948

Symbol: EPC-DO-19-069
LA-UR: 19-21981
Locates Action No.: U1801172
Date: MAR 20 2019

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

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

Dear Ms. Hunter:

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

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

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

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

Sincerely,

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

Sincerely,

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

ET/KEA/MTS/RSB:jdm

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

Copy: Shelly Lemon, NMED/SWQB, Shelly.Lemon@state.nm.us, (E-File)
John E. Kieling, NMED/HWB, john.kieling@state.nm.us, (E-File)
Gerald Knutson, NMED/GWQB, Gerald.Knutson@state.nm.us, (E-File)
Andrew Romero, NMED/GWQB, AndrewC.Romero@state.nm.us, (E-File)
Karen E. Armijo, NA-LA, Karen.Armijo@nnsa.doe.gov, (E-File)
Michael W. Hazen, ALDESHQSS, mhazen@lanl.gov, (E-File)
Enrique Torres, EPC-DO, etorres@lanl.gov, (E-File)
William H. Schwettmann, IPM, bills@lanl.gov, (E-File)
Raelynn Romero, PM6, raelynn@lanl.gov, (E-File)
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John C. Del Signore, TA-55-RLW, jcds@lanl.gov, (E-File)
Michael T. Saladen, EPC-CP, saladen@lanl.gov, (E-File)
Robert S. Beers, EPC-CP, bbeers@lanl.gov, (E-File)
locatesteam@lanl.gov, (E-File)
epc-correspondence@lanl.gov, (E-File)

ATTACHMENT 1

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

EPC-DO: 19-069

LA-UR-19-21981

Date: MAR 2 0 2019

EPC-DO-19-069

ATTACHMENT 1

COPY

LA-UR-19-21981

GROUND WATER
NOV 19 2018
BUREAU

Environmental Protection & Compliance Division
Environmental Compliance Programs (EPC-CP)
PO Box 1663, K490
Los Alamos, New Mexico 87545
(505) 667-0666

National Nuclear Security Administration
Los Alamos Field Office
3747 West Jemez Road, A316
Los Alamos, New Mexico, 87544
(505) 665-7314/Fax (505) 667-5948

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

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

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

Dear Ms. Hunter:

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

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

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

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

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

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

Sincerely,

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

Sincerely,

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

TVV/KEA/MTS/RSB:jdm

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

Copy: Shelly Lemon, NMED/SWQB, Shelly.Lemon@state.nm.us, (E-File)
John E. Kieling, NMED/HWB, john.kieling@state.nm.us, (E-File)
Gerald Knutson, NMED/GWQB, Gerald.Knutson@state.nm.us, (E-File)
Andrew Romero, NMED/GWQB, AndrewC.Romero@state.nm.us, (E-File)
Karen E. Armijo, NA-LA, Karen.Armijo@nnsa.doe.gov, (E-File)
Michael W. Hazen, ALDESHQSS, mhazen@lanl.gov, (E-File)
Enrique Torres, EPC-DO, etorres@lanl.gov, (E-File)
William H. Schwettmann, IPM, bills@lanl.gov, (E-File)
Raelynn Romero, PM6, raelynn@lanl.gov, (E-File)
Randal S. Johnson, DESHF-TA55, randyj@lanl.gov, (E-File)
Denise C. Gelston, TA-55-RLW, dgelston@lanl.gov, (E-File)
Alvin M. Aragon, TA-55-RLW, alaragon@lanl.gov, (E-File)
John C. Del Signore, TA-55-RLW, jcds@lanl.gov, (E-File)

Michael T. Saladen, EPC-CP, saladen@lanl.gov, (E-File)
Robert S. Beers, EPC-CP, bbeers@lanl.gov, (E-File)
Steven G. Pearson, EPC-CP, spearson@lanl.gov, (E-File)
locatesteam@lanl.gov, (E-File)
epc-correspondence@lanl.gov, (E-File)

ENCLOSURE 1

DP-1132, Verification of Secondary Containment

EPC-DO: 18-403

LA-UR-18-30432

Date: NOV 19 2018

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

November 2018

Purpose

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

Requirements

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

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

Scope of the Secondary Containment Survey

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

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

Treatment Processes

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

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

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

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

Treatment Units

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

TABLE 1: RLWTF TREATMENT PROCESSES AND UNITS

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

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

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

Vessels and Secondary Containment

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

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

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

Survey Summary

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

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

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

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

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

Table 2: RLWTF Vessels and Secondary Containment

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

Notes: See Page 6

Table 2: RLWTF Vessels and Secondary Containment (concluded)

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

Notes:

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

From: Romero, Andrew C, NMENV
To: Beers, Bob
Subject: Approval of DP-1132, Condition No. 53 Request for an Extension of Time
Date: Wednesday, April 3, 2019 4:52:40 PM

Bob,

On January 23, 2019, the New Mexico Environment Department (NMED) Ground Water Quality Bureau (GWQB) received *DP-1132, Condition No. 53, Request for an Extension of Time to Complete Outfall 051 Pipeline Water Tightness Testing.* Condition No. 8 of DP-1132 requires DOE/TRIAD demonstrate that the pipeline conveying treated wastewater from the TA-50 RLWTF to Outfall 051 - a pipeline without secondary containment - is not leaking. Further, Condition No. 8 stipulates that the tightness test shall be completed by February 25, 2019, 180 days after permit issuance.

DOE/TRIAD requests an extension of time for conducting water tightness testing for the following two reasons:

- Between December 15, 2018, and January 15, 2019, Los Alamos National Laboratory received in excess of 3 6 inches of snow. The terminus of the outfall pipeline is down a north facing, very steep, dirt road. Access to the outfall prior to spring snow melt could presents significant safety concerns for LANL workers
- NPDES Outfall 051 is located within the Mexican Spotted Owl core habitat in Mortandad Canyon. The Mexican Spotted Owl is listed as a threatened species by the U.S. Fish and Wildlife Service. During the Mexican Spotted Owl's breeding season, noise disturbance is not permitted in its core habitat. Conducting work with heavy equipment or other noise-generating machinery is prohibited between March 1 and May 15.

Due to the factors listed above, DOE/Triad estimate that an additional four months will be required to complete water tightness testing of the pipeline to Outfall 051. Accordingly, DOE/Triad request an extension of time until June 25, 2019.

NMED hereby approves a longer period, for good cause, for Condition No. 8 as described in the Request for an Extension of Time to Complete Outfall 051 Pipeline Water Tightness Testing.

Approval of the *DP-1132, Condition No. 53, Request for an Extension of Time to Complete Outfall 051 Pipeline Water Tightness Testing* does not relieve the Permittee of the responsibility to comply with any other applicable federal, state, and/or local laws and regulations. This approval does not relieve the Permittee of liability should operations associated with this time extension result in actual pollution of ground or surface waters.

Thank you for your cooperation.

Andrew C. Romero
Environmental Scientist, Pollution Prevention Section
Ground Water Quality Bureau
New Mexico Environment Department
(505) 827-0076