

HOWIE C. MORALES Lieutenant Governor

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

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

S Domestic Mail Only 621 For delivery information, visit o 4183 Certified Mail Fee Extra Services & Fees (check box, add fee Return Receipt (hardcopy) 0000 Return Receipt (electronic) Certified Mail Restricted Delivery Adult Signature Required Adult Signature Restricted Delivery \$ 3040 Taunia S. Van V Total Postag Group Leader Environmental P 7017 Sent To Triad National S Street and A Po Box 1663, K Los Alamos, NM City, State, 2 PS Form 3800, April 2015 PSN 7530-02-0

U.S. Postal Service CERTIFIED MAIL

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.

Taunia Van Valkenburg and Karen Armijo, DP-1132 January 30, 2019 Page 2 of 2

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

Enrique Torres and Karen A jo, DP-1132 January 30, 2019 Page 3 of 2

> 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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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

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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.

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U.S. Postal Service

CERTIFIED MAIL

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Enrique 'KiKi" Torr

Triad National Sec Po Box 1663, K49

Los Alamos, NM 8

Division Leader Environmental Pro

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Enrique Torres and Karen Arm, DP-1132 January 30, 2019 Page 2 of 2

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



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 3 0 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



EPC-DO:19-021 Ms. Michelle Hunter Ms. Shelly Lemon

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-SWOB, 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, ALDESHOSS, 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 3 0 2019

	Occurrence Type of Release	10/2/2018 Potable Water	10/2/2018 Potable Water TA-55	10/2/2018 Potable Water TA-55	10/3/2018 Potable Water T	10/3/2018 Potable Water T		10/3/2018 Potable Water TA	Potable Water Potable Water	Potable Water Potable Water Potable Water	Potable Water Potable Water Potable Water	Potable Water Potable Water Potable Water Potable Water	Potable Water Potable Water Potable Water Potable Water Potable Water	Potable Water Potable Water Potable Water Potable Water Potable Water Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water
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TA-33-114; Fire Suppression System-SPW	TA-48-01; Fire Suppression System-SPW	TA-16-304; Fire Suppression System-SPW	TA-16-411; Fire Suppression System-SPW	TA-16-304; Fire Suppression System-SPW	TA-40; Hydrant-533	TA-53-54; Fire Suppression System	TA-53-988; Fire Suppression System	TA-16-180; Fire Suppression System	TA-16-218; Fire Suppression System-SPW	TA-3-2322; Fire Suppression System-SPW	TA-16-263; Fire Suppression System-SPW	TA-16-261; Fire Suppression System-SPW	TA-39; Hydrant	TA-9-21; Fire Suppression System-SPW	TA-16-450; Fire Suppression System-SPW	TA-46-535; Fire Suppression System-SPW	TA-55-04; Fire Suppression System - South	TA-55-04; Fire Suppression System - North	TA-55-04; Fire Suppression System - Discharge Point-306	TA-55-04; Fire Suppression System - Discharge Point-111	Location	Qua (October
LOG-FP	LOG-FP	LOG-FP	LOG-FP	LOG-FP	UI	LOG-FP	LOG-FP	LOG-FP	LOG-FP	LOG-FP	LOG-FP	LOG-FP	IN	LOG-FP	LOG-FP	LOG-FP	TA-55	TA-55	TA-55	TA-55	Organization	Quarterly Discharge Report (October 1, 2018 - December 31, 2018)
~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	\sim 3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	\sim 200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	\sim 750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	\sim 50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	\sim 275 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	\sim 325 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~325 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	\sim 350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	\sim 4,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	~375 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	\sim 120 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	\sim 20 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~80 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~70 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	Comments 14	or 11, 2018)

10/18/2018	10/18/2018	10/18/2018	10/18/2018	10/18/2018	10/18/2018	10/18/2018	10/18/2018	10/18/2018	10/18/2018	10/18/2018	10/18/2018	10/18/2018	10/18/2018	10/18/2018	10/18/2018	10/18/2018	10/18/2018	10/18/2018	10/18/2018	10/18/2018	Occurrence T	
Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Type of Release					
TA-55-02; Fire Suppression System - Discharge Point-1391-1	TA-55-371; Fire Suppression System - Discharge Point-371-04	TA-55-39; Fire Suppression System - Discharge Point-1728	TA-55-39; Fire Suppression System - Discharge Point-1782	TA-55-42; Fire Suppression System - Discharge Point-1421	TA-55-42; Fire Suppression System - Discharge Point-1421	TA-55-05; Fire Suppression System - Discharge Point-1784	TA-55-06; Fire Suppression System - Discharge Point-1445-2	TA-55-06; Fire Suppression System - Discharge Point-1445	TA-55-08; Fire Suppression System - Discharge Point-904	TA-55-08; Fire Suppression System - Discharge Point-904	TA-55-05; Fire Suppression System - Discharge Point-1784-1	TA-55-371; Fire Suppression System - Discharge Point-371-03	TA-55-314; Fire Suppression System - Discharge Point-2051	TA-55-314; Fire Suppression System - Discharge Point-2051-230	TA-55-03; Fire Suppression System - Discharge Point-1393	TA-55-03; Fire Suppression System - Discharge Point-B93	TA-53-988; Fire Suppression System	TA-53-54; Fire Suppression System	TA-55-114; Fire Suppression System - Discharge Point-1252-1	TA-55-11; Fire Suppression System - Discharge Point-1458	Location	Quan (October 1
TA-55	TA-55	TA-55	TA-55	TA-55	TA-55	TA-55	TA-55	TA-55	TA-55	TA-55	TA-55	TA-55	TA-55	TA-55	TA-55	TA-55	LOG-FP	LOG-FP	TA-55	TA-55	Organization	Quarterly Discharge Report (October 1, 2018 - December 31, 2018)
~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~20 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~20 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	\sim 25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	∼25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~20 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~20 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	Comments 14	ort 31, 2018)

10/18/2018 10/18/2018 10/18/2018 10/18/2018 10/18/2018 10/18/2018 10/18/2018 10/18/2018 10/18/2018 10/18/2018 10/18/2018	Potable Water	Location TA-55-02; Fire Suppression System - Discharge Point-1391-2 TA-55-28; Fire Suppression System - Discharge Point-1466-N TA-55-03; Fire Suppression System - Discharge Point-1393 TA-55-03; Fire Suppression System - Discharge Point-1393-1 TA-55-02; Fire Suppression System - Discharge Point-1391 TA-55-02; Fire Suppression System - Discharge Point-1391 TA-55-114; Fire Suppression System - Discharge Point-1252-2 TA-16-180; Fire Suppression System - Discharge Point-1929-210 TA-55-114; Fire Suppression System - Discharge Point-1929-210 TA-55-114; Fire Suppression System - Discharge Point-1929-210	Organization TA-55 TA-55 TA-55 TA-55 TA-65 TA-65 TA-65 TA-65 LOG-FP TA-55	Organization Comments scharge TA-55 -30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. scharge TA-55 -40 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. scharge TA-55 -fire suppression system. scharge TA-55 -40 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. scharge TA-55 -40 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. scharge TA-55 -70 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. scharge TA-55 -50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. scharge TA-55 -50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. scharge TA-55 -50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. scharge TA-55 -50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. scharge -50 gallons of dechlorinated potable water was discharged
018	Potable Water Potable Water	TA-55-02; Fire Suppression System - Discharge Point-1391 TA-55-114; Fire Suppression System - Discharge Point-1252-2	TA-55 TA-55	~50 gallons of dechlorinated potable water fire suppression system. ~30 gallons of dechlorinated potable water fire suppression system.
10/18/2018	Potable Water	TA-16-180; Fire Suppression System TA-55-142: Fire Suppression System - Discharge	LOG-FP	~50 gallons of dechlorinated potable water v ~5 gallons of dechlorinated potable water v ~5 gallons of dechlorinated potable water v
10/18/2018 10/18/2018	Potable Water Potable Water	IA-55-142; Fire Suppression System - Discharge Point-1929-210 TA-55-114; Fire Suppression System - Discharge Point-1252	TA-55	 5 gallons of dechlorinated potable water suppression system. 5 gallons of dechlorinated potable water suppression system.
10/18/2018	Potable Water	TA-55-142; Fire Suppression System - Discharge Point-1929	TA-55	$\sim\!\!30$ 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	$\sim\!\!500$ 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	$\sim\!\!700$ 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	\sim 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	\sim 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	\sim 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	\sim 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	\sim 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.

10/30/2018	10/29/2018	10/29/2018	10/29/2018	10/29/2018	10/29/2018	10/29/2018	10/29/2018	10/28/2018	10/26/2018	10/26/2018	10/26/2018	10/26/2018	10/25/2018	10/25/2018	10/25/2018	10/25/2018	10/25/2018	10/23/2018	10/23/2018	10/23/2018	Occurrence Date	
Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Type of Release	
TA-55-11; Fire Suppression System - Discharge Point-1458-57	TA-55-371; Fire Suppression System - Discharge Point-1445	TA-55-371; Fire Suppression System - Discharge Point-904	TA-46-154; Fire Suppression System-SPW	TA-46-77; Fire Suppression System-SPW	TA-46-75; Fire Suppression System-SPW	TA-46-158; Fire Suppression System-SPW	TA-3-32; Fire Suppression System-SPW	TA-54-38; Fire Suppression System	TA-46-32; Fire Suppression System-SPW	TA-46-31; Fire Suppression System-SPW	TA-46-30; Fire Suppression System-SPW	TA-3-1819; Fire Suppression System-SPW	TA-16-180; Fire Suppression System	TA-53-988; Fire Suppression System	TA-53-54; Fire Suppression System	TA-55-371; Fire Suppression System - Discharge Point-1445	TA-55-371; Fire Suppression System - Discharge Point-904	TA-3-508; Fire Suppression System-SPW	TA-16-267; Fire Suppression System-SPW	TA-16-207; Fire Suppression System-SPW	Location	Quar (October 1
TA-55	TA-55	TA-55	LOG-FP	LOG-FP	LOG-FP	LOG-FP	LOG-FP	TA-55	LOG-FP	LOG-FP	LOG-FP	LOG-FP	LOG-FP	LOG-FP	LOG-FP	TA-55	TA-55	LOG-FP	LOG-FP	LOG-FP	Organization	Quarterly Discharge Report (October 1, 2018 - December 31, 2018)
~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~400 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~450 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~500 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	Comments 14	31, 2018)

	11/6/2018	11/5/2018	11/5/2018	11/5/2018	11/5/2018	11/5/2018	11/1/2018	11/1/2018	11/1/2018	11/1/2018	11/1/2018	11/1/2018	11/1/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	Occurrence Date	
	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Type of Release	
Point-1458-57	TA-55-11; Fire Suppression System - Discharge	TA-49-153; Water Line	TA-3-3093; Fire Suppression System-SPW	TA-36-01; Water Line	TA-60-245; Fire Suppression System-SPW	TA-48-01; Fire Suppression System-SPW	TA-03-29 SE; Fire Suppression System	TA-03-29 NW; Fire Suppression System	TA-16-180; Fire Suppression System	TA-53-988; Fire Suppression System	TA-53-54; Fire Suppression System	TA-3-422; Fire Suppression System-SPW	TA-33-114; Fire Suppression System-SPW	TA-46-161; Fire Suppression System-SPW	TA-46-250; Fire Suppression System-SPW	TA-46-200; Fire Suppression System-SPW	TA-3-123; Fire Suppression System-SPW	TA-35-88; Fire Suppression System	TA-55-10; Fire Suppression System - Discharge Point-1469-59	Location	Quar (October 1
	TA-55	UI	LOG-FP	UI	LOG-FP	LOG-FP	TA-55	TA-55	LOG-FP	LOG-FP	LOG-FP	LOG-FP	LOG-FP	LOG-FP	LOG-FP	LOG-FP	LOG-FP	LOG-FP	TA-55	Organization	Quarterly Discharge Report (October 1, 2018 - December 31, 2018)
fire suppression system.	~256 gallons of dechlorinated potable water was discharged to the environment from the	~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.	~275 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~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.	~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~4,500 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~4,500 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~325 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	Comments 14	31, 2018)

11/9/2018	11/9/2018	11/9/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018	11/7/2018	11/7/2018	11/7/2018	11/7/2018	11/7/2018	11/7/2018	11/7/2018	11/7/2018	11/6/2018	11/6/2018	11/6/2018	11/6/2018	Occurrence Date	
Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Type of Release	
TA-15; Hydrant-171	TA-15; Hydrant-932	TA-15; Hydrant-536	TA-53-54; Fire Suppression System	TA-39; Hydrant	TA-03-141; Fire Suppression System-SPW	TA-16-180; Fire Suppression System	TA-53-988; Fire Suppression System	TA-63-147; Fire Suppression System	TA-33; Hydrant-456	TA-22; Hydrant-903	TA-22; Hydrant-422	TA-63-147; Fire Suppression System	TA-54-38; Fire Suppression System	TA-48-01; Fire Suppression System-SPW	TA-55-11; Fire Suppression System - Discharge Point-1458-47	TA-55-10; Fire Suppression System - Discharge Point-1469-59	TA-48-01; Fire Suppression System-SPW	TA-35-88; Fire Suppression System	TA-54-38; Fire Suppression System	TA-55-10; Fire Suppression System - Discharge Point-1469-59	Location	Quar (October 1
U	UI	U	LOG-FP	C	LOG-FP	LOG-FP	LOG-FP	LOG-FP	UI	⊆	CI	TA-55	TA-55	LOG-FP	TA-55	TA-55	LOG-FP	LOG-FP	TA-55	TA-55	Organization	Quarterly Discharge Report (October 1, 2018 - December 31, 2018)
\sim 2,700 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	~3,000 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	~3,000 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~4,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	~375 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	\sim 750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	\sim 4,000 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	\sim 3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	~100 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	\sim 80 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	\sim 250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~60 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~60 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~5,000 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	Comments 14	ort 11, 2018)

~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-53-54; Fire Suppression System	Potable Water	11/15/2018
\sim 3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	UI	TA-40; Hydrant-533	Potable Water	11/14/2018
~80 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-63-147; Fire Suppression System	Potable Water	11/14/2018
~375 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-2010; Fire Suppression System-SPW	Potable Water	11/14/2018
~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-2327; Fire Suppression System-SPW	Potable Water	11/14/2018
~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-9-29; Fire Suppression System-SPW	Potable Water	11/14/2018
~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-8-70; Fire Suppression System-SPW	Potable Water	11/14/2018
~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.	UI	TA-51; Water Line	Potable Water	11/14/2018
~90 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-55-04; Fire Suppression System - South	Potable Water	11/14/2018
~20 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-55-04; Fire Suppression System - North	Potable Water	11/14/2018
~90 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-55-04; Fire Suppression System - Discharge Point-306	Potable Water	11/14/2018
~90 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-55-04; Fire Suppression System - Discharge Point-111	Potable Water	11/14/2018
~375 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-1411; Fire Suppression System-SPW	Potable Water	11/13/2018
~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-410; Fire Suppression System-SPW	Potable Water	11/13/2018
~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	UI	TA-46; Hydrant-673	Potable Water	11/13/2018
~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-6-124; Fire Suppression System-SPW	Potable Water	11/13/2018
\sim 250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-9-29; Fire Suppression System-SPW	Potable Water	11/13/2018
~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-16-260; Fire Suppression System-SPW	Potable Water	11/13/2018
~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-55-10; Fire Suppression System - Discharge Point-1469-59	Potable Water	11/13/2018
~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-55-11; Fire Suppression System - Discharge Point-1458-57	Potable Water	11/13/2018
Comments 14	Organization	Location	Type of Release	Occurrence Date
ort 1, 2018)	Quarterly Discharge Report (October 1, 2018 - December 31, 201	Quai (October		

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~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-22-120; Fire Suppression System-SPW	Potable Water	11/26/2018
~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-6-124; Fire Suppression System-SPW	Potable Water	11/26/2018
\sim 750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-40; Fire Suppression System-SPW	Potable Water	11/26/2018
~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-22-115; Fire Suppression System-SPW	Potable Water	11/26/2018
~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-15-280; Fire Suppression System-SPW	Potable Water	11/26/2018
~80 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-63-147; Fire Suppression System	Potable Water	11/20/2018
~ 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.	UI	TA-49; Water Line	Potable Water	11/20/2018
~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-55-11; Fire Suppression System - Discharge Point-1458-57	Potable Water	11/20/2018
~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-55-10; Fire Suppression System - Discharge Point-1469-59	Potable Water	11/20/2018
~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-40; Fire Suppression System-SPW	Potable Water	11/19/2018
~500 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-1420; Fire Suppression System-SPW	Potable Water	11/19/2018
~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-15-285; Fire Suppression System-SPW	Potable Water	11/19/2018
~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-63-111; Fire Suppression System-SPW	Potable Water	11/16/2018
~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-1410; Fire Suppression System-SPW	Potable Water	11/16/2018
~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-102; Fire Suppression System-SPW	Potable Water	11/16/2018
~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-16-414; Fire Suppression System-SPW	Potable Water	11/16/2018
~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-63-121; Fire Suppression System-SPW	Potable Water	11/15/2018
~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-15-183; Fire Suppression System-SPW	Potable Water	11/15/2018
~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-16-180; Fire Suppression System	Potable Water	11/15/2018
\sim 750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-53-988; Fire Suppression System	Potable Water	11/15/2018
Comments	Organization	Location	Type of Release	Occurrence Date
ort 1, 2018)	Quarterly Discharge Report (October 1, 2018 - December 31, 2018)	Quar (October 1		

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~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-55-10; Fire Suppression System - Discharge Point-1469-59	Potable Water	12/4/2018
~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-55-11; Fire Suppression System - Discharge Point-1458-57	Potable Water	12/4/2018
~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-46-335; Fire Suppression System-SPW	Potable Water	12/3/2018
~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-1498; Fire Suppression System-SPW	Potable Water	12/3/2018
~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-16-180; Fire Suppression System	Potable Water	11/29/2018
~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-53-988; Fire Suppression System	Potable Water	11/29/2018
~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-53-54; Fire Suppression System	Potable Water	11/29/2018
~80 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-63-147; Fire Suppression System	Potable Water	11/28/2018
~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-40; Fire Suppression System-SPW	Potable Water	11/28/2018
~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-494; Fire Suppression System-SPW	Potable Water	11/28/2018
~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-22-34; Fire Suppression System-SPW	Potable Water	11/27/2018
~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-316; Fire Suppression System-SPW	Potable Water	11/27/2018
~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-562; Fire Suppression System-SPW	Potable Water	11/27/2018
~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-1076; Fire Suppression System-SPW	Potable Water	11/27/2018
$\sim\!\!750$ gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-40; Fire Suppression System-SPW	Potable Water	11/27/2018
~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-35-88; Fire Suppression System	Potable Water	11/27/2018
\sim 256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-55-10; Fire Suppression System - Discharge Point-1469-59	Potable Water	11/27/2018
~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-55-11; Fire Suppression System - Discharge Point-1458-57	Potable Water	11/27/2018
~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.	Ξ	TA-03; Water Line	Potable Water	11/26/2018
~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-40-23; Fire Suppression System-SPW	Potable Water	11/26/2018
Comments 14	Organization	Location	Type of Release	Occurrence Date
ort 11, 2018)	Quarterly Discharge Report (October 1, 2018 - December 31, 2018)	Qua (October		

~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-1400; Fire Suppression System-SPW	Potable Water	12/10/2018
\sim 450 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-22-34; Fire Suppression System-SPW	Potable Water	12/10/2018
\sim 3,300 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	IN	TA-15; Hydrant-171	Potable Water	12/7/2018
~2,900 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	IU	TA-15; Hydrant-932	Potable Water	12/7/2018
~3,100 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	UI	TA-15; Hydrant-536	Potable Water	12/7/2018
~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-15-312; Fire Suppression System-SPW	Potable Water	12/7/2018
~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-15-564; Fire Suppression System-SPW	Potable Water	12/7/2018
~450 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-22-34; Fire Suppression System-SPW	Potable Water	12/7/2018
~2,700 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	U	TA-33; Hydrant-456	Potable Water	12/6/2018
~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-16-192; Fire Suppression System-SPW	Potable Water	12/6/2018
~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-16-180; Fire Suppression System	Potable Water	12/6/2018
~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-53-988; Fire Suppression System	Potable Water	12/6/2018
~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-53-54; Fire Suppression System	Potable Water	12/6/2018
~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	U	TA-22; Hydrant-903	Potable Water	12/5/2018
~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	U	TA-22; Hydrant-422	Potable Water	12/5/2018
~775 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-38; Fire Suppression System-SPW	Potable Water	12/5/2018
~775 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-38; Fire Suppression System-SPW	Potable Water	12/4/2018
~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-53-365; Fire Suppression System-SPW	Potable Water	12/4/2018
~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-35-88; Fire Suppression System	Potable Water	12/4/2018
~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.	STO	TA-35-126; Water Line	Potable Water	12/4/2018
Comments 14	Organization	Location	Type of Release	Occurrence Date
ort 31, 2018)	Quarterly Discharge Report (October 1, 2018 - December 31, 2018)	Qua (October		

		Quar (October 1	Quarterly Discharge Report (October 1, 2018 - December 31, 2018)	ort 1, 2018)
Occurrence Date	Type of Release	Location	Organization	Comments 14
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	\sim 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	$\sim\!256$ 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	\sim 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	⊑	~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	<u>u</u>	~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	\sim 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	U	~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	\sim 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.

~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-60-02; Fire Suppression System-SPW	Potable Water	12/18/2018
\sim 250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-60-17; Fire Suppression System-SPW	Potable Water	12/18/2018
\sim 200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-3-29-4; Fire Suppression System	Potable Water	12/18/2018
~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-3-29-1; Fire Suppression System	Potable Water	12/18/2018
~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-55-10; Fire Suppression System - Discharge Point-1469-59	Potable Water	12/18/2018
\sim 256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-55-11; Fire Suppression System - Discharge Point-1458-57	Potable Water	12/18/2018
~600 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-63-144; Fire Suppression System	Potable Water	12/17/2018
~400 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-53-02; Fire Suppression System-SPH	Potable Water	12/17/2018
~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-16-200; Fire Suppression System-SPW	Potable Water	12/17/2018
\sim 200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-3-29-7; Fire Suppression System	Potable Water	12/17/2018
~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-3-29-2; Fire Suppression System	Potable Water	12/17/2018
~4,000 gallons of dechlorinated potable water was discharged to the environment while connecting a water line.	UI	TA-46-778; Water Line	Potable Water	12/16/2018
~4,500 gallons of dechlorinated potable water was discharged to the environment while connecting a water line.	υI	TA-46-778; Water Line	Potable Water	12/16/2018
~3,500 gallons of dechlorinated potable water was discharged to the environment while connecting a water line.	IN	TA-46-119; Water Line	Potable Water	12/15/2018
~900 gallons of dechlorinated potable water was discharged to the environment while connecting a water line.	IN	TA-3-680; Water Line	Potable Water	12/15/2018
~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.	WFO	TA-16-267; Fire Suppression System	Potable Water	12/14/2018
~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-2006; Fire Suppression System-SPW	Potable Water	12/14/2018
~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-2007; Fire Suppression System-SPW	Potable Water	12/14/2018
~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-2008; Fire Suppression System-SPW	Potable Water	12/14/2018
~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-3-2009; Fire Suppression System-SPW	Potable Water	12/14/2018
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\sim 1,000 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	TA-55	TA-54-38; Fire Suppression System	Potable Water	11/4/2018 -
~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.	<u> </u>	TA-55-314; Water Line	Potable Water	10/10/2018- 11/27/2018
~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.	S	TA-3-1651; Water Line	Potable Water	10/3/2018 - 10/4/2018
~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.	⊆	TA-3-22; Water Line	Potable Water	12/29/2019
~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-35-88; Fire Suppression System	Potable Water	12/27/2018
\sim 50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-16-180; Fire Suppression System	Potable Water	12/27/2018
\sim 750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-53-988; Fire Suppression System	Potable Water	12/27/2018
~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-53-54; Fire Suppression System	Potable Water	12/27/2018
~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-16-180; Fire Suppression System	Potable Water	12/20/2018
\sim 750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-53-988; Fire Suppression System	Potable Water	12/20/2018
\sim 200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-53-54; Fire Suppression System	Potable Water	12/20/2018
~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.	UI	TA-18; Water Line	Potable Water	12/20/2018
~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-16-305; Fire Suppression System-SPW	Potable Water	12/19/2018
~325 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-22-34; Fire Suppression System-SPW	Potable Water	12/19/2018
\sim 2,355 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	⊊	TA-3; Hydrant-40-784	Potable Water	12/19/2018
\sim 2,355 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.	UI	TA-3; Hydrant-67-653	Potable Water	12/19/2018
~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-16-410; Fire Suppression System-SPW	Potable Water	12/19/2018
~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.	LOG-FP	TA-35-88; Fire Suppression System	Potable Water	12/18/2018
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Symbol: EPC-DO-19-018

LA-UR: 19-20526

Locates Action No.: U1801172

Date: JAN 3 1 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, 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, NO₃-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, NO₃+NO₂-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.



Page 5

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, NO₃+NO₂-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, NO₃+NO₂-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 (NO₃+NO₂-N) was detected at a concentration of 11.2 mg/L; the NMWQCC Regulation 3103 Ground Water Standard is 10 mg/L. The average NO₃+NO₂-N concentration at MCOI-6 during the 5-yr period from 2014 through 2018 was 9.0 mg/L. The maximum NO₃+NO₂-N concentration during the referenced period was 11.5 mg/L. Detections of NO₃+NO₂-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 NO₃+NO₂-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 beers@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



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ATTACHMENT 1

Updated schematic of all major structures at the RLWTF

EPC-DO: 19-018

LA-UR-19-20526

Date: JAN 3 1 2019

TZ TRU INFLUENT TANKS

50-066

RLWTF TREATMENT UNIT LOCATIONS

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

DATE 12/18/2017

3 or

REMORDS JOHN C DO. SIGNORE DATE 12/19/2017

3532

LOS AZAMOS PO Box 1963
RATIONAL LABORATORY Los Alamas, Nov Menico 87545

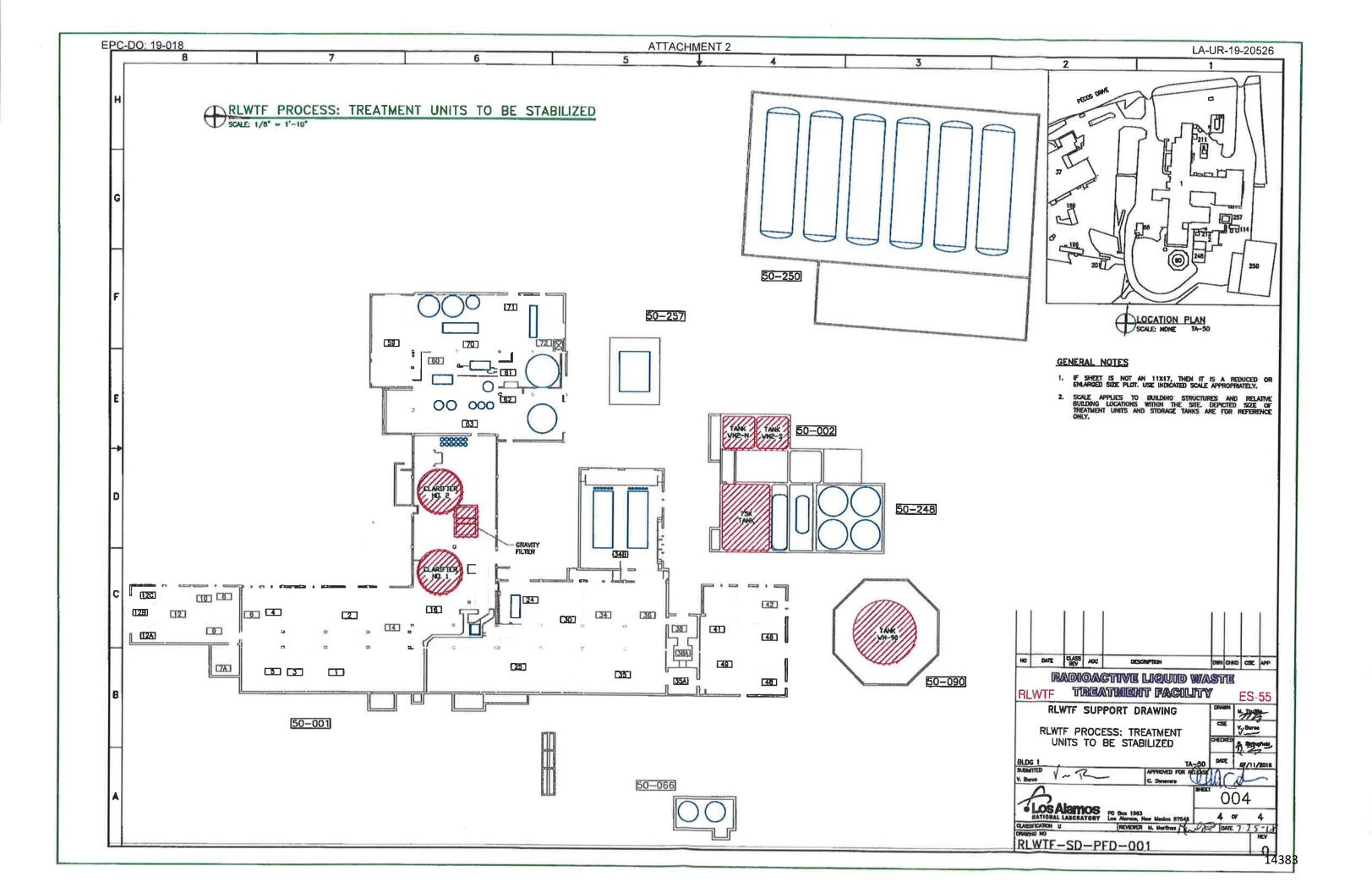
RLWTF-SD-PFD-001

Schematic showing treatment units to be stabilized at the RLWTF

EPC-DO: 19-018

LA-UR-19-20526

Date: JAN 3 1 2019

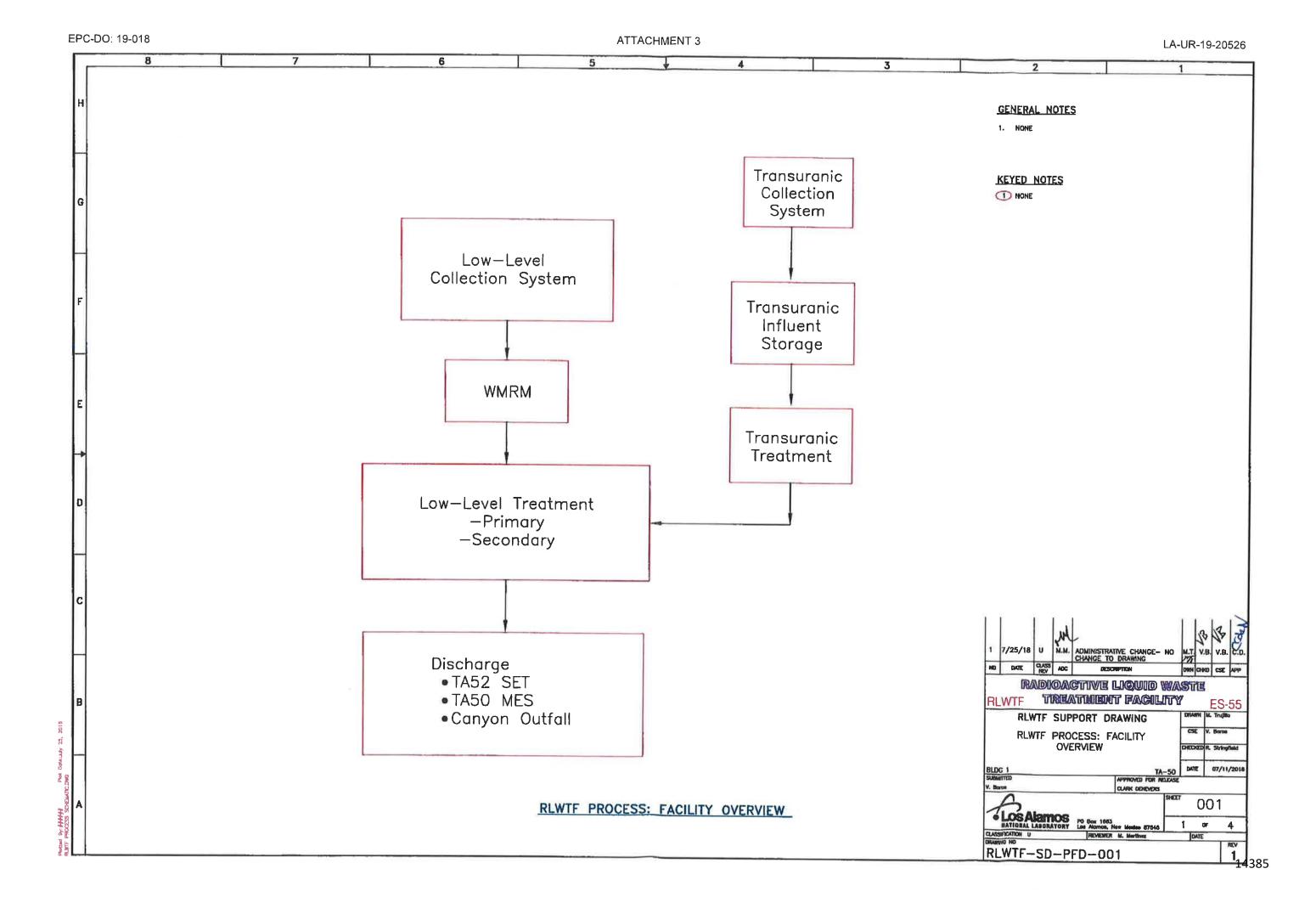


Flow chart showing an overview of current treatment processes at the RLWTF

EPC-DO: 19-018

LA-UR-19-20526

Date: _____ JAN 3 1 2019

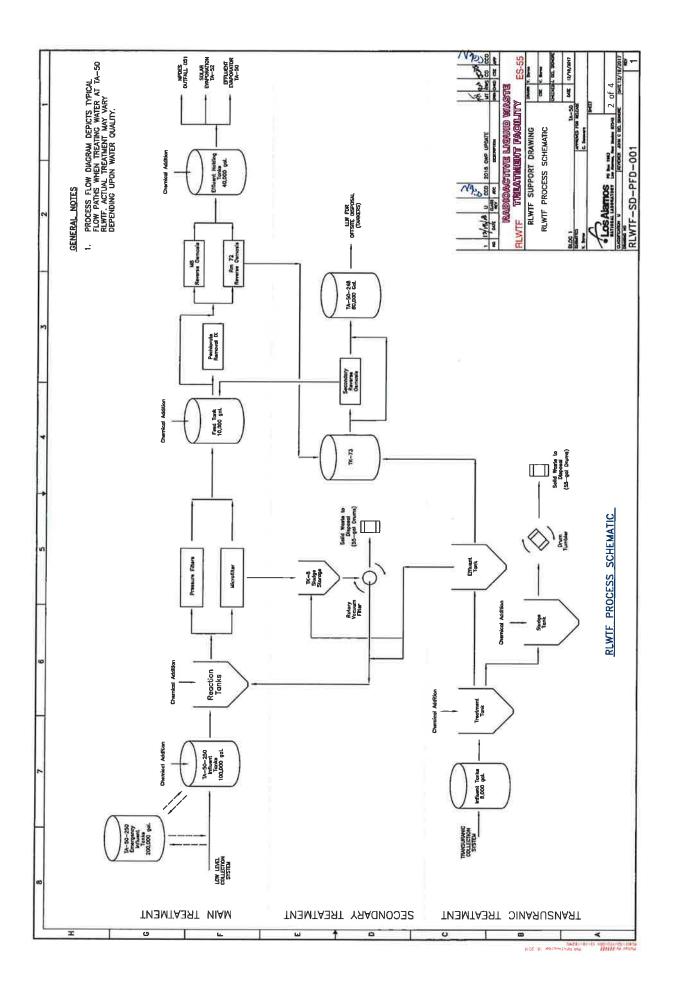


Flow chart showing a detailed view of the current treatment process at the RLWTF

EPC-DO: 19-018

LA-UR-19-20526

Date: **JAN 3 1 2019**



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 Tre	eatment:		
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	<u> </u>	50-01
M7	Perchlorate ion exchange	TK09	50-01
M8	Primary reverse osmosis		50-01
M9	Reserved	NAME OF THE PARTY	: 20152 3
M10	Effluent storage	N.Frac, S.Frac	50-01
M11	Mechanical evaporator		50-257
M11	Solar evaporation		TA52
M11	NPDES Outfall #051		Mortandad Canyon
Transura	anic:		
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
Seconda	ry 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.

1

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 transurance 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

					Vessel			Secondary Containment	inment	
	Treatment Unit	Vessel(s)	Location	Capacity	Category	Material	Structure	Material	Leak Detection	_
Mai	Main Treatment:									-
M	Collection system	Piping (~ 4 miles)	Six TAs	1	Inground	Polyethylene	Pipe	Polyethylene	63 alarms	
		Vaults (63)	Six TAs	1	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	Ī	Inground	Polyethylene	Pipe	Polyethylene	250_Inf, 250_Eff	_
		Xfer pump room	50-250-001	Ē	Aboveground	Steel	Floor	Concrete	PLC250_SMP1	_
Ξ	Emergency influent storage	WMRM tanks (4)	50-250-003	50,000 ea.	Aboveground	Fiberglass	Floor	Concrete	250 SMP3	
Σ		TK71, TK72	50-01-70	10,000 ea.	Aboveground	Steel	Floor	Concrete	RUF 71A A1	_
M ₂	Microfilter	Filter	50-01-70	40	Aboveground	Steel	Floor	Concrete	RUF 71A A1	
		Concentrate tank	50-01-70	200	Onground	Polyethylene	Floor	Concrete	RUF_71A_A1	
		Cleaning tanks (2)	50-01-70	400	Onground	Polyethylene	Floor	Concrete	RUF_71A_A1	
9 W		Filters (3)	50-01-63	300	Aboveground	Lined Steel	Floor	Concrete	SMP_16_A2	_
Ž	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	Ω	
∞ ≥	Primary reverse osmosis	R72 RO unit	50-01-72	40	Aboveground	Steel	Floor	Concrete	RUF 71A A1	
		R72 CIP tank	50-01-72	200	Aboveground	Polyethylene	Floor	Concrete	RUF 71A A1	
		M8 RO unit	50-01-36	09	Aboveground	Fiberglass	Floor	Concrete	□	
		M8 CIP tank	50-01-36	300	Aboveground	Polyethylene	Floor	Concrete	۵	
<u>₹</u>										
M10		N.Frac, S.Frac	50-01-34B	20,000	Aboveground	Steel	Floor	Concrete	SMP_34B_A1	_
M11			50-257	1,200	Aboveground	S.Steel	Floor	Hypalon,	. 8	
M11		E.Tank, W.Tank	TA52	380,000	Inground	HDPE	Liner	HDPE,	Q	
M11	. NPDES Outfall #051	1	Canyon	Ĭ	Inground	1	1	1	.	
Tran	Transuranic:									
1	TRU Collection system	Piping (~1 mile)	TA50, TA55	Î	Inground	PVDF, PP	Pipe	PVDF, PP	CTL_WM57_A1	
		Vaults (1)	50-201	1	Inground	Concrete	Floor	Concrete	CTL WM57 A1	
T2	TRU Influent storage	Acid tank	99-05	3,900	Aboveground	Steel	Floor	Concrete	CTL_WM66_A4	
		Caustic tank	99-05	3,000	Aboveground	Steel	Floor	Concrete	CTL_WM66_A4	
<u>m</u>	TRU Treatment	TK1	50-01-60	006	Aboveground	Steel	Floor	Concrete	۵	
		TK2	50-01-60	800	Aboveground	Fiberglass	Floor	Concrete	۵	
74	TRU Solids	TK-7A	50-01-60A	006	Aboveground	Steel	Floor	Concrete	Q	
T.	TRU Effluent	TK3	50-01-60	1,000	Aboveground	Fiberglass	Floor	Concrete	۵	

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

				Vessel			Secondary Containment	ainment
Treatment Unit	Vessel(s)	Location	Capacity	Category	Material	Structure	Material	Leak Detection
Secondary Treatment:								
S1 Secondary reverse osmosis	RO vessel	50-01-24	10	Aboveground	Fiberglass	Floor	Concrete	<u>Q</u>
	TK25	50-01-24	300	Aboveground	Polyethylene	Floor	Concrete	<u></u>
	TK73	50-01-70	3,700	Aboveground	Steel	Floor	Concrete	RUF 71A A1
S2 Vacuum filter	Vacuum filter	50-01-116	150	Aboveground	5.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	۵
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:

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

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.

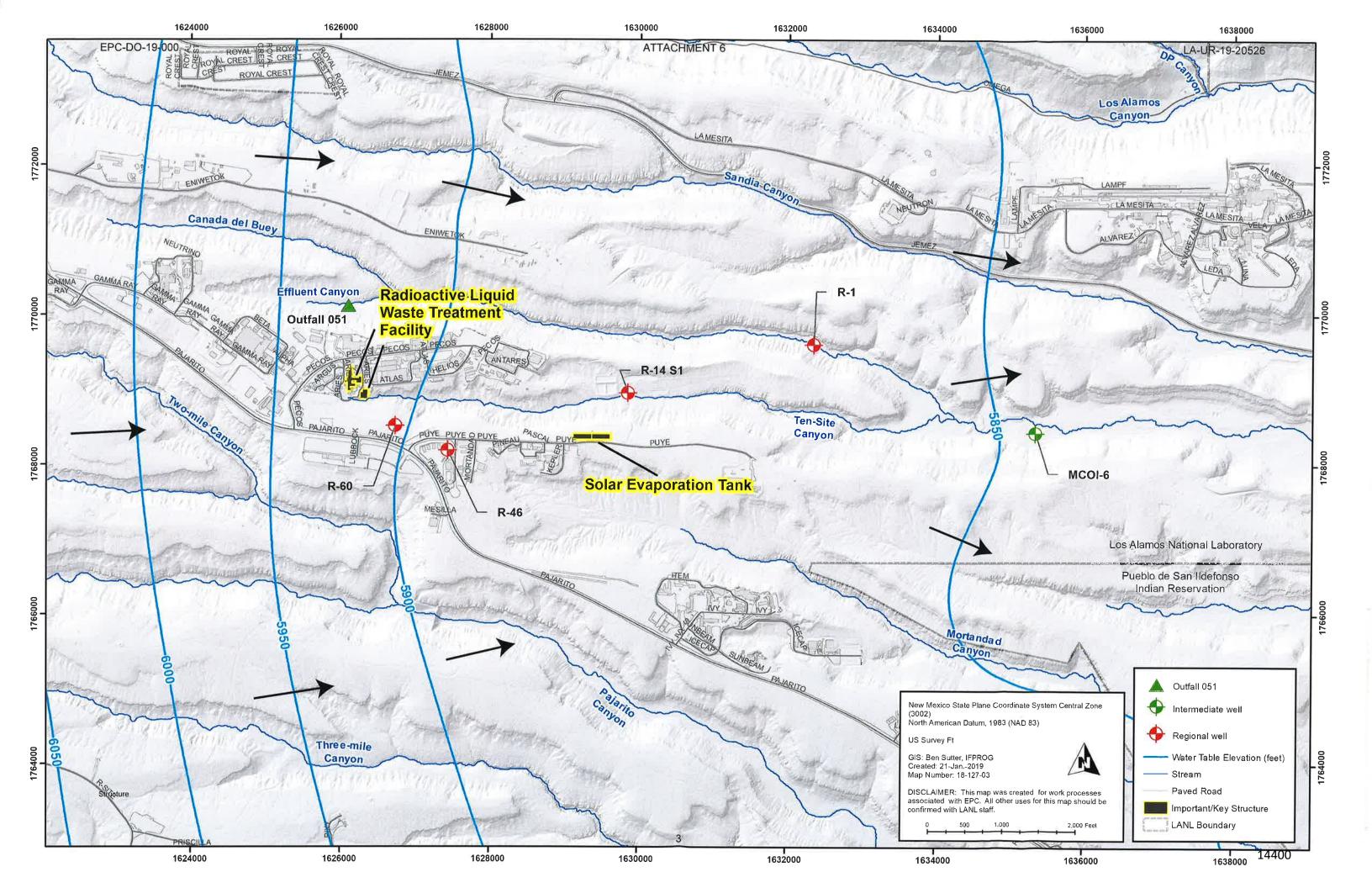
Because of the long-term declines and pumping transients described above, the water-level data and the respective water-table maps are time dependent and representative of specific periods of time. The attached water-table map used the monthly-averaged water-level data for February 2018. The averaged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



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	Vype		
Structures	Description	Built	PM	00	Mod	SR	Total
Building 1	Original treatment bldg.	1963	51	10	က	Н	65
Building 2	Original influent storage bldg.	1963	П	1	0	0	2
Building 66	TRU influent storage	1982	1	0	0	0	1
Building 248	Low-level bottoms storage	1996	m	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	m	1	109

Task Types:

PM - preventive maintenance

CO-corrective maintenance

Mod - modification

SR-service request

Page 1 of 1

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

				Task Type	VDe		
Structures	Description	Built	PM	8	Mod	SR	Total
Building 1	Original treatment bldg.	1963	37	9	က	0	46
Building 2	Original influent storage bldg.	1963	0	1	0	0	Н
Building 66	TRU influent storage	1982	0	0	0	0	0
Building 248	Low-level bottoms storage	1996	-	0	0	0	1
Building 250	Low-level influent storage	5005	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		99	o.	m	0	78

Task Types:

PM - preventive maintenance

CO-corrective maintenance

Mod - modification

SR-service request

Page 1 of 5

٥	MON INDE	Tack	Tack Tyne	Tack Tito
-	586048	01	00	500001 REPLACE PRE & HEPA FILTERS ON EB-17 & EB-25
-	59069	03	MD	3 SUPPORT EXECUTION
-	590699	02	MD	TA-50-POTHOLING SUPPORT PROCUREMENT
-	59069	01	MD	TA-50-POTHOLING SUPPORT SOW
Н	591058	10	8	500001 EVALUATE & INSTALL FOAM EDGE PROTECTORS AS NEEDED.
	603761	01	PM	50001 & 248 LPT 1YR PM VISUAL
	603936	01	PM	500001 EH (1YR) PM, ELEVATOR 3RD PARTY INSP
Н	612612	01	PM	1—
	615632	10	8	500001 REPAIR THE SOUTH FRAC TANK LEVEL INSTRUMENTATION
Н	616366	10	8	500001 TROUBLE SHOOT AND REPAIR PV-02
\vdash	616650	10	PM	500001 FE'S 1YR PM, (MECHANICAL) (11 EA)
\vdash	617856	01	PM	AUTO DUMP
	617857	10	PM	500001 BHW 1YR PM, (START UP) AFTER LAY-UP
	617867	01	PM	500001 MICROFILTER 3 MONTH PUMP MAINTENANCE
	617870	01	PM	500001 ASE 3MO PM, EXHAUST STACK PUMP (3 EA)
H	617871	01	PM	500001 LTE 1MO PM
\dashv	617873	10	PM	500001 LTET 1MO PM
Н	617912	01	PM	500001 FEXT 1MO PM
	617943	01	PM	500001 PERFORM WEEKLY EYEWASH/ SAFETY SHOWER TESTING
	620074	01	PM	50-1 TK 3YR PM, 60/60A ULTRASONIC TANK INSPECT(VISUAL/EXTRNL)
Н	620075	01	PM	500001 PV-008 1YR PM, (ELECTRICAL)
H	620076	01	PM	500001 DT 1YR PM, DRUM TUMBLER
Н	620084	01	PM	500001 (A) SAFETY SHOWER PM (32 EA)
	620089	01	PM	500001 DAD 6MO PM
-	620090	01	PM	500001 EH 6MO PM, ELEVATOR MECH/ELECT
	620095	01	PM	500001 (6M) DEIONIZED WATER BOTTLE CHANGE OUT
	620103	10	PM	50-1 PH ANALYZER 2MO CALIBRATION 2 EA
	620108	01	PM	500001 PERFORM WEEKLY EYEWASH/ SAFETY SHOWER TESTING
H	620110	01	PM	500001 BHW 1MO PM (2 EA)
H	620137	01	PM	500001 FEXT 1MO PM
Н	620160	01	PM	500001 LTE 1MO PM
	620162	01	PM	500001 LTET 1MO PM
	620800	01	00	500001 RLW MICROFILTER EMERGENCY STOP REPLACEMENT
	621923	01	PM	500001 CA'S 6MO PM, (MECHANICAL)
-	797009	70	::0	

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

		The real Property lies and the least lies and the lies and the least lies and the lies and the least lies and the		
Unit	Work Order	Task	Task Type Task Title	Task Title
5000001	622768	10	PM	500001 SPW 3 MO FIRE SUPPRRESSION SYSTEMS PM
5000001	622772	10	Μď	500001 PV-008 3MO PM, (MECHANICAL)
5000001	622773	10	Md	500001 GFCI (6M) SERVICE INSPECTIONS
5000001	622794	01	PM	500001 LTET 1MO PM
5000001	622826	01	PM	500001 LTE 1MO PM
5000001	622839	10	PM	500001 BHW 1MO PM (2 EA)
5000001	622844	01	PM	500001 PERFORM WEEKLY EYEWASH/ SAFETY SHOWER TESTING
5000001	623456	10	PM	500001 PV-007 3 MO PM, (MECHANICAL)
5000001	623574	01	PM	500001 CONNECT/PURGE ARGON DEWAR
5000001	623838	10	00	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)

		_	_	-	1	_	_	_	_	_	_	_	_	_	_	_	-
a	Task Title	500250 WMRM REPLACE TANK OUTLET VALVES	500250 REPLACE EMERGENCY LIGHT LTE-75 IN ROOM 003	50-250 3MO DIESEL GENERATOR PM	500250 SHS 3MO PM, SAFETY SHOWER	500250 LTET 1MO PM	500250 LTE 1MO PM	500250 LTNT 1MO PM	500250 FEXT 1MO PM	500250 (A) BACKFLOW PREVENTER MAINTENANCE PM 2EA	50-250 3MO DIESEL GENERATOR PM	500250 LTNT 1MO PM	500250 FEXT 1MO PM	500250 LTET 1MO PM	500250 LTE 1MO PM	50-250 3MO SPW SYSTEM PM	S00250 FEXT 1MO PM
10-12/31/201	Task Type Task Title	00	00	PM	PM	PM	PM	ΡM	Md	Md	PM	Md	PM	Md	Μd	PM	Md
2011 1001120	Task	10	10	10	01	10	01	10	10	10	10	10	10	10	10	10	01
A 22 - 22 32 WOLK CONTINENDLY TOWN 1/20 19-12/31/2019	Work Order	495946	608848	612617	617864	617877	617881	617910	617937	620088	620102	620135	620157	620164	620167	622771	622825
1000000	Unit	500250	500250	500250	500250	500250	500250	500250	500250	500250	500250	500250	500250	500250	500250	500250	500250

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

Unit	Work Order	Task	Task Type	Task Title	
500005	613406	10	00	500002 PRV TIGHTENING	

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

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

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

a	Task Title	500248 PUMPS 3MO PM (2 EA.)
102/15/21-0102/	k Task Type Task T	PM
10/01	Task	01
NOIN COMPRESSION REPORT	Work Order	622780
A-20-05-A	Unit	500248

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

Unit	Work Order	Task	Task Type Task Title	Task Title
500257	621187	10	Md	50-257 (A) EVAPORATOR FAN ELECTRICAL
500257	621316	10	Md	50-257 1YR MECHANICAL EVAPORATOR FAN PM

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

14-35-3E1 V	A-32-3E1 WOLK COMPLETION REPORT (10/01/2018-12/31/2018	07/10/01/310	0-12/31/2016	
Unit	Work Order	Task	Task Type Task Title	Task Title
520182	617944	01	Md	TA52-182 FEXT 1MO PM
520182	617945	01	PM	TA52-182 MONTHLY NON TRITIUM LIGHTS PM
520182	617947	01	Md	TA52-182 MONTHLY EMERGENCY LIGHTS PM
520182	620106	01	PM	TA52-182 MONTHLY EMERGENCY LIGHTS PM
520182	620177	01	Md	TA52-182 FEXT 1MO PM
520182	620178	01	Md	TA52-182 MONTHLY NON TRITIUM LIGHTS PM
520182	622840	01	Md	TA52-182 MONTHLY EMERGENCY LIGHTS PM
520182	622842	01	MA	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	Md	52-0182 (3M) SIGNAGE VERIFICATION FOR FENCE LINE

Key to Acronyms

exhaust	
sampler,	
air	
ASE	

BHW boiler, hot water

compressed air

dessicant air dryer DAD

exhaust bank

exhaust heater H

FAR

filter, air replaceable fan, exhaust

high-efficiency particulate air fire extinguisher FEXT HEPA

heater unit, electric HÜE

lightning protection

lights, emergency, tritium lights, emergency LTET

pressure reducing valve PRV

lights, non-tritium

LTNT

radiological control area pump, vacuum δ RCA

shower, safety SHS

sprinkler pipe, dry SPH

tank, compressed air sprinkler pipe, wet SPW TCA

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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 Outf <mark>all</mark>	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 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						
2-Oct 8,458 14,765 0 0 0 0 0 0 3-Oct 9,840 11,478 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1-Oct	14,342	14.478	0	0	0
3-Oct 9,840 11,478 0 0 0 0 0 0 4-Oct 7,490 6,396 0 0 0 0 0 0 5-Oct 7,069 15,447 0 0 0 0 0 0 6-Oct 6,739 15,073 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 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 20-Oct					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 0 13-Oct 6,474 14,217 0 0 0 0 13-Oct 6,474 14,217 0 0 0 0 15-Oct 5,349 5,430 0 0 0 0 16-Oct 7,048 7,354 0 0 0 0 17-Oct 8,695 14,789 0 0 0 0 18-Oct	4-Oct			0	0	
7-Oct 7,097 14,407 0 0 0 0 0 0 8-Oct 7,425 7,969 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	5-Oct			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	6-Oct	6,739	15,073	0	0	0
9-Oct 7,356 0 0 0 0 0 0 0 0 10-Oct 7,215 5,859 0 0 0 0 0 0 11-Oct 7,215 5,859 0 0 0 0 0 0 11-Oct 7,785 10,674 0 0 0 0 0 12-Oct 7,312 13,876 0 0 0 0 0 0 13-Oct 6,474 14,217 0 0 0 0 0 0 14-Oct 5,177 14,217 0 0 0 0 0 0 15-Oct 5,349 5,430 0 0 0 0 0 0 16-Oct 7,048 7,354 0 0 0 0 0 0 17-Oct 8,695 14,789 0 0 0 0 0 0 18-Oct 8,937 14,842 0 0 0 0 0 0 18-Oct 9,296 9,422 0 0 0 0 0 0 19-Oct 9,296 9,422 0 0 0 0 0 0 21-Oct 5,043 13,984 0 0 0 0 0 0 21-Oct 5,314 14,227 0 0 0 0 0 22-Oct 5,314 14,227 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	7-Oct	7,097	14,407	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	8-Oct	7,425	7,969	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	9-Oct	7,356	0	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	10-Oct	7,215	5,859	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	11-Oct	7,785	10,674	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	12-Oct	7,312	13,876	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	13-Oct	6,474	14,217	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	14-Oct	5,177	14,217	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	15-Oct	5,349	5,430	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	16-Oct	7,048	7,354	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	17-Oct	8,695	14,789	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	18-Oct	8,937	14,842	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	19-Oct	9,296	9,422	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	20-Oct	7,305	14,828	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	21-Oct	5,043	13,984	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	22-Oct	5,314	14,227	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	23-Oct	6,011	14,355	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	24-Oct	7,773	13,961	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	25-Oct	9,398	7,638	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	26-Oct	13,732	14,045	0	0	0
29-Oct 15,556 8,885 0 0 0 30-Oct 11,749 5,266 0 0 0	27-Oct	5,307	14,501	0	0	0
30-Oct 11,749 5,266 0 0 0	28-Oct	6,734	14,501	0	0	0
	29-Oct	15,556	8,885	0	0	0
31-Oct 20,091 13,983 0 0 0	30-Oct	11,749	5,266	0	0	0
	31-Oct	20,091	13,983	0	0	0

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

	Low-level	Effluent	Effluent	Effluent	Transuranic
Date	Influent	MES	Outfall	SET	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
Date	militatine	MEG	Oddan	OLI	iiiideit
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

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		У	N	EPA:300.0
NP051-18-158778	RLWTF_MES 01	09-24-2018	Fluoride	0.198	mg/L		Y	Υ	EPA:300.0
NP051-18-158779	RLWTF_MES 01	09-24-2018	Nitrate-Nitrite as Nitrogen	5.10	mg/L		Υ	N	EPA:353.2
NP051-18-158779	RLWTF_MES 01	09-24-2018	Perchlorate	1.08	ug/L		Υ	N	SW-846:6850
NP051-18-158779	RLWTF_MES 01	09-24-2018	Total Dissolved Solids	160	mg/L		γ	N	EPA:160.1
NP051-18-158779	RLWTF_MES 01	09-24-2018	Total Kjeldahl Nitrogen	0.988	mg/L		Υ	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.

				Report		Lab			
Field Sample ID	Location ID	Sample Date	Parameter Name	Result	Units	Qualifier	Detected	Filtered	Lab Method
NP051-18-163141	RLWTF_MES 01	10-03-2018	Chloride	13,5	mg/L		Υ	N	EPA:300.0
NP051-18-163140	RLWTF_MES 01	10-03-2018	Fluoride	0.100	mg/L		Υ	Υ	EPA:300.0
NP051-18-163141	RLWTF_MES 01	10-03-2018	Nitrate-Nitrite as Nitrogen	4.24	mg/L		Υ	N	EPA:353.2
NP051-18-163141	RLWTF_MES 01	10-03-2018	Perchlorate	0.13	ug/L	J	Υ	N	SW-846:6850
NP051-18-163141	RLWTF_MES 01	10-03-2018	Total Dissolved Solids	87.1	mg/L		Υ	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.

				Report		Lab			
Field Sample ID	Location ID	Sample Date	Parameter Name	Result	Units	Qualifier	Detected	Filtered	Lab Method
RLWTF-19-164497	RLWTF_MES 01	11-07-2018	Chloride	13.1	mg/L		Υ	N	EPA:300.0
RLWTF-19-164497	RLWTF_MES 01	11-07-2018	Fluoride	0.109	mg/L		Υ	N	EPA:300.0
RLWTF-19-164497	RLWTF_MES 01	11-07-2018	Nitrate-Nitrite as Nitrogen	4.68	mg/L		Υ	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		Υ	N	EPA:160.1
RLWTF-19-164497	RLWTF_MES 01	11-07-2018	Total Kjeldahl Nitrogen	0.172	mg/L		Υ	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.

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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		Υ	N	EPA:300.0
RLWTF-19-164498	RLWTF_MES 01	12-05-2018	Fluoride	0.128	mg/L		γ	N	EPA:300.0
RLWTF-19-164498	RLWTF_MES 01	12-05-2018	Nitrate-Nitrite as Nitrogen	7.08	mg/L		Υ	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		Υ	N	EPA:160.1
RLWTF-19-164498	RLWTF_MES 01	12-05-2018	Total Kjeldahl Nitrogen	0.100	mg/L		γ	N	EPA:351.2

INORGANIC LCMS/MS HE INORGANIC INORGANIC INORGANIC INORGANIC INORGANIC INORGANIC LCMS/MS HE INORGANIC INORGANIC INORGANIC INORGANIC INORGANIC INORGANIC GEN CHEM INORGANIC INORGANIC INORGANIC INORGANIC INORGANIC NORGANIC INORGANIC PESTPCB PESTPCB PESTPCB PESTPCB PESTPCB PESTPCB PESTPCB PESTPCB PESTPCB RAD RAD SW-846:8330B SW-846:8081B SW-846:8330B SW-846:8330B SW-846:8081B SW-846:8081B SW-846:8081B SW-846:8081B SW-846:8081B SW-846:8081B SW-846:8081B SW-846:8082 SW-846:8082 SW-846:8082 SW-846:8082 SW-846:8082 SW-846:8082 SW-846:8082 EPA:300.0 EPA:200.8 EPA:200.8 EPA:200.8 EPA:200.8 EPA:200.8 EPA:200.8 EPA:335.4 EPA:200.8 EPA:200.8 EPA:200.8 EPA:200.8 EPA:200.7 EPA:200.8 EPA:200.7 EPA:245.2 EPA:200.8 EPA:200.8 EPA:200.7 EPA:200.7 EPA:245.2 EPA:903.1 EPA:904 Field Purpose Sample REG Table 5. Analytical Results from Quarterly Sampling RLWTF Treated Effluent Discharged to the MES, 4th Quarter 2018, Permit Condition No. 29. Filtered z z z Z Z z z z z z z z z z z z Z Detected z z z z z z z z Z z z z z Z z z z z Z Qualifier Lab \supset \supset \supset \supset \supset \supset \supset \supset Units mg/L UE/L UB/L ug/L mg/L J∕gu ng/r ng/L ug/L ug/L ug/L ng/L UB/L PCI/L pCi/L √gn ng/L ug/L UB/L √gn UB/L ng/r ug/L ng/r ng/L ng/L ng/L ug/L UE/L √an ug/L ug/L ug/L ng/L SU η/gn J/Bn υg/ι 1/gn 1/gn η/gn ug/l Report Result 0.00167 0.00792 0.00792 0.00792 0.0909 0.00792 0.0119 0.0909 0.0374 0.0374 0.0374 0.0374 0.0374 0.0374 0.0374 0.00792 0.00792 0.0911 0.300 0.300 60.4 0.500 6.100 0.798 0.067 0,300 3.45 0.363 19.3 2.00 37.2 3.00 5,64 0.067 7,18 2.00 0,521 1.6 14 Chlordane(alpha/gamma) Trinitrotoluene[2,4,6-] Chlordane[gamma-] Parameter Name Chlordane[alpha-] Aroclor-1242 Aroclor-1248 Cyanide (Total) Aroclor-1016 Aroclor-1221 Aroclor-1232 Aroclor-1254 Aroclor-1260 Molybdenum Radium-228 Radium-226 Manganese BHC[gamma-Chromium DDT[4,4'-] BHC[alpha-BHC[beta-] Aluminum Cadmium Mercury Mercury Selenium Uranium Sulfate Barium Arsenic Boron Cobalt Nickel Copper Iron Silver ХМН Aldrin Zinc Lead RDX 펍 Sample Date 10-03-2018 RLWTF_MES 01 RLWTF_MES 01 RLWTF MES 01 RLWTF MES 01 RLWTF_MES 01 RLWTF_MES 01 RLWTF MES 01 RLWTF MES 01 RLWTF MES 01 RLWTF_MES 01 RLWTF MES 01 RLWTF_MES 01 RLWTF_MES 01 RLWTF MES 01 RLWTF MES 01 RLWTF_MES 01 RLWTF_MES 01 RLWTF_MES 01 RLWTF MES 01 RLWTF MES 01 RLWTF MES 01 RLWTF MES 01 RLWTF_MES 01 RLWTF_MES 01 RLWTF_MES 01 RLWTF MES 01 RLWTF_MES 01 RLWTF MES 01 RLWTF_MES 01 RLWTF_MES 01 RLWTF MES 01 Location ID ield Measuremen NP051-18-163140 VP051-18-163140 NP051-18-163140 NP051-18-163141 NP051-18-163140 NP051-18-163140 NP051-18-163140 NP051-18-163140 NP051-18-163140 NP051-18-163140 NP051-18-163140 NP051-18-163140 NP051-18-163141 Field Sample ID

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

						rap			Sample		Method
Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Units	Qualifier	Detected	Filtered	Purpose	Lab Method	Category
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dieldrin	0.0119	ug/L	n	N	Z	REG	SW-846:8081B	PESTPCB
NP051-18-163141	RLWTF MES 01	10-03-2018	Endosulfan I	0.00792	UB/L	n	z	z	REG	SW-846:8081B	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	Endosulfan II	0.0119	1/Bn	ס	z	z	REG	SW-846:8081B	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	Endrin	0.0119	ng/L	D	z	z	REG	SW-846:8081B	PESTPCB
NP051-18-163141	RLWTF MES 01	10-03-2018	Heptachlor	0.00792	ng/L	n	N	z	REG	SW-846:8081B	PESTPCB
NP051-18-163141	RLWTF_MES 01	10-03-2018	Toxaphene (Technical Grade)	0.179	UB/L	О	z	z	REG	SW-846:8081B	PESTPCB
NDOE1 10 153111	DI VATE NACE OF	40.00.000	A - A1								
NPOS1-18-185141	RLWIF INES UI	10-03-2018	Anthracene	0.300	ng/L	5	z	z	REG	SW-846:8270D	SVOC
NPU51-18-163141	RLW I F MES 01	10-03-2018	Azobenzene	3.00	ng/L)	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Benzidine	3,90	ng/L	J	z	Z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Benzo(a)pyrene	0.300	ng/L	n	Z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Benzo(b)fluoranthene	0.300	ng/L	n	Z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Benzo(k)fluoranthene	0.300	∏/gn	n	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Bis(2-chloroethyl)ether	3.00	J/Bn	n	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Bis(2-ethylhexyl)phthalate	0.300	ng/L	n	Z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF MES 01	10-03-2018	Dichlorobenzidine[3,3'-]	3.00	ug/L	n	Z	Z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dichlorophenol[2,4-]	3.00	J/Bn	n	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Diethylphthalate	0.38	ng/L	BJ	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dimethyl Phthalate	0.300	ng/L	ס	Z	Z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Di-n-butylphthalate	0.300	ng/L	כ	z	Z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dinitro-2-methylphenol[4,6-]	3.00	ng/L	ס	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dinitrophenol[2,4-]	5.00	∩g/L	ח	z	Z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dinitrotoluene[2,4-]	3.00	ug/L	>	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Dinitrotoluene[2,6-]	3.00	ng/L	5	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Diphenylamine	3.00	ng/L	_	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Fluoranthene	0.300	ug/L	Э	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Fluorene	0.300	ng/L	D	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Hexachlorobenzene	3.00	ng/L	Π	z	Z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Hexachlorobutadiene	3.00	ug/L	ח	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Hexachlorocyclopentadiene	3.00	ng/L	ם	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Hexachloroethane	3.00	1∕gu	ח	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Isophorone	3.50	√Zn	ם כ	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Methylnaphthalene[1-]	0.300	ng/L	5	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Methylnaphthalene[2-]	0.300	1∕Bn	ם כ	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Naphthalene	0.300	ng/L	_	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Nitrobenzene	3.00	ng/L	ס	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Nitrosodiethylamine[N-]	3.00	ng/L	n	z	Ν	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Nitrosodimethylamine[N-]	3.00	ng/L	ס	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Nitroso-di-n-butylamine[N-]	3.00	ng/L	ס	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Nitrosopyrrolidine[N-]	3.00	ng/L	n	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Oxybis(1-chloropropane)[2,2'-]	3.00	1/Bn	ם	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Pentachlorobenzene	3.00	ng/L	5	z	z	REG	SW-846:8270D	SVOC
NP051-18-163141	RLWTF_MES 01	10-03-2018	Pentachlorophenol	3.00	ng/L	n	z	z	REG	SW-846:8270D	SVOC

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Category SVOC SVOC ĺδί SVOC SVOC SVOC SVOC VOC δ S မြွန် 9 8 δV 8 8 200 ۷ V Š VOC ğ VOC VOC χ VOC 8 8 200 δ 200 VOC 200 700 VOC VOC 8 SW-846:8270D SW-846:8270D SW-846:8270D SW-846:8270D SW-846:8270D SW-846:8270D SW-846:8260B SW-846:8270D SW-846:8270D SW-846:8270D SW-846:8260B SW-846:8270D SW-846:8260B Lab Method Purpose Sample REG 요 면 요 Table 5. Analytical Results from Quarterly Sampling RLWTF Treated Effluent Discharged to the MES, 4th Quarter 2018, Permit Condition No. 29. Filtered z z Z z z z z z z Z z z z z z Z z z z z z z z z z z z z z z z z z Z Detected z Z z z z z z z z z Z z Z Qualifier E P \supset \supset J \supset \supset \supset \supset \supset Units ng/L ng/L 7∕8n ug/L ng/L UE/L ng/L ug/L ug/L ng/L ug/L ng/L ug/L ng/L ng/L ng/L ug/L ug/L ng/L ug/Ľ ∩g/L ng/L ug/L ng∕L ug/L ng/L ng/L ug/L ng/L ng/L ug/L ug/L ug/L ug/L ng/L UB/L ng∕L ng∕L ug/L Report Result 0.300 0,300 0.300 0.300 0.300 0.300 0.300 0.300 0.353 3.00 3.00 3.00 1.00 3,53 4,59 3.00 0.0 Dichloropropene[cis/trans-1,3-Tetrachlorobenzene[1,2,4,5] Dichlorodifluoromethane Tetrachloroethane[1,1,2,2-Xylene[1,3-]+Xylene[1,4-] Bromodichloromethane Dichloroethene[trans-1,2-Trichlorofluoromethane Trichloropheno![2,4,6-] Methyl tert-Butyl Ether Trichlorophenol[2,4,5-Dichloroethene cis-1,2 Trichloroethane[1,1,1-Trichloroethane[1,1,2-Carbon Tetrachloride Dichlorobenzene[1,4-] Dibromoethane[1,2-] Methylene Chloride Dichloroethane[1,1-] Dichloroethane[1,2-] Dichloroethene[1,1-] Tetrachloroethene Parameter Name Bromomethane Chloromethane Trichloroethene Chlorobenzene Phenanthrene Ethylbenzene Vinyl Chloride Xylene (Total) Azobenzene Chloroform Anthracene Bromoform Total PAHs Xylene[1,2-Benzidine Benzene Toluene Pyrene Phenol 10-03-2018 10-03-2018 10-03-2018 Sample Date 10-03-2018 RLWTF_MES 01 RLWTF_MES 01 RLWTF_MES 01 RLWTF MES 01 RLWTF MES 01 RLWTF_MES 01 RLWTF MES 01 RLWTF MES 01 RLWTF MES 01 RLWTF MES 01 RLWTF_MES 01 RLWTF MES 01 RLWTF MES 01 RLWTF MES 01 RLWTF MES 01 RLWTF_MES 01 RLWTF MES 01 RLWTF MES 01 RLWTF MES 01 RLWTF MES 01 RLWTF_MES 01 RLWTF MES 01 RLWTF MES 01 RLWTF_MES 01 RLWTF_MES 01 RLWTF MES 01 RLWTF_MES 01 RLWTF MES 01 RLWTF MES 01 RLWTF_MES 01 RLWTF_MES 01 RLWTF_MES 01 RLWTF MES 01 RLWTF MES 01 **MES 01** RLWTF_MES 01 RLWTF MES 01 RLWTF MES 01 RLWTF_MES 01 RLWTF MES 01 RLWTF_MES 01 Location ID RLWTF NP051-18-163142 NP051-18-163142 NP051-18-163142 NP051-18-163141 NPO51-18-163141 NP051-18-163141 Field Sample ID

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

lable 5. Analytical Results from Quarterly Sampling	esuits from Quar	terly sampling	KLW IF Ireated Effluent Discharged to the MES, 4th Quarter 2018, Permit Condition No. 29.	ed to the MES,	4th Qu	arter 2018	, Permit Co	ondition N	lo. 29.		
Field Sample 10	Location ID	Cample Date	amen actomered	1	1	Lab		7	Sample		Method
NP051-18-163142	RI WTF MFS 01	10-03-2018	Renzo(a)ovrene	nepolit nesult	21/011		Delected	riitered	rurpose	CW 845-8320D	Category
NP051-18-163142	RI WTE MES 01	10-03-2018	Bonzo(h)(hioranthono	0.553	1/9/1	=	2 2	2 2	2 6	3W-040.0270D	3000
AIDOE 4 40 403 423	DIMITE NACCO	10.02-2010	ם ביונס (מ)וומסו פוונוופווב	0.333	7/8/	5	2	2	2	2W-846:82/UU	SVOC
NPUS1-18-103142	KLW IF INES UT	10-03-2018	Benzo(k)Tluoranthene	0.353	ng/L	0	z	z	2	SW-846:8270D	SVOC
NPUS1-18-163142	RLW IF MES 01	10-03-2018	Bis(2-chloroethyl)ether	3.53	ng/L	D	z	z	9	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Bis(2-ethylhexyl)phthalate	0.353	ng/L	n	z	z	요	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Dichlorobenzidine[3,3'-]	3.53	ng/L	n	z	z	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Dichlorophenol[2,4-]	3.53	1/gn	n	Z	z	Ð	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Diethylphthalate	0.353	ng/L	Э	z	z	6	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Dimethyl Phthalate	0.353	ng/L	ח	z	z	Ð	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Di-n-butylphthalate	0.353	1/8n	n	z	z	욘	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Dinitro-2-methylphenol[4,6-]	3.53	ng/L	n	z	z	6	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Dinitrophenol[2,4-]	5.88	ng/L	n	Z	z	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Dinitrotoluene[2,4-]	3.53	l J/gn	n	Z	z	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Dinitrotoluene[2,6-]	3.53	l √gn	n	Z	z	Ð	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Diphenylamine	3.53	ng/L	n	Z	z	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Fluoranthene	0.353	ng/L	n	Z	z	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Fluorene	0.353	ng/L	n	Z	z	Ð	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Hexachlorobenzene	3.53	ng/L	n	Z	z	Œ	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Hexachlorobutadiene	3.53	ng/L	n	z	z	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Hexachlorocyclopentadiene	3.53	ng/L	n	Z	z	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF MES 01	10-03-2018	Hexachloroethane	3.53	ng/L	n	Z	z	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Isophorone	4.12	ng/L	n	N	z	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Methylnaphthalene[1-]	0.353	ng/L	n	N	Z	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Methylnaphthalene[2-]	0.353	ng/L	n	Z	Z	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Naphthalene	0.353	ng/L	n	Z	z	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Nitrobenzene	3.53	ng/L	n	Z	z	G	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Nitrosodiethylamine[N-]	3.53	ng/L	n	N	Z	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Nitrosodimethylamine[N-]	3.53	ug/L	n	Z	z	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Nitroso-di-n-butylamine[N-]	3.53	ng/L	D	z	z	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Nitrosopyrrolidine[N-]	3.53	ng/L	D	z	z	Ð	SW-846:8270D	SVOC
NP051-18-163142	RLWTF MES 01	10-03-2018	Oxybis(1-chloropropane)[2,2'-]	3.53	ng/L	ס	z	z	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Pentachlorobenzene	3.53	ng/L	n	Z	z	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Pentachlorophenol	3.53	ng/L	n	2	z	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF MES 01	10-03-2018	Phenanthrene	0.353	ng/L	n	z	z	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Phenol	3.53	ng/L	n	Z	z	FD	SW-846:8270D	svoc
NP051-18-163142	RLWTF_MES 01	10-03-2018	Pyrene	0,353	ng/L	ס	z	z	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Tetrachlorobenzene[1,2,4,5]	3,53	ng/L	D	z	z	FD	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Total PAHs	0.0	ng/L	n	z	z	요	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Trichlorophenol[2,4,5-]	3.53	ng/L	n	z	z	Ð	SW-846:8270D	SVOC
NP051-18-163142	RLWTF_MES 01	10-03-2018	Trichlorophenol[2,4,6-]	3.53	ng/L	כ	z	z	욘	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

SW-846:6850 Lab Method EPA:300.0 EPA:353.2 EPA:160.1 EPA:300.0 EPA:351.2 Table 1. Analytical Results from Quarterly Groundwater Sampling at Perched/Intermediate Ground Water Well MCOI-6, November 8, 2018, Condition No. 36 Purpose Sample REG REG REG REG REG Field Prep Code 片 当병 Qualifier Lab Detected Units mg/L mg/L mg/L mg/L mg/L ng/L Report Result 0.438 0.146 54.4 350 124 Nitrate-Nitrite as Nitrogen Total Kjeldahl Nitrogen Perchlorate Total Dissolved Solids Parameter Name Fluoride Chloride 11-08-2018 11-08-2018 11-08-2018 11-08-2018 11-08-2018 11-08-2018 Sample Date Location MCOI-6 MCOI-6 MCOI-6 MCOI-6 MCOI-6 MCOI-6 CAMO-19-163970 CAMO-19-163970 CAMO-19-163970 CAMO-19-163970 CAMO-19-163970 CAMO-19-163971 Field Sample ID

METALS METALS METALS METALS METALS PESTPCB Category METALS GEN CHEN LCMS/MS PESTPCB PESTPCB METALS METALS RAD RAD SW-846:8081B Table 2. Analytical Results from Annual Groundwater Sampling at Perched/Intermediate Ground Water Well MCOI-6, November 8, 2018, Condition No. 36 SW-846:6010C SW-846:6010C SW-846:8081B SW-846:8081B SW-846:8081B SW-846:8081B SW-846:8081B SW-846:6010C SW-846:6010C SW-846:6010C SW-846:6010C SW-846:6010C SW-846:6020 SW-846:6020 SW-846:6020 SW-846:6020 SW-846:6020 SW-846:6020 SW-846:8082 SW-846:8082 Lab Method SW-846:6020 SW-846:6020 SW-846:6020 SW-846:6850 SW-846:8082 SW-846:8082 SW-846:8082 SW-846:8082 SW-846:8082 EPA:335.4 EPA:300.0 EPA:245.2 EPA:245.2 EPA:903. EPA:904 Field Sample Purpose REG Field Prep Code 当当 片 片 片 5 片 님 5 告 5 5 5 느 片 片 Lab Qualifier \supset \supset Detected Z z z Z Z z Z Z z z Z z Units pCi/L pCi/L mg/L ng/L J/gn ng/L ng/L ng/L ng/L 7gn 1/gn ng/F mg/L ng/L √gn 뛜 √g/ ug/L ng/L ng/L ng/L ng/F ug/L 힑 ng/F √gn √g/I ng/L l/gn /gn /gn l/gu S ng/l 'n √g/l /gn ug/l 0.00235 Report Result 0.0351 0.0351 0.0351 0.0805 0.300 0.500 4.73 0.0351 68.0 2.36 38.2 53.8 68.2 30.0 0.067 0.300 0.802 53.6 7.19 0.007 0.007 0.007 1.00 3.88 2.07 2.00 0.007 124 21.1 Chlordane(alpha/gamma) Chlordane[alpha-] Parameter Name Cyanide (Total Aroclor-1242 Aroclor-1248 Aroclor-1254 BHC[gamma-Radium-228 Radium-226 Aroclor-1016 Aroclor-1232 Aroclor-1260 Molybdenum Aroclor-1221 Manganese Perchlorate BHC[alpha-] Aluminum Chromium BHC[beta-Cadmium Selenium Uranium Boron Mercury Arsenic Cobalt Copper Mercury Sulfate Barium Nickel Aldrin Silver Zinc 5 Lead 핌 Location ID Sample Date 11-08-2018 MCOI-6 Field Measurement CAMO-19-163970 CAMO-19-164108 CAMO-19-164108 CAMO-19-164108 CAMO-19-164108 CAMO-19-164108 CAMO-19-164108 CAMO-19-164108 CAMO-19-164108 CAMO-19-164108 CAMO-19-163970 CAMO-19-164107 CAMO-19-164108 CAMO-19-164108 CAMO-19-164108 CAMO-19-164108 CAMO-19-163970 CAMO-19-163970 CAMO-19-163970 CAMO-19-163970 CAMO-19-163970 CAMO-19-164107 CAMO-19-163971 CAMO-19-16397 Field Sample ID

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Category PESTPCB PESTPCB PESTPCB PESTPCB PESTPCB PESTPCB PESTPCB PESTPCB Method SVOC SW-846:8081B Table 2. Analytical Results from Annual Groundwater Sampling at Perched/Intermediate Ground Water Well MCOI-6, November 8, 2018, Condition No. 36 SW-846:8081B SW-846:8081B SW-846:8081B SW-846:8081B SW-846:8081B SW-846:8081B SW-846:8081B SW-846:8270D Lab Method Purpose Sample REG Field Prep Code 느 비방 造 当 当방 片 片 片 비비 告 믱 告 띩 片 片 5 5 焅 5 5 当 片 片 5 뿔 느 4 片 悎 告 Qualifier Detected z z z z z z z z Z Z Z Z z z z z Z z z Z Z Z z z Z Units ng/L ng/L ng/F ng/L ng/L ng/L ng/L ٦ď ng/F ∩g/L √g N √g/L √gn √g/ ng/ /gn /gn ng/L ng/L 퉭 ٦gn √gn /gn /gn /gu /go /gn /gn /gn ğ l/gn l/gu /gn l/gn √g Ng /gn /gn -gn l/gu /gn Result 0.0105 0.0105 0.0105 0.0105 0.313 0.313 0.313 0.313 0.158 0.313 0.313 0.313 0.007 6.25 3.13 3.13 3.13 3.13 3.44 3.13 3.13 0.007 4.06 3.13 3.13 Toxaphene (Technical Grade) Chlorophenyl-phenyl[4-] Ether Bis(2-chloroethoxy)methane Bromophenyl-phenylether[4-Bis(2-ethylhexyl)phthalate Chloro-3-methylphenol[4-] Bis(2-chloroethyl)ether Dibenz(a,h)anthracene Benzo(b)fluoranthene Benzo(k)fluoranthene Dichlorobenzidine[3,3'-Dichlorobenzene[1,4-] Benzo(g,h,i)perylene Butylbenzylphthalate Chloronaphthalene[2-Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Benzo(a)anthracene Dichlorophenol[2,4-] Chlordane[gamma-Parameter Name Acenaphthylene Benzo(a)pyrene Acenaphthene Benzyl Alcohol Chloroaniline[4-Chlorophenol[2-Benzoic Acid Azobenzene Dibenzofuran Endosulfan I Anthracene Endosulfan DDT[44-1 Benzidine Heptachlor Atrazine Endrin Aniline Sample Date 11-08-2018 Location ID MCOI-6 CAMO-19-164108 CAMO-19-164108 CAMO-19-164108 CAMO-19-164108 CAMO-19-164108 CAMO-19-164108 CAMO-19-164108 CAMO-19-164108 CAMO-19-163971 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 Field Sample ID CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397

Category SVOC SW-846:8270D SW-846:8270D Table 2. Analytical Results from Annual Groundwater Sampling at Perched/Intermediate Ground Water Well MCOI-6, November 8, 2018, Condition No. 36 SW-846:8270D Lab Method Purpose Sample REG Field Prep Code 当 발 当밤 Н 告 4 片 片 비방 告 片 5 5 띩 片 告 焅 告 告 焅 F 5 告 片 片 片 5 片 告 5 Qualifier Lab \supset Detected z Z Z z z Z z z z z z z z Z Z Z z Z z z z z z z Units ng/L ng/L ng/L ng/L √g ng/L ng/L J/gn ng/L ng/L √gn ng/L ng/F ng/F ng/F ng/L ng/L ug/L /gn ug/L J Bn Ng/ /gn J/gn √g/ J/gn Ę, J/gn /gn ug/L ng/L ug/L /gn ug/L ng/L ng/L ug/L /gn √g/ gn Νgη √g/ Result 0.313 0.313 0.313 0.313 3.65 0.313 0.313 0.313 0.313 0.313 3.13 0.313 3.13 3.13 3.13 3.13 3.13 3.85 3.13 3.13 3.13 3.13 3.13 3.13 3.13 5.21 Oxybis(1-chloropropane)[2,2'-] Hexachlorocyclopentadiene Nitroso-di-n-propylamine[N-] Dinitro-2-methylphenol[4,6-Nitroso-di-n-butylamine[N-] Nitrosodimethylamine[N-] Indeno(1,2,3-cd)pyrene Nitrosodiethylamine[N-] Methylnaphthalene[1-] Hexachlorobutadiene Methylnaphthalene[2-Nitrosopyrrolidine[N-] Pentachlorobenzene Dimethyl Phthalate Dimethylphenol[2,4-] Di-n-butylphthalate Hexachlorobenzene Pentachlorophenol Dinitrotoluene[2,4-] Dinitrotoluene[2,6-] Di-n-octylphthalate Hexachloroethane Dinitrophenol[2,4-] Methylphenol[3-,4-] Parameter Name Diethylphthalate Methylphenol[2-] Diphenylamine Phenanthrene Nitroaniline[3-] Nitrophenol[4-] Fluoranthene Naphthalene Nitroaniline[2-Nitroaniline[4-Nitrobenzene Nitrophenol[2-Dioxane[1,4-] Isophorone Fluorene Dinoseb Phenol Sample Date 11-08-2018 1-08-2018 Location 1D MCOI-6 CAMO-19-163971 CAMO-19-16397 :AMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 :AMO-19-16397 :AMO-19-16397 :AMO-19-16397 :AMO-19-16397 :AMO-19-16397 :AMO-19-16397 :AMO-19-16397 :AMO-19-16397 :AMO-19-16397 CAMO-19-16397 :AMO-19-16397 CAMO-19-16397 :AMO-19-16397 CAMO-19-16397

Category Method SVOC SVOC SVOC SVOC SVOC SVOC 200 200 VOC 00 8 200 200 V0C 200 200 000 99 200 200 8 8 200 |S 00 VOC 200 200 8 200 VOC Table 2. Analytical Results from Annual Groundwater Sampling at Perched/Intermediate Ground Water Well MCOI-6, November 8, 2018, Condition No. 36 SW-846:8270D SW-846:8270D SW-846:8270D SW-846.8270D SW-846:8270D SW-846.8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846.8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846.8260B SW-846:8270D SW-846:8260B SW-846:8270D Lab Method Purpose Sample REG Field Prep Code 5 |5|5 告 능 告 비방 5 5 5 片 5 비방 비분 当5 片 焅 비방 비방 片 焅 片 5 泻 造 焅 Qualifier \supset \supset \supset \supset \supset \supset Detected z z z z z Z z Z Z z Z Z z z z z z z z z z Z Units Ng/L Z/gn √gn Ng/F ng/L ng/L 7gn 7 In ng/L /g /g √l J /g ģ J Bn /g /gn /g ٦/gn /gn √g/I /gn √g/l √gn ng/ /gn /gn /gn 9 Ιĝη ğ √g/l ng/L ٦/gn √g n ģ √gn ٦/gn ۷gn ۱g Result 0.300 0.313 0.300 0.300 0.300 0.300 0.300 0.300 0.300 0.300 0.300 0.300 0.300 0.300 0.300 0.300 0.300 0.500 0.300 0.300 0.300 0.300 3.13 3.13 3.13 3.13 15.0 0.300 3.13 8.00 1.50 1.50 1.50 3.13 8 1.50 Dibromo-3-Chloropropane[1,2-] [etrachlorobenzene[1,2,4,5] Tetrachlorophenol[2,3,4,6richlorobenzene[1,2,4-] Dichlorodifluoromethane Chlorodibromomethane Bromodichloromethane Chloro-1,3-butadiene[2-Trichlorophenol[2,4,6-] Bromochloromethane Dichlorobenzene[1,4-] Trichlorophenol[2,4,5-] Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Carbon Tetrachloride Chloro-1-propene[3-] Dibromoethane[1,2-] Butylbenzene[tert-] Butylbenzene[sec-Dibromomethane Parameter Name Chlorotoluene[4-] Butylbenzene[n-] Carbon Disulfide Chlorotoluene[2-Bromomethane Chloromethane Chlorobenzene Bromobenzene Chloroethane Bromoform Butanone[2-Chloroform Acrylonitrile Acetonitrile Butanol[1-] Benzene Acetone Acrolein Pyrene Pyridine Location ID Sample Date 11-08-2018 1-08-2018 11-08-2018 11-08-2018 11-08-2018 1-08-2018 1-08-2018 MCOI-6 9-100M MCOI-6 CAMO-19-163971 CAMO-19-163971 CAMO-19-163971 CAMO-19-163971 CAMO-19-163971 CAMO-19-163971 CAMO-19-163971 Field Sample ID CAMO-19-16397 CAMO-19-163977 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397

Category 00 V 2000 200 200 VOC 200 VOC VOC 200 200 000 8 200 VOC 200 200 000 200 00 200 200 200 200 Voc Voc Voc VOC Voc VOC 00 00 00 00 Table 2. Analytical Results from Annual Groundwater Sampling at Perched/Intermediate Ground Water Well MCOI-6, November 8, 2018, Condition No. 36 SW-846:8260B Lab Method Purpose Sample REG RIG Big REG Field Prep Code 片 5 5 5 焅 告 5 告 넁 5 님 片 5 느 5 5 告 5 5 5 5 5 造 5 5 5 5 片 片 5 5 告 5 Qualifier Detected z z Z z Z Z z Z z z z z z z z z z z z Z Z Z Units ng/L √g ng/L ng/L ng/L ng/L √gn ng/L J/gn √g/ ng/L √gn √g/ ng/L J/gn ng/L ٦ğ Jg Jg Ng/L Įģ √gn 1/gn √g/I √g/ /gn ľg, l/gu 'n l/gu √g/I l/gu /gn /gn l/gu √gu /gn /gn /gn /gn /gn √g/I Result 0.300 0.300 0.300 0.300 0.300 0.300 15.0 1.50 0.300 0.300 0.300 0.300 1.50 1.50 0.300 0.300 1.50 0.300 0.300 2.00 1.50 1.50 1.00 Trichloro-1,2,2-trifluoroethane[1,1,2-] Dichloropropene[trans-1,3-] Tetrachloroethane[1,1,2,2-] Tetrachloroethane[1,1,1,2-] Dichloroethene[trans-1,2-Dichloropropene[cis-1,3-] Trichloropropane[1,2,3-] Trichlorobenzene[1,2,3-] Trichlorobenzene[1,2,4-] Trichlorofluoromethane Dichloroethene cis-1,2-Methyl tert-Butyl Ether Trichloroethane[1,1,1-] Dichloropropene[1,1-] Methyl-2-pentanone[4-Dichloropropane[1,3-] Dichloropropane[2,2-] Hexachlorobutadiene Trichloroethane[1,1,2-Dichloropropane[1,2-Methyl Methacrylate Dichloroethane[1,2-] Ethyl Methacrylate Methylene Chloride Dichloroethene[1,1sopropyltoluene[4-] Isopropylbenzene Tetrachloroethene Parameter Name Propylbenzene[1-] Methacrylonitrile Trichloroethene Isobutyl alcohol Diethyl Ether Ethylbenzene Iodomethane Hexanone[2-] Naphthalene Propionitrile Coluene Styrene Sample Date 1-08-2018 11-08-2018 Location ID MCOI-6 CAMO-19-163971 CAMO-19-163971 CAMO-19-163971 CAMO-19-16397 CAMO-19-163971 CAMO-19-16397 Field Sample ID CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397 CAMO-19-16397

Results	ŧΙ	om Annual Gr	Table 2. Analytical Results from Annual Groundwater Sampling at Perched/Intermediate Ground Water Well MCOI-6, November 8, 2018, Condition No. 36	ntermediate G	Sround V	Vater Well	MCOI-6, N	lovember 8	, 2018, Co	andition No. 36	
				Report			Lab	Field Prep	Sample		Method
Location ID Sample Date	Sample Date		Parameter Name	Result	Units	Detected	Qualifier	Code	Purpose	Lab Method	Category
MCOI-6 11-08-2018 Trim		Trin	rimethylbenzene[1,2,4-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
MCOI-6 11-08-2018 Trim	11-08-2018 T	Trim	rimethylbenzene[1,3,5-]	0.300	ng/L	z	n	η	REG	SW-846:8260B	NOC
MCOI-6 11-08-2018	$\overline{}$		Vinyl acetate	1.50	l 7/6n	z	כ	Ę,	REG	SW-846:8260B	NOC
MCOI-6 11-08-2018		^	Vinyl Chloride	0.300	ng/L	z	ם	J.	REG	SW-846:8260B	NOC
MCOI-6 11-08-2018	11-08-2018		Xylene[1,2-]	0.300	ng/L	z	ם	Ę,	REG	SW-846:8260B	VOC
MCOI-6 11-08-2018 Xylene[1	11-08-2018	Xylene	[1,3-]+Xylene[1,4-]	0.300	ng/L	z	n	Ę,	REG	SW-846:8260B	NOC
MCOI-6 11-08-2018	11-08-2018		HMX	0.0833	ng/L	z	n	UF	REG	SW-846:8330B LCMS/MS HE	LCMS/MS HE
MCOI-6 11-08-2018	11-08-2018		RDX	0.0833	ng/L	z	n	JU	REG	SW-846:8330B LCMS/MS HE	LCMS/MS HE
MCOL6 14.08.2048		Tri	Trinitrofoli lenel 2 4 6.1	00000	1/2::	Z	=	1	CLLC	TIT ONE ONE - CANCINIC III	11101101101

CAMO-19-164108 MCOI-E

SAMPLE PURPOSE KEY

REG means regular field sample

FD means field duplicate sample

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

a	Sample Date	11/8/2018
b	Sample Time	1252
С	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
1	Chain-of custody.	Attached
m	Location Map	Attachment 15

EVENT ID:

12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID:	CAMO-19-16	4108		WO	RK ORDER	₹;		
		S INED AS C	OLLEC	TED		AS PLANNED	AS COLLE	CTED
Date Collected (MM/DD/YYY):	11/8/	1018	OK_	FIELD M	IATRIX:	WG	QR	
TIME COLLECT (HH:MM):	TED 125			MEDIA:		ON		
PRS ID:	<u> </u>			SAMPLE CODE:	TECH	SSP SSP		
LOCATION ID:	MCO	I-6		FIELD P	REP:	UF		
LOCATION TYP	PE:			FIELD Q	C TYPE:	REG		
TOP DEPTH:				SAMPLE	USAGE:	INV		
BOTTOM DEPT	н:		_ L	EXCAVA	ATED:		YES / NO /	NA
PRIORITY	ORDER	CONTAINER	#	PRESERVATIV	E CO	LLECTED Y/N	SPECIAL INS	TRUCTION
NA	DP-8082	1 LITER GLASS	3	ICE		Y	NA	
in the second se	DP-TP-8081	1 LITER GLASS	3	ICE				
	DP-TP-8330	1 LITER AMBER GLASS	3	ICE				
SAMPLE COM	MENTS: MA				L		1	
LOCATION CO	mments: MA							
FIELD PARAM	200 m21							
Sample Time		H-MM Casi	ng Volume		UNITLESS	Discharge Rate	1.30	gal/min
ssolved Oxygen		g/L Flov	v (in gpm)	1 30	GPM	Groundwater Elevation	NC	ſŧ
dation-Reduction Potential	327.5 N	V	iod Purge ⁄olume	W)7	gal	pН	7.19	SU
Potential	117	, S	pecific	556	uS/cm	Temperature	155	deg C
Purge Volume	<u>117</u> g	Con	ductance					409 5

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

RELINQUISHED BY Tomor Renham (Printed Name) (Signature)		(Printed Name) She wood (Signature) She wood	Date/Time りしめしま 1600
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name)		(Printed Name)	
(Signature)		(Signature)	

Report Date: 11/05/2018

EPC-DO: 19-018

EVENT ID:

12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID:	CAMO-19-164	1107			WORK (ORDER:	
3	A PLAN	-	AS C	OLLEC	(ED	AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	11/8/20	18		alt	FIELD MATRI	IX: WG	M.
TIME COLLECT (HH:MM):	IZ5				MEDIA:	ON	
PRS ID:	_cr				SAMPLE TEC CODE:	CH RSP	
OCATION ID:	MCOI	-6			FIELD PREP:	F	
OCATION TYP	E:			_	FIELD QC TY	PE: REG	
OP DEPTH:	-			+	SAMPLE USA	AGE: INV	V
BOTTOM DEPTI	t: <u>\</u>			1	EXCAVATED:		YES / NO / NA
PRIORITY	ORDER	CONTAI	NER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTION
	DP-Ra226+228	1 LITER F	POLY	4	ниоз		
SAMPLE COMM	MENTS:						
LOCATION CO	MMENTS:						parent.
FIELD PARAME	TERS:					نبذ	
Sample Time	Н	i:MM	Casing	g Volume	— JUNIT	TLESS Discharge Rate	gal/min
ssolved Oxygen	mg	/L	Flow	(in gpm)	1-8-7018 TGPM	Groundwater Elevation	ft
dation-Reduction Potential	M\	,		od Purge	M gal	рН	SU

COLLECTED BY (PRINT): A	Stocker	À.	0	Jeromillo
		w	-	

gal

gaí

Specific Conductance

Turbidity

RELINQUISHED BY Tonner Bonhorn (Printed Name) (Signature)	Date/Time	(Printed Name) Sherwood (Signature)	Pate/Time
RELINQUISTED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
D 10 1 44/05/0640		11	

Report Date: 11/05/2018

Purge Volume

Total Volume

Pumped

EPC-DO: 19-018

ATTACHMENT 10

uS/cm

NTU

Temperature

LA-UR-19-20526 14429

deg C

		1 7	10	
-	/ I		41 5 -	
_ 1	_	N I	uL/-	

12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID:	CAMO-19-164	4 94		WORK (ORDER:	
	AS PLAN	400	OLLEC	TED	AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	11/8/2	0/8	Ok	FIELD MATRI	X : WG	OA
TIME COLLECT (HH:MM):				MEDIA:	CK	
PRS ID:	_ ak			SAMPLE TEC CODE:	H BS IB	
LOCATION ID:	MCOI-	6		FIELD PREP:	UF	
LOCATION TYP	E: <u>ak</u>			FIELD QC TY	PE: FB	
TOP DEPTH:				SAMPLE USA	GE: QC	
BOTTOM DEPTI	н:		V	EXCAVATED:		YES / (NO) / NA
PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	DP-8082	1 LITER GLASS	3	ICE	V	NA
\bigvee	DP-TP-8081	1 LITER GLASS	3	ICE	V	1
LOCATION CO						
Sample Time	НН	:MM Casi	ng Volume	UNIT	LESS Discharge Rate	gal/min
Dissolved Oxygen	mg/	L Flov	v (in gpm)	8-701% GPM	Groundwater Elevation	(t
Oxidation-Reduction Potential	MV		iod Purge /olume	gal	рН	su
Purge Volume	gal	Con	pegilic fluctance	uS/cr	n Temperature	deg C
Total Volume Pumped COLLECTED BY	gal		urbidity	NTU		
RELINQUISHED (Printed Name) (Signature)	BY TONNER	Borghom So	Date/ い/8/20 /6 0x	(Printed Nam		Date/Time (1 8 18 16 00
RELINQUISHED (Printed Name) (Signature)	ВҮ		Date/	Time RECEIVED B		Date/Time

Report Date: 11/05/2018

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

Location	Sample		Report			4	Field Dren	Cample		Mothod
Q	Date	Parameter Name	Result	Units	Detected	Qualifier	Code	Purpose	Lab Method	Category
R-1	11-08-2018	Ammonia as Nitrogen	0.0361	mg/L	>	7	ш	REG	EPA:350.1	GEN CHEM
R-1	11-08-2018	Chloride	1.88	mg/L	>		L	REG	EPA:300.0	GEN CHEM
R-1	11-08-2018	Cyanide (Total)	0.00167	mg/L	z	⊃	Ъ	REG	EPA:335.4	GEN CHEM
R-1	11-08-2018	Fluoride	0.129	mg/L	>		ш	REG	EPA:300.0	GEN CHEM
R-1	11-08-2018	Nitrate-Nitrite as Nitrogen	0.359	mg/L	>		ш	REG	EPA:353.2	GEN CHEM
R-1	11-08-2018	Sulfate	2.31	mg/L	>		ш	REG	EPA:300.0	GEN CHEM
R-1	11-08-2018	Total Dissolved Solids	123	mg/L	>		ч	REG	EPA:160.1	GEN CHEM
R-1	11-08-2018	Total Kjeldahl Nitrogen	0.0455	mg/L	Υ	ſ	UF	REG	EPA:351.2	GEN_CHEM
R-1	11-08-2018	Aluminum	0.89	ng/L	z	b	L.	REG	SW-846:6010C	METALS
R-1	11-08-2018	Arsenic	2.28	ng/L	>	_	4.	REG	SW-846:6020	METALS
R-1	11-08-2018	Barium	13.9	ng/L	>		ш	REG	SW-846:6010C	METALS
R-1	11-08-2018	Beryllium	1.00	ng/L	z	ם	ч	REG	SW-846:6010C	METALS
R-1	11-08-2018	Boron	15.0	ng/L	z	Þ	L	REG	SW-846:6010C	METALS
R-1	11-08-2018	Cadmium	0.300	ug/L	z	ם	Ь	REG	SW-846:6020	METALS
R-1	11-08-2018	Chromium	5.75	ng/L	>	7	Щ	REG	SW-846:6020	METALS
R-1	11-08-2018	Cobalt	1.00	ng/L	z	כ	Н	REG	SW-846:6010C	METALS
R-1	11-08-2018	Copper	3.00	ng/L	z	n	Ь	REG	SW-846:6010C	METALS
R-1	11-08-2018	Iron	30.0	ng/L	z	n	Ь	REG	SW-846:6010C	METALS
R-1	11-08-2018	Lead	0.500	ng/L	z	Ŋ	4	REG	SW-846:6020	METALS
R-1	11-08-2018	Manganese	2.00	ng/L	z	n	F	REG	SW-846:6010C	METALS
R-1	11-08-2018	Mercury	0.067	ng/L	z	n	UF	REG	EPA:245.2	METALS
R-1	11-08-2018	Mercury	0.067	ng/L	z	n	4	REG	EPA:245.2	METALS
R-1	11-08-2018	Molybdenum	1.11	ng/L	Υ		F	REG	SW-846:6020	METALS
R-1	11-08-2018	Nickel	2.77	l ng/L	×		Э	REG	SW-846:6020	METALS
R-1	11-08-2018	Selenium	2.00	ng/L	z	n	Ь	REG	SW-846:6020	METALS
R-1	11-08-2018	Silver	0.300	ng/L	z	n	J	REG	SW-846:6020	METALS
R-1	11-08-2018	Uranium	0.764	ng/L	٨		4	REG	SW-846:6020	METALS
R-1	11-08-2018	Zinc	4.17	J/gu	\	ſ	Ł	REG	SW-846:6010C	METALS
R-1	11-08-2018	Hd	7.78	ns			UF	REG	Field	
R-1	11-08-2018	Perchlorate	0.391	ng/L	>		Ľ.	REG	SW-846:6850	LCMS/MS
R-1	11/08/2018	Radium-226	0.619	pCi/L	>		ш	REG	EPA:903.1	RAD
R-1	11/08/2018	Radium-228	0.753	pCi/L	z	ח	H	REG	EPA:904	RAD
R-1	11/08/2018	Aldrin	0.007	ng/L	z	n	UF	REG	SW-846:8081B	PESTPCB
R-1	11/08/2018	BHC[alpha-]	0.007	ng/L	z	N	UF	REG	SW-846:8081B	PESTPCB
R-1	11/08/2018	BHC[beta-]	0.007	ng/L	z	n	UF	REG	SW-846:8081B	PESTPCB
R-1	11/08/2018	BHC[gamma-]	0.007	ng/L	z	n	UF	REG	SW-846:8081B	PESTPCB
R-1	11/08/2018	Chlordane(alpha/gamma)	0.0805	ng/L	z	U	占	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

			6								
	Location	Sample		Report			Lab	Field Prep	Sample		Method
Field Sample ID	۵	Date	Parameter Name	Result	Units	Detected	Qualifier	Code	Purpose	Lab Method	Category
CAMO-19-164110	R-1	11/08/2018	Chlordane[alpha-]	0.007	T/6n	z	ס	-JO	REG	SW-846:8081B	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Chlordane[gamma-]	0.007	ng/L	z	ח	٦U	REG	SW-846:8081B	PESTPCB
CAMO-19-164110	R-1	11/08/2018	DDT[4,4'-]	0.0105	∏/gn	z	n	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Dieldrin	0.0105	T/Bn	z	n	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Endosulfan l	0.007	ng/L	z	n	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Endosulfan II	0.0105	ng/L	Z	n	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Endrin	0.0105	ng/L	z	ם כ	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Heptachlor	200.0	∏/Bn	z	n	Ę,	REG	SW-846:8081B	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Toxaphene (Technical Grade)	0.158	ng/L	z	n	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Aroclor-1016	0.0358	ng/L	z	ח	IJ	REG	SW-846:8082	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Aroclor-1221	0.0358	ng/L	z	n	J.	REG	SW-846:8082	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Aroclor-1232	0.0358	ng/L	z	ח	Ä	REG	SW-846:8082	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Aroclor-1242	0.0358	ng/L	z	n	Ę,	REG	SW-846:8082	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Aroclor-1248	0.0358	ng/L	z	ח	占	REG	SW-846:8082	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Aroclor-1254	0.0358	ng/L	z	n	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Aroclor-1260	0.0358	ng/L	z	Ω	Ę,	REG	SW-846:8082	PESTPCB
CAMO-19-164110	R-1	11/08/2018	Benzene	0.300	ng/L	z	Ω	J.	REG	SW-846:8260B	NOC
CAMO-19-164110	유	11/08/2018	Bromodichloromethane	0.300	ng/L	z	ņ	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	유	11/08/2018	Bromoform	0.300	ng/L	z	n	J.	REG	SW-846:8260B	VOC
CAMO-19-164110	유	11/08/2018	Bromomethane	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164110	R-1	11/08/2018	Carbon Tetrachloride	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164110	R-1	11/08/2018	Chlorobenzene	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Chloroform	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164110	R-1	11/08/2018	Chloromethane	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164110	R-1	11/08/2018	Dibromoethane[1,2-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Dibromomethane	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Dichlorobenzene[1,4-]	0.300	ng/L	z	n	J.	REG	SW-846:8260B	NOC
CAMO-19-164110	유-1	11/08/2018	Dichlorodifluoromethane	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164110	R-1	11/08/2018	Dichloroethane[1,1-]	0.300	ng/L	z	Ω	IJ.	REG	SW-846:8260B	NOC
CAMO-19-164110	R-1	11/08/2018	Dichloroethane[1,2-]	0.300	l J/gn	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164110	R-1	11/08/2018	Dichloroethene[1,1-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Dichloroethene[cis-1,2-]	0.300	ng/L	Z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Dichloroethene[trans-1,2-]	0.300	l J/Bn	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164110	R-1	11/08/2018	Dichloropropene[cis/trans-1,3-]	0.300	J/Bn	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164110	R-1	11/08/2018	Ethylbenzene	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Methyl tert-Butyl Ether	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164110	R-1	11/08/2018	Methylene Chloride	1.00	ng/L	z	ח	UF	REG	SW-846:8260B	voc
CAMO-19-164110	R-1	11/08/2018	Tetrachloroethane[1,1,2,2-]	0.300	ng/L	z	D	ΠF	REG	SW-846:8260B	NOC
CAMO-19-164110	유	11/08/2018	Tetrachloroethene	0.300	ng/L	z	D	片	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Toluene	0.300	ng/L	z	5	J.	REG	SW-846:8260B	700

ATTACHMENT 11

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

Field Sample ID	Location	Sample Date	Parameter Name	Report	Units	Detected	Lab Qualifier	Field Prep Code	Sample	Lab Method	Method
CAMO-19-164110	~	11/08/2018	Trichloroethane[1,1,1-]	0.300	ng/L	z	_	5	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Trichloroethane[1,1,2-]	0.300	ug/L	z	Э	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Trichloroethene	0.300	ng/L	z	D	UF	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Trichlorofluoromethane	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164110	R-1	11/08/2018	Vinyl Chloride	0.300	l J/gn	z	n	Ъ	REG	SW-846:8260B	VOC
CAMO-19-164110	R-1	11/08/2018	Xylene (Total)	0.300	ng/L	z	n	占	REG	SW-846:8260B	NOC
CAMO-19-164110	R-1	11/08/2018	Xylene[1,2-]	0.300	ng/L	z	כ	UF	REG	SW-846:8260B	NOC
CAMO-19-164110	R-1	11/08/2018	Xylene[1,3-]+Xylene[1,4-]	0.300	ng/L	z	ח	UF	REG	SW-846:8260B	NOC
CAMO-19-164110	R-1	11/08/2018	Anthracene	0.319	ng/L	z	ס	IJ.	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Azobenzene	3.19	ng/L	z	D	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Benzidine	4.15	ng/L	z	D	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Benzo(a)pyrene	0.319	ng/L	z	ס	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	유-1	11/08/2018	Benzo(b)fluoranthene	0.319	ng/L	z	D	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Benzo(k)fluoranthene	0.319	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Bis(2-chloroethyl)ether	3.19	ng/L	z	ח	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Bis(2-ethylhexyl)phthalate	0.394	ng/L	>	ſ	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Dichlorobenzidine[3,3'-]	3.19	l J/gn	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Dichlorophenol[2,4-]	3.19	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Diethylphthalate	0.319	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Dimethyl Phthalate	0.319	l J/gn	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Di-n-butylphthalate	0.319	l J/Bn	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Dinitro-2-methylphenol[4,6-]	3.19	l J/Bn	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Dinitrophenol[2,4-]	5.32	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Dinitrotoluene[2,4-]	3.19	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Dinitrotoluene[2,6-]	3.19	ng/L	z	n	UF	П	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Diphenylamine	3.19	ng/L	z	n	UF	П	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Fluoranthene	0.319	ng/L	z	n	UF	П	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Fluorene	0.319	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Hexachlorobenzene	3.19	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Hexachlorobutadiene	3.19	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Hexachlorocyclopentadiene	3.19	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Hexachloroethane	3.19	ng/L	z	ם	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Isophorone	3.72	ng/L	z	ם	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Methylnaphthalene[1-]	0.319	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Methylnaphthalene[2-]	0.319	ng/L	z	D	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Naphthalene	0.319	ng/L	z	D	JU	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Nitrobenzene	3.19	ng/L	z	כ	Ę,	REG	SW-846:8270D	SVOC
CAMO-19-164110	R-1	11/08/2018	Nitrosodiethylamine[N-]	3.19	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	-	11/08/2018	Nitrosodimethylamine[N-]	3.19	ng/L	z	Э	UF	REG	SW-846:8270D	SVOC
CAMO-19-164110	유	11/08/2018	Nitroso-di-n-butylamine[N-]	3.19	ng/L	z	ח	٦.	REG	SW-846:8270D	SVOC

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SW-846:8330B LCMS/MS HE SW-846:8330B LCMS/MS HE LCMS/MS HE Category SVOC SVOC SVOC SVOC SVOC SVOC SVOC SVOC SW-846:8270D SW-846:8270D SW-846:8330B SW-846:8270D SW-846:8270D SW-846:8270D SW-846:8270D SW-846:8270D SW-846:8270D SW-846:8270D SW-846:8270D SW-846:8270D Lab Method Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-1, November 8, 2018, Condition No. 36 Sample Purpose REG Field Prep 발발발발 占 造 띩 5 Qualifier \supset Detected z z z z z z z z z z z Units ng/L ng/L ď, ģ 7gn /gn 7gn ng/L Ng/I √g/I /gn ηgη √g/I /gn Report Result 0.319 0.319 3.19 3.19 3.19 0.087 0.087 3.19 3.19 3.19 3.19 0.087 0.0 Oxybis(1-chloropropane)[2,2'-] [etrachlorobenzene[1,2,4,5] richlorophenol[2,4,5-] Trichlorophenol[2,4,6-] Pentachlorobenzene Trinitrotoluene[2,4,6-Nitrosopyrrolidine[N-Pentachlorophenol Parameter Name Phenanthrene Total PAHs Phenol Pyrene HMX RDX 11/08/2018 11/08/2018 11/08/2018 11/08/2018 11/08/2018 11/08/2018 11/08/2018 11/08/2018 11/08/2018 11/08/2018 11/08/2018 11/08/2018 11/08/2018 11/08/2018 Sample Date Location <u>유</u> \<u>\</u> <u> 주</u> 전 꼰 7-7 ₽ 눔 7 7 CAMO-19-164110 Field Sample ID

SAMPLE PURPOSE KEY
REG means regular field sample

FD means field duplicate sample

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

a	Sample Date	11/8/2018
b	Sample Time	1454
С	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
1	Chain-of custody.	Attached
m	Location Map	Attachment 15

EPC-DO: 19-018						AT	ATTACHMENT 11	MENT	7									4	LA-UR-19-20526		
LANL SMO																			COC/Lab Request #:	uest #:	
	ć	J	Chain		آ	JSt	po	4//	Na	of Custody/Analysis Request	<u>S</u>	26	gũ	est					2019-423		
Los Alamos NM	1/												-						Page 1 of 1		
Client Contact:	Lab Agreement #:	#		Site Name:	ame		N3B LANL	ANI													_
	Project Number:	2				-e)			-									8	Rad Screening Info:	g Info:	_
	Analysis Turnaround Time:	und Time:	×			hlora			+0												
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					SI	+9YC												<u> </u>	ab Reportin	ab Reporting Limit Type:	_
	21 Days -						E-H-3												Method De	Method Detection Limit	
Field Sample ID	Sample Sample	Sample Time	Sample Matrix	-dosw	A-98W D-98W	WSP-G	IJ-4SM	N-92W	N-92W IT-92W								14-1				
CAMO-19-163974	Nov 8 2018	14:54	3		-	_		2 1	⊢		┝	L		┝	L		H	L			_
CAMO-19-163975	Nov 8 2018	14:54	>	_	_		-		-		-			-			-				_
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Special Instructions:	,																				
Relinquished by	Print Na	me:Allisu	Print Name: Allisum Stanfield		Date/Time:	me:	1630		Receiv	Received by: Kayal Orch	S. S.	0)	77		Print Name: \$		2	O. A.	S LOR CAN Date/Time?	1/8/R	
Relinquished by:	Print Name:	те:			Date/Time:	me:			Receiv	Received by:					Print Name:	1			Date/Time:		
Relinquished by:	Print Name:	me:		Ť	Date/Time:	ije:			Receiv	Received by:				_	Print Name:	ie:			Date/Time:		
																					ř

EVENT ID:

12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164110

WORK ORDER:

						•	
â !	A: PLAN		OLL	ECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	11/8/2	10/8	ON	FIELD MAT	RIX:	WG	W.
TIME COLLECT (HH:MM):	ED	4		MEDIA:		OK	
PRS ID:	0			SAMPLE TI CODE:	ЕСН	GSP	
LOCATION ID:	R-1			FIELD PRE	P:	UF	
LOCATION TYP	E: <u>CA</u>		-	FIELD QC 1	YPE:	REG	
TOP DEPTH:			4	SAMPLE U	SAGE;	INV	
BOTTOM DEPTH	H:		V	EXCAVATE	D:		YES / NO / NA
PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	cc	LLECTED Y/N	SPECIAL INSTRUCTIONS
NA	DP-8082	1 LITER GLASS	3	ICE		Y	NA
Commission of the Commission o	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			
V	DP-TP-8330	1 LITER AMBER GLASS	3	ICE		/	V

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	5.20	mg/L	Flow (in gpm)	3,30	GPM	Groundwater Elevation	5872.41	ft
Oxidation-Reduction Potential	300.2	MV	Period Purge Volume	NA	gal	рН	7.75	su
Purge Volume	198	gal	Specific Conductance	139.3	uS/cm	Temperature	Zo.8	deg C
Total Volume Pumped	277.2	gal	Turbidity	0.53	NTU			

EVENT ID:

12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164110

WORK ORDER:

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

RELINQUISHED BY Torner Barham (Printed Name) (Signature)		(Printed Name) Sharwad (Signature)	Date/Time
RELINQU ISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 11/05/2018

EPC-DO: 19-018

ATTACHMENT 11

LA-UR-19-20526 14439

LA-UR-19-2052**14440**

12119

EVENT ID:

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENTID.	TETTO			EVENT	NAME: Discharge	Permit MY19	Q1
SAMPLE ID:	CAMO-19-164	109		WORK O	ORDER:		
	AS PLAN		OLLECTED		AS PLANNE	D AS CO	LLECTED
Date Collected (MM/DD/YYY):	11/3/201	4	cu/x	FIELD MATRI	X :WG	0	X
TIME COLLECT (HH:MM):	ED 1452	1		MEDIA:			
PRS ID:	OK		1	SAMPLE TEC CODE:	H GSP		
LOCATION ID:	R-1			FIELD PREP:	F		
LOCATION TYP	E:			FIELD QC TYI	PE; REG		
TOP DEPTH:				SAMPLE USA	GE: INV		
BOTTOM DEPTI	н:		V	EXCAVATED:		YES / NO) / NA
PRIORITY	ORDER	CONTAINER	# PRE	SERVATIVE	COLLECTED Y/	N SPECIAL	INSTRUCTIONS
MA	DP-Ra226+228	1 LITER POLY	4	НИОЗ	Y	N	14
SAMPLE COMM	WENTS:						
LOCATION CO	MMENTS:					and the same of th	450
FIELD PARAME	ETERS:			ý	M	c.	
Sample Time	НН	:MM Casir	ng Volume	4-2018 UNIT	Discharge F	łate	gal/min
Dissolved Oxygen	mg		v (in gpm)	SPM SPM	Groundwa Elevation		ſt
Oxidation-Reduction Potential	MV		od Purge olume	gal	pН	-	SU
Purge Volume	gal		pecific ductance	uS/cr	m Temperalu	ire	deg C
Total Volume Pumped	gal	Ti	urbidity	NTU			
COLLECTED BY	Y (PRINT): A	Stocker A	D. Scro	m:j/C			
	BYTERNOT		Date/Time	RECEIVED B		ood wood	Pate Time
RELINQUISHED (Printed Name) (Signature)	ВУ		Date/Time				Date/Time
Report Date: 11/05/20	018 O: 19-018		ATI	9 FACHMENT 11		I A-LIR-1	9-20528 4440

ATTACHMENT 11

EVENT ID:

12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164164

WORK ORDER:

	AS PLAN	AC C	OLLEC	TED		<u>aş</u> Planned	AS COLLECTED
Date Collected (MM/DD/YYY):	11/8/20	18	alc_	FIELD MATRI	X:	WG	
TIME COLLECT (HH:MM):	1454			MEDIA:		_ ON	
PRS ID:	CAL		1	SAMPLE TEC CODE:	H	DC	
LOCATION ID:	R-1	(e): a:	\perp	FIELD PREP:		UF	
LOCATION TYP	E OK		-	FIELD QC TY	PE:	FTB	
TOP DEPTH:				SAMPLE USA	GE:	QC	
BOTTOM DEPTI	H		<u>"\</u>	EXCAVATED:			YES / 🔞 / NA
PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	co	LLECTED Y/N	SPECIAL INSTRUCTIONS
NA	DP-TP-8260	40 ML SEPTUM AMBER GLASS	2	HCL		Y	NA
SAMPLE COM	MENTS:						

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time		HH:MM	Casing Volume		UNITLESS	Discharge Rate		gal/min
Dissolved Oxygen	-	mg/L	Flow (in gpm)	-18	GPM	Groundwater Elevation	::	ft
Oxidation-Reduction Polential		MV	Period Purge Volume	810/0	gal	рН		SU
Purge Volume		gal	Specific Conductance	/	uS/cm	Temperature		deg C
Total Volume Pumped		gal	Turbidity		NTU			

COLLECTED BY (PRINT): A, Stoder & D. Jarom. 110

RELINQUISHED BY Torner Bonhayn	Date/Time	RECEIVED BY The wood	Date/Time
(Printed Name)	17.30	(Printed Name)	(~ 1 . 0
(Signature)	1600	(Signature) her wood	1000
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name)		(Printed Name)	
(Signature)		(Signature)	

Report Date: 11/05/2018 EPC-DO: 19-018

10 ATTACHMENT 11

LA-UR-19-20526 **14441**

ATTACHMENT 12

R-14 S1 annual ground water monitoring report

EPC-DO: 19-018

LA-UR-19-20526

Date: _____ JAN 3 1 2019

GEN CHEM GEN CHEM GEN CHEM GEN CHEM GEN_CHEM METALS METALS PESTPCB PESTPCB PESTPCB PESTPCB PESTPCB METALS Category METALS Method METALS RAD RAD SW-846:6010C SW-846:6010C SW-846:6010C SW-846:6010C SW-846:6010C SW-846:6850 SW-846:8081B SW-846:6010C SW-846:6010C SW-846:6010C SW-846:6010C SW-846:8082 SW-846:8082 SW-846:8082 SW-846:6020 SW-846:6020 SW-846:6020 SW-846:6020 SW-846:8082 SW-846:6020 SW-846:6020 SW-846:6020 Lab Method EPA:300.0 SW-846:6020 EPA:300.0 EPA:353.2 EPA:300.0 EPA:335.4 EPA:351.2 EPA:245.2 EPA:245.2 EPA:160.1 EPA:350.1 EPA:903.1 EPA:904 Field Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-14 S1 (screen 1), November 9, 2018, Condition No. 36 Purpose Sample REG Field Prep Code 4 片 焅 片 当片 Н ш ш ш Qualifier Lab > \supset \supset \supset \supset \supset ⊃ Detected z z Z z z z Z z Z z Units mg/L mg/L mg/L mg/L mg/L mg/L pCi/L mg/L mg/L ng/F pCi/L ug/L ug/L ug/L J/gn /gn lg/ ng/L ng/F √gn /gn /gn ģ /g 7gn √g ng/T 7gn ug/L √gn ug/I ug/L SU ng/L /gn /gn /gn 0.00679 0.0354 0.00167 0.0354 Report 0.0354 0.0354 Result 0.033 0.500 0.300 0.644 0.493 0.017 0.127 68.0 24.5 0.300 15.0 1.00 30.0 0.067 1.15 8.19 0.348 0.366 0.351 1.92 15.0 3.00 2.00 0.067 2.00 3.00 3.30 1.67 Nitrate-Nitrite as Nitrogen Total Dissolved Solids Total Kjeldahl Nitrogen Ammonia as Nitrogen Parameter Name Cyanide (Total) Aroclor-1232 Aroclor-1016 Aroclor-1242 Molybdenum Radium-226 Aroclor-1221 Radium-228 Manganese Perchlorate Chromium Aluminum Selenium Beryllium Cadmium Copper Mercury Fluoride Cobalt Mercury Uranium Chloride Arsenic Barium Sulfate Nickel Boron Silver Aldrin Lead 딘 Zinc 펍 11-09-2018 Sample Date Location ID R-14 S1 Field Measurement CAMO-19-164050 CAMO-19-164168 CAMO-19-164050 CAMO-19-164159 CAMO-19-164050 CAMO-19-164050 CAMO-19-164050 CAMO-19-164050 CAMO-19-164050 CAMO-19-164050 CAMO-19-164168 CAMO-19-164051 CAMO-19-164051 CAMO-19-164051 CAMO-19-164051 CAMO-19-164051 CAMO-19-164051 CAMO-19-164051 Field Sample ID

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

			Chicken a minima at incalant			Scient	J' NOACH	001 3, 2010,	Collution No.	NO. 30	
		Sample		Report			Lab	Field Prep	Sample		Method
Field Sample ID	Location ID	Date	Parameter Name	Result	Units	Detected	Qualifier	Code	Purpose	Lab Method	Category
CAMO-19-164051	R-14 S1	11-09-2018	Aroclor-1248	0.0354	ng/L	z	n	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164051	R-14 S1	11-09-2018	Aroclor-1254	0.0354	ng/L	z	n	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164051	R-14 S1	11-09-2018	Aroclor-1260	0.0354	ng/L	z	ר	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164051	R-14 S1	11-09-2018	Aroclor-1262	0.0354	ng/L	z	ח	UF	REG	SW-846:8082	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	BHC[alpha-]	0.00679	ng/L	z	ח	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	BHC[beta-]	0.00679	ng/L	z	כ	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	BHC[gamma-]	0.00679	ng/L	z	ס	-JO	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	Chlordane(alpha/gamma)	0.0781	ng/L	z	b	ħ	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	Chlordane[alpha-]	0.00679	ng/L	z	b	-J	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	Chlordane[gamma-]	0.00679	ng/L	z	5	ħ	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	DDT[4,4'-]	0.0102	ng/L	z	n	占	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	Dieldrin	0.0102	ng/L	z	ח	Į,	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	Endosulfan I	0.00679	J/Bn	z	ס	Ę,	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	Endosulfan II	0.0102	ng/L	z	b	5	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	Endrin	0.0102	ng/L	z	_	٦.	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	Heptachlor	0.00679	ng/L	z	כ	ij	REG	SW-846:8081B	PESTPCB
CAMO-19-164159	R-14 S1	11-09-2018	Toxaphene (Technical Grade)	0.153	ng/L	z	>	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164051	R-14 S1	11-09-2018	Acenaphthene	0.326	ng/L	z	ס	귀	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Acenaphthylene	0.326	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Aniline	4.57	ng/L	z	n	귀	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Anthracene	0.326	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Atrazine	3.26	ng/L	z	n	JU	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Azobenzene	3.26	ng/L	z	n	JU	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Benzidine	4.24	ng/L	Z	n	JU	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Benzo(a)anthracene	0.326	ng/L	z	ם	Ę,	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Benzo(a)pyrene	0.326	ng/L	z	n	JU	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Benzo(b)fluoranthene	0.326	ng/L	Z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Benzo(g,h,i)perylene	0.326	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Benzo(k)fluoranthene	0.326	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Benzoic Acid	6.52	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Benzyl Alcohol	3.26	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Bis(2-chloroethoxy)methane	3.26	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Bis(2-chloroethyl)ether	3.26	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Bis(2-ethylhexyl)phthalate	0.326	ng/L	z	ח	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Bromophenyl-phenylether[4-]	3.26	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Butylbenzylphthalate	0.326	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Chloro-3-methylphenol[4-]	3.26	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Chloroaniline[4-]	3.59	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Chloronaphthalene[2-]	0.446	ng/L	z	Э	JU	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Chlorophenol[2-]	3.26	ng/L	z	ם כ	UF	REG	SW-846:8270D	SVOC

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

			0			2				20.00	
		Sample		Report			Lab	Field Prep	Sample		Method
Field Sample ID	Location ID	Date	Parameter Name	Result	Units	Detected	Qualifier	Code	Purpose	Lab Method	Category
CAMO-19-164051	R-14 S1	11-09-2018	Chlorophenyl-phenyl[4-] Ether	3.26	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Сhrysene	0.326	ng/L	z	ס	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dibenz(a,h)anthracene	0.326	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dibenzofuran	3.26	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichlorobenzene[1,2-]	3.26	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichlorobenzene[1,3-]	3.26	ng/L	z)	H.	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichlorobenzene[1,4-]	3.26	ng/L	z	ח	-JO	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichlorobenzidine[3,3'-]	3.26	ng/L	z	כ	Ä	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichlorophenol[2,4-]	3.26	ng/L	z	ר	Ę,	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Diethylphthalate	0.326	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dimethyl Phthalate	0.326	ng/L	z	⊃	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dimethylphenol[2,4-]	3.26	ng/L	z	ח	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Di-n-butylphthalate	0.326	ng/L	z	n	5	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dinitro-2-methylphenol[4,6-]	3.26	ng/L	z	כ	J.	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dinitrophenol[2,4-]	5.43	ng/L	z	ח	٦ ا	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dinitrotoluene[2,4-]	3.26	ng/L	z	n	η	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dinitrotoluene[2,6-]	3.26	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Di-n-octylphthalate	0.326	ng/L	z	D	J.	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dinoseb	3.26	ng/L	z	ח	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Dioxane[1,4-]	3.26	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Diphenylamine	3.26	ng/L	z	_ ס	UF.	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Fluoranthene	0.326	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Fluorene	0.326	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Hexachlorobenzene	3.26	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Hexachlorobutadiene	3.26	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Hexachlorocyclopentadiene	3.26	ng/L	z	ח	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Hexachloroethane	3.26	ng/L	z	ם	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Indeno(1,2,3-cd)pyrene	0.326	ng/L	z	D	占	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Isophorone	3.80	ng/L	z	ם כ	귀	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Methylnaphthalene[1-]	0.326	ng/L	z	b	Ę,	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Methylnaphthalene[2-]	0.326	ng/L	z	D	占	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Methylphenol[2-]	3.26	ng/L	z	_ ס	Į.	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Methylphenol[3-,4-]	4.02	ng/L	z	ח	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Naphthalene	0.326	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Nitroaniline[2-]	3.26	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Nitroaniline[3-]	3.26	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Nitroaniline[4-]	3.26	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Nitrobenzene	3.26	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Nitrophenol[2-]	3.26	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Nitrophenol[4-]	3.26	ng/L	z	D	UF	REG	SW-846:8270D	SVOC
CAMO-19-164051	R-14 S1	11-09-2018	Nitrosodiethylamine[N-]	3.26	ng/L	z	o o	UF	REG	SW-846:8270D	SVOC

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Category SVOC Method SVOC SVOC SVOC SVOC SVOC SVOC SVOC SVOC SVOC 200 200 00 900 200 900 SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8270D SW-846:8270D SW-846:8270D SW-846:8270D SW-846:8270D SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8270D SW-846.8270D SW-846:8270D SW-846:8270D SW-846:8270D SW-846:8270D SW-846:8270D SW-846:8270D SW-846:8270D SW-846:8270D SW-846:8270D SW-846.8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846.8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846.8260B Lab Method Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-14 S1 (screen 1), November 9, 2018, Condition No. 36 Purpose Sample REG Field Prep 린빈린 님 片 片 5 5 5 告 当방 片 片 J. 비방 Qualifier \supset Detected z z z z Z z z z z Z z z Z Z /g √gn J g /gin /gn ug/L √g/ ug/L /gn ng/L Z g √g/ √gn /gn Z Ng ng/L √gn Z Z ng/L √l/gn 7gn ug/I 7gn l∕gu /gn ug/L 'n √gn √g/l ng/L l/g∩ 7gn √l I √g/I ģ √g /gn /gn Report Result 0.300 0.326 0.326 0.300 0.300 0.300 0.300 0.300 0.300 0.300 0.300 0.300 0.300 0.300 0.300 3.26 3.26 3.26 3.26 3.26 3.26 3.26 3.26 3.26 3.26 1.50 1.50 0.30015.0 0.300 8 1.50 8.00 1.50 5 Oxybis(1-chloropropane)[2,2'-] Tetrachlorobenzene[1,2,4,5] Nitroso-di-n-propylamine[N-Nitroso-di-n-butylamine[N-] Tetrachlorophenol[2,3,4,6-] Nitrosodimethylamine[N-Trichlorobenzene[1,2,4-] Chloro-1,3-butadiene[2-Chlorodibromomethane Bromodichloromethane Trichlorophenol[2,4,5-] Trichloropheno[[2,4,6-] Bromochloromethane Nitrosopyrrolidine[N-] Carbon Tetrachloride Pentachlorobenzene Chloro-1-propene[3-] Pentachlorophenol Butylbenzene(tert-) Butylbenzene[sec-Parameter Name Carbon Disulfide Butylbenzene[n-] Chlorobenzene Chloromethane Bromobenzene Bromomethane Phenanthrene Chloroethane Chloroform Acrylonitrile Butanone[2-Acetonitrile Bromoform Butanol[1-] Benzene Acrolein Pyridine Acetone Pyrene Phenol 11-09-2018 Sample Location ID R-14 S1 CAMO-19-164051 CAMO-19-16405 CAMO-19-16405 CAMO-19-16405 CAMO-19-16405 Field Sample ID

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

		of a large									
Field Sample ID	Location ID	Date	Parameter Name	Result	Units	Detected	Qualifier	riela Frep Code	Purpose	Lab Method	Category
CAMO-19-164051	R-14 S1	11-09-2018	Chlorotoluene[2-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Chlorotoluene[4-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164051	R-14 S1	11-09-2018	Dibromo-3-Chloropropane[1,2-]	0.500	ng/L	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164051	R-14 S1	11-09-2018	Dibromoethane[1,2-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164051	R-14 S1	11-09-2018	Dibromomethane	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichlorobenzene[1,2-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichlorobenzene[1,3-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichlorobenzene[1,4-]	0.300	ng/L	z	b	Į,	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichlorodifluoromethane	0.300	ng/L	z	b	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichloroethane[1,1-]	0.300	ng/L	z	D	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichloroethane[1,2-]	0.300	ng/L	z	D	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichloroethene[1,1-]	0.300	ng/L	z	ח	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichloroethene[cis-1,2-]	0.300	ng/L	z	ם	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichloroethene[trans-1,2-]	0.300	ng/L	z	Э	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichloropropane[1,2-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichloropropane[1,3-]	0.300	ng/L	z	ח	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichloropropane[2,2-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichloropropene[1,1-]	0.300	ng/L	z	>	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichloropropene[cis-1,3-]	0.300	ng/L	z	D	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Dichloropropene[trans-1,3-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Diethyl Ether	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Ethyl Methacrylate	1.50	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Ethylbenzene	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Hexachlorobutadiene	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Hexanone[2-]	1.50	ng/L	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164051	R-14 S1	11-09-2018	lodomethane	1.50	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Isobutyl alcohol	15.0	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Isopropylbenzene	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Isopropyltoluene[4-]	0.300	ng/L	z	D	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Methacrylonitrile	1.50	ng/L	z	D	UF	REG	SW-846:8260B	NOC
CAMO-19-164051	R-14 S1	11-09-2018	Methyl Methacrylate	1.50	ng/L	z		UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Methyl tert-Butyl Ether	0.300	ng/L	z	D	UF	REG	SW-846:8260B	NOC
CAMO-19-164051	R-14 S1	11-09-2018	Methyl-2-pentanone[4-]	1.50	ng/L	z	>	UF	REG	SW-846:8260B	voc
CAMO-19-164051	R-14 S1	11-09-2018	Methylene Chloride	1.00	ng/L	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164051	R-14 S1	11-09-2018	Naphthalene	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Propionitrile	1.50	ng/L	z	n	UF	SEG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Propylbenzene[1-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164051	R-14 S1	11-09-2018	Styrene	0.300	ng/L	z	⊃	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Tetrachloroethane[1,1,1,2-]	0.300	ng/L	z	>	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Tetrachloroethane[1,1,2,2-]	0.300	ng/L	z	5	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Tetrachloroethene	0.300	ng/L	z	D	UF	REG	SW-846:8260B	NOC

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

table is Amaigned the annual Cloundwater Sal	OIL CHIES II O	D IBRILLY III	delicated campling at regional Addition well (Screen 1), November 3, 2010, Compilion No. 30	10110	7	(selection	I, NOVELLI	101 2, 4010,		NO. 20	
		Sample		Report			Lab	Field Prep	Sample		Method
Field Sample ID	Location ID	Date	Parameter Name	Result	Units	Detected	Qualifier	Code	Purpose	Lab Method	Category
CAMO-19-164051	R-14 S1	11-09-2018	Toluene	0.300	ng/L	z	ے ا	5	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Trichloro-1,2,2-trifluoroethane[1,1,2-]	2.00	ng/L	z	ם	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Trichlorobenzene[1,2,3-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Trichlorobenzene[1,2,4-]	0.300	ng/L	z	ח	JU	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Trichloroethane[1,1,1-]	0.300	ng/L	z	ח	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Trichloroethane[1,1,2-]	0.300	ng/L	z	ס	JN	REG	SW-846:8260B	NOC
CAMO-19-164051	R-14 S1	11-09-2018	Trichloroethene	0.300	ng/L	z	ח	-JO	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Trichlorofluoromethane	0.300	ng/L	z	ח	H)	REG	SW-846:8260B	NOC
CAMO-19-164051	R-14 S1	11-09-2018	Trichloropropane[1,2,3-]	0.300	l J/gn	z	ח	JU	REG	SW-846:8260B	NOC
CAMO-19-164051	R-14 S1	11-09-2018	Trimethylbenzene[1,2,4-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Trimethylbenzene[1,3,5-]	0.300	l J/gn	z	ח	-N	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Vinyl acetate	1.50	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Vinyl Chloride	0.300	ng/L	z	n	J.	REG	SW-846:8260B	NOC
CAMO-19-164051	R-14 S1	11-09-2018	Xylene[1,2-]	0.300	7/Bn	z	n	귀	REG	SW-846:8260B	VOC
CAMO-19-164051	R-14 S1	11-09-2018	Xylene[1,3-]+Xylene[1,4-]	0.300	ng/L	z	ס	占	REG	SW-846:8260B	VOC
CAMO-19-164159	R-14 S1	11-09-2018	XMH	0.0851	ng/L	z	>	ħ	REG	SW-846:8330B	LCMS/MS HE
CAMO-19-164159	R-14 S1	11-09-2018	RDX	0.0851	ng/L	z	<u></u>	ħ	REG	SW-846:8330B	LCMS/MS HE
CAMO-19-164159	R-14 S1	11-09-2018	Trinitrotoluene[2,4,6-]	0.0851	ng/L	z	b	Į,	REG	SW-846:8330B	LCMS/MS HE
SAMPLE PURPOSE KEY	KEY										

SAMPLE PURPOSE KEY
REG means regular field sample
FD means field duplicate sample

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

a	Sample Date	11/9/2018
b	Sample Time	1015
С	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
1	Chain-of custody.	Attached
m	Location Map	Attachment 15

LA-UR-19-20526

LANI SMO													1							ſ
	P. 14	Chain	4	C	ţ	Ź	< '	2	((6	i						COC/Lab	COC/Lab Request #:	
Los Alamos NM		Cildill of Custody/Arialysis Request	5	5	25	g	<u>{</u>	<u>a</u>	l)S	<u>S</u>	O Y	d	est					Page 1 of	- 10	
Client Contact:	Lab Agreement #:		Site	Site Name:		N3B I ANI	Z									-		5		
	Project Number:			-	L		-		-	H		L	F	_		-				\neg
	Analysis Turnaround Time:						rate						Title			_		Kad Scre	Kad Screening Info:	
	24 Hour - Other -	×					OIUC			ŧΟ			-							
	7 Days -			_)19c		-	d+7										
				_	_		(C+F		10147	ON/			-			_		O de		Т
	21 Days -				_		_	8\A		403	001		_					ran repo	ab reporting Limit Type:	
	28 Days -		_	_	_		_	8801	_	_								Method	Method Detection Limit	_
Field Sample ID	Sample Sample Date Time	Sample	MSGP.	8-92W 8-92W	8-92W	A-98W	O-98W WSP-G	MSP-G	MSP-LI	N-92V A-92V	IT-98W									
CAMO-19-164050	Nov 9 2018 10:15	8	H	\vdash		1_	-		-	-	-		╁	\perp	T	╁	T			$\neg \neg$
CAMO-19-164051	Nov 9 2018 10:15	8	-	3 2	2		-	-	-	-	-		+			+	I			\top
CAMO-19-164052	Nov 9 2018 10:15	×		-					H	-			-			+	L			
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Special Instructions:	^ \																		:	
Relinquished by Jonne	Richard Print Name: Towner	ne Bowlen		Date/Time:	me:	81/6/		eceive	Received by: Received	2000	Ž	1	, a	Print Name: Report	me:	2	8	// Date/Time:	Time: 11/7/18	1 .
Refinquished by:	Print Name:		_	Date/Time:	me:		æ	Received by:	d by:				-	Print Name:	jë E	1		Date/Time:	Lime:	T
Relinquished by:	Print Name:		Ë	Date/Time:	ë.		ar a	Received by:	d by:				الم	Print Name:] E			Date/Time:	Time:	
							7						1							\neg

EVENT ID:

12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164159

WORK ORDER:

5	0					
5	- 11	1/	FIELD MATRI	X :	WG	OK
			MEDIA:		OK	
			SAMPLE TEC	н —	GSP	
§1			FIELD PREP:		UF	
<u> </u>			FIELD QC TY	PE: _	ŘĖG	
	4		SAMPLE USA	GE:	INV	
·			EXCAVATED:			YES /NO / NA
CONTAINER	#	PRES	SERVATIVE	COLI	ECTED Y/N	SPECIAL INSTRUCTIONS
1 LITER GLASS	3		ICE		Υ	MA
1 LITER AMBER GLASS	3		ICE			
		1 LITER AMBER GLASS 3	1 1 3 1	1 131 ICE 1	1 1 3 1 ICE 1	I I ICE I I

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Sample Time	1015	HH:MM	Casing Volume	NA	UNITLESS	Discharge Rate	7.14	gal/min
Dissolved Oxygen	2.80	mg/L	Flow (in gpm)	7.14	GPM	Groundwater Elevation	5870.47	fl
Oxidation-Reduction Potential	167.6	MV	Period Purge Valume	NA	gal	рН	8,18	su
Purge Volume	149.94	gal	Specific Conductance	127.4	uS/cm	Temperature	22.8	deg C
Total Volume Pumped	2627846	gal	Turbidity	0.67	NTU			

COLLECTED BY (PRINT): K, TOW & D. Jurom:110

RELINQUISHED BY Tonner Banhayn (Printed Name)	Date/Time	RECEIVED BY Drud M Sarracino (Printed Name)	Date/Time 11/9/2018
(Signature)		(Signature) Land Mohrison	1330 h
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name)		(Printed Name)	
(Signature)		(Signature)	

Report Date: 11/05/2018 EPC-DO: 19-018

	SAMPL	E COLLEC	HONE	OG/FIELD C	HAIN OF C	100160	
EVENT ID:	12119			EVENT	NAME: Discharç	ge Permit MY19	Q1
SAMPLE ID:	CAMO-19-164	168		WORK O	ORDER:		
	AS PLAN		OLLECTE)	AS PLANN	ED AS CO	LLECTED
Date Collected (MM/DD/YYY):	11/9/201	<u> </u>	OK	FIELD MATRI	X :WG		Δ <u>/</u>
TIME COLLECT (HH:MM):	1015			MEDIA:	OK		
PRS ID:	ON			SAMPLE TEC CODE:	H GSP		
LOCATION ID:	R-14 S	31		FIELD PREP:	F		
LOCATION TYP	E: OK			FIELD QC TY	PE: REG		
TOP DEPTH:				- SAMPLE USA	GE: INV		
BOTTOM DEPT	н:У		<u> </u>	EXCAVATED:		YES / K	D) / NA
PRIORITY	ORDER	CONTAINER	# PF	RESERVATIVE	COLLECTED	Y/N SPECIAL	INSTRUCTIONS
NA	DP-Ra226+228	1 LITER POLY	4	НИОЗ	Υ	/V	A
LOCATION CO	MMENTS:NA						
Sample Time	HF	1:MM Casii	ng Volume	19/70/3 GPM	Discharge	Rate	gal/min
Dissolved Oxygen	mg	J/L Flow	v (in gpm)	19/20 GPM	Groundw Elevati		, ft
xidation-Reduction Potential	M		iod Purge olume	gal	рН	-	su
Purge Volume	gal		pecific ductance	uS/cr	m Tempera	uture	deg C
Total Volume Pumped COLLECTED B	y (PRINT): k,		urbidity	NTU			
	DBY Tonner		Date/Tim		Y David m Sarr e) Savis MX	racino Imas	Date/Time 11/9/2018
DELINOUR HE	DBY		Date/Tim				Date/Time

Report Date: 11/05/2018

(Printed Name)

(Signature)

RELINQUISHED BY

EPC-DO: 19-018

10 **ATTACHMENT 12**

RECEIVED BY

(Printed Name)

(Signature)

LA-UR-19-2052652

Date/Time

EVENT ID:

12119

EPC-DO: 19-018

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164165

WORK ORDER:

O				WORK	JIVDEIV	\•	
	AS PLAN	1000	OLLEG	CTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	11/9/20	018	ar	FIELD MATRI	X : ,	WG	
TIME COLLECTE (HH:MM):	11/9/20 D	.7		MEDIA:		OK	
PRS ID:	_OK			SAMPLE TEC CODE:	: н	DC	
LOCATION ID:	R-14 S	1	\downarrow	FIELD PREP:		UF	
LOCATION TYPE	- gr		\perp	FIELD QC TY	PE:	PEB	-
TOP DEPTH:			+	SAMPLE USA	GE:	QC	V
BOTTOM DEPTH:			\bigvee	EXCAVATED:			YES / NO / NA
PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	со	LLECTED Y/N	SPECIAL INSTRUCTIONS
NA	DP-8082	1 LITER GLASS	3	ICE		Y	NA
	DD CIO4	0.25 LITER	1	ICE			1

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
MA	DP-8082	1 LITER GLASS	3	ICE	Y	NA
	DP-CIO4	0.25 LITER POLY	1	ICE		1
	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+CI	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		
V	DP-TP-8330	1 LITER AMBER GLASS	3	ICE	V	V

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

12119 **EVENT ID:**

Pumped

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID:	CAMO-19	-164165		W	ORK ORDER	•		
SAMPLE COM	MENTS:							
LOCATION CO	MMENTS:							
FIELD PARAM	ETERS:						ر	/
Sample Time		HH:MM	Casing Volume		UNITLESS	Discharge Rate		gal/min
Dissolved Oxygen		mg/L	Flow (in gpm)		GPM	Groundwater Elevation	_	Ŋ
Oxidation-Reduction Potential		MV	Period Purge Volume		gal	рН		SU
Purge Volume	-	gal	Specific Conductance		uS/cm	Temperature		deg C
Total Volume		gal	Turbidity		NTU	1		

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

(Printed Name) (Signature)	Date/Time 11/9/18 1475	(Printed Name) Sand M Sarracino (Signature) Sand M Sanacino	Date/Time 14/9/18
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 11/05/2018

EPC-DO: 19-018

12 **ATTACHMENT 12**

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

lable 1. Aliaiyucal Nesurts Horn Allindal Groundwater S	LACSUILS	ווסווויט וווסוו	noundwater Sampling at Regional Aquiler Well R-46, November 13, 2018,	a done	2	PO, INCVCIIII	DEI 13, 201	6, Condition No. 36	NO. 30		
Field Sample ID	Location	Sample Date	Parameter Name	Report	Inite	Detected	Lab	Field Prep	Sample	A CASS	Method
CAMO-19-164053	R-46	11-13-2018	Ammonia as Nitrogen	0.017	mg/L	z	٦	L	REG	EPA:350.1	GEN CHEM
CAMO-19-164053	R-46	11-13-2018	Chloride	1.73	mg/L	>		4	REG	EPA:300.0	GEN CHEM
CAMO-19-164053	R-46	11-13-2018	Fluoride	0.140	mg/L	>		4	REG	EPA:300.0	GEN CHEM
CAMO-19-164053	R-46	11-13-2018	Nitrate-Nitrite as Nitrogen	0.374	mg/L	\		ш	REG	EPA:353.2	GEN CHEM
CAMO-19-164053	R-46	11-13-2018	Sulfate	1.89	mg/L	\		ц	REG	EPA:300.0	GEN CHEM
CAMO-19-164053	R-46	11-13-2018	Total Dissolved Solids	244	mg/L	>		Ь	REG	EPA:160.1	GEN CHEM
CAMO-19-164054	R-46	11-13-2018	Total Kjeldahl Nitrogen	0.0821	mg/L	Υ	7	UF	REG	EPA:351.2	GEN_CHEM
CAMO-19-164055	R-46	11-13-2018	Ammonia as Nitrogen	0.0299	mg/L	z	ר	Ь	FD	EPA:350.1	GEN_CHEM
CAMO-19-164055	R-46	11-13-2018	Chloride	1.73	mg/L	>		Ь	FD	EPA:300.0	
CAMO-19-164055	R-46	11-13-2018	Fluoride	0.120	mg/L	>		Ł	FD	EPA:300.0	GEN_CHEM
CAMO-19-164055	R-46	11-13-2018	Nitrate-Nitrite as Nitrogen	0.375	mg/L	>		Ь	FD	EPA:353.2	GEN_CHEM
CAMO-19-164055	R-46	11-13-2018	Sulfate	1.89	mg/L	\		H	FD	EPA:300.0	GEN_CHEM
CAMO-19-164055	R-46	11-13-2018	Total Dissolved Solids	170	mg/L	٨		F	FD	EPA:160.1	
CAMO-19-164056	R-46	11-13-2018	Total Kjeldahl Nitrogen	0.0715	mg/L	>	7	UF	FD	EPA:351.2	GEN_CHEM
01070707010	9										
CAMO-19-164053	R-46	11-13-2018	Aluminum	68.0	ng/L	z	D	IL.	REG	SW-846:6010C	METALS
CAMO-19-164053	R-46	11-13-2018	Arsenic	2.22	ng/L	>	7	H	REG	SW-846:6020	METALS
CAMO-19-164053	R-46	11-13-2018	Barium	21.6	ng/L	\		Ь	REG	SW-846:6010C	METALS
CAMO-19-164053	R-46	11-13-2018	Beryllium	1.00	ng/L	z	כ	F	REG	SW-846:6010C	METALS
CAMO-19-164053	R-46	11-13-2018	Boron	15.0	ng/L	z	n	Ь	REG	SW-846:6010C	METALS
CAMO-19-164053	R-46	11-13-2018	Cadmium	0.300	ng/L	z	n	Ь	REG	SW-846:6020	METALS
CAMO-19-164053	R-46	11-13-2018	Chromium	5.23	ng/L	Υ	ľ	Ь	REG	SW-846:6020	METALS
CAMO-19-164053	R-46	11-13-2018	Cobalt	1.00	ng/L	z	n	Ь	REG	SW-846:6010C	METALS
CAMO-19-164053	R-46	11-13-2018	Copper	3.00	ng/L	z	כ	L	REG	SW-846:6010C	METALS
CAMO-19-164054	R-46	11-13-2018	Cyanide (Total)	0.00167	mg/L	z	n	UF	REG	EPA:335.4	METALS
CAMO-19-164053	R-46	11-13-2018	Iron	30.0	ug/L	z	n	F	REG	SW-846:6010C	METALS
CAMO-19-164053	R-46	11-13-2018	Lead	0.500	ng/L	z	n	F	REG	SW-846:6020	METALS
CAMO-19-164053	R-46	11-13-2018	Manganese	2.00	ng/L	z	n	Ь	REG	SW-846:6010C	METALS
CAMO-19-164053	R-46	11-13-2018	Mercury	0.067	ng/L	z	n	Ь	REG	EPA:245.2	METALS
CAMO-19-164054	R-46	11-13-2018	Mercury	0.067	ng/L	z	ח	UF	REG	EPA:245.2	METALS
CAMO-19-164053	R-46	11-13-2018	Molybdenum	1.01	ng/L	Υ		F	REG	SW-846:6020	METALS
CAMO-19-164053	R-46	11-13-2018	Nickel	0.600	l J/gn	z	n	F	REG	SW-846:6020	METALS
CAMO-19-164053	R-46	11-13-2018	Selenium	2.00	l J/Bn	z	n	F	REG	SW-846:6020	METALS
CAMO-19-164053	R-46	11-13-2018	Silver	0.300	ng/L	z	n	F	REG	SW-846:6020	METALS
CAMO-19-164053	R-46	11-13-2018	Uranium	0.448	l J/gn	λ		F	REG	SW-846:6020	METALS
CAMO-19-164053	R-46	11-13-2018	Zinc	5.21	ng/L	\	٦	F	REG	SW-846:6010C	METALS
Field Measurement	R-46	11-13-2018	Hd	8.10	ns			UF	REG	Field	
CAMO-19-164055	R-46	11-13-2018	Aluminum	68.0	ug/L	z	<u> </u>	ш	6	SW-846:6010C	METALS
CAMO-19-164055	440	11-13-2018	Arsenic	2.00	ng/L	Z		ш	9 1	SW-846:6020	METALS
CAIMO-19-164055	740	11-13-2018	Barium	22.3	ng/L	<u></u>		_	HD	SW-846:6010C	METALS

LCMS/MS CIO4 LCMS/MS CIO METALS METALS METALS METALS PESTPCB PESTPCB PESTPCB PESTPCB PESTPCB PESTPCB PESTPCB PESTPCB PESTPCB METALS PESTPCB PESTPCB PESTPCB PESTPCB PESTPCE Category METALS METALS METALS METALS METALS RAD RAD RAD RAD SW-846:6020 SW-846:6010C SW-846:6850 SW-846:8081B SW-846:8081B SW-846:6010C SW-846:8081B SW-846:6010C SW-846:6010C SW-846:6010C SW-846:6010C SW-846:8081B SW-846:8081B SW-846:8081B SW-846:6020 SW-846:6020 SW-846:6020 SW-846:6020 SW-846:6020 SW-846:6020 SW-846:6020 SW-846:6850 SW-846:8082 SW-846:8082 SW-846:8082 SW-846:8082 SW-846:6020 SW-846:8082 SW-846:8082 SW-846:8082 SW-846:8082 EPA:335.4 EPA:245.2 EPA:245.2 EPA:903.1 EPA:903.1 EPA:904 EPA:904 Purpose Sample Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-46, November 13, 2018, Condition No. 36 REG 요 요 윤윤 요 요 요 요요 9 日 9 요 요 밉 민 Field Prep Code (H) 띩 5 5 Η ш 当 当 5 片 5 造 Ц. Qualifier \supset \supset \supset Detected z z z z Z Z z z z z Units pCi/L DCI/L ng/L ug/L mg/L ng/L ng/L J/Bn ٦/gi ng/L ng/L ng/L ng/L ng/F ٦gn l/gi J/gn √g/ Ng/ /g ng/L √gn /g ng/I Ng/L Į, ٦ď /gn ug/L ng/L ģ ug/L /gn ğ /g /gn Result -0.0249 0.00679 0.00679 0.00679 0.00679 0.0347 0.00679 0.0781 0.00167 0.904 0.642 0.419 0.0347 0.0347 0.0347 1.00 15.0 0.30030.0 0.500 2.00 0.600 2.00 0.300 0.600 0.454 0.288 0.352 0.0347 0.0347 0.0347 0.0347 3.00 0.067 8 4.97 5.6 1.05 Chlordane(alpha/gamma) Parameter Name Chlordane[alpha-] Cyanide (Total Aroclor-1016 Aroclor-1242 BHC[gamma-Molybdenum Radium-228 Radium-226 Aroclor-1232 Aroclor-1248 Aroclor-1254 Aroclor-1260 Aroclor-1262 Perchlorate Radium-226 Radium-228 Manganese Perchlorate Aroclor-1221 BHC[alpha-] BHC[beta-] Cadmium Chromium Beryllium Selenium Thallium Uranium Mercury Cobalt Copper Mercury Nickel Silver Aldrin Iron Lead Zinc 11-13-2018 Sample Date 11-13-2018 11-13-2018 11-13-2018 11-13-2018 11-13-2018 11-13-2018 11-13-2018 11-13-2018 11-13-2018 11-13-2018 11-13-2018 11-13-2018 11-13-2018 11-13-2018 11-13-2018 1-13-2018 11-13-2018 Location R-46 R-46 R-46 R-46 R-46 R-46 R-46 R46 R-46 R46 R-46 R46 R-46 R-46 R-46 R-46 R46 R-46 R-46 R-46 CAMO-19-164055 CAMO-19-164056 CAMO-19-164055 CAMO-19-164055 CAMO-19-164056 CAMO-19-164055 CAMO-19-164055 CAMO-19-164055 CAMO-19-164055 CAMO-19-164055 CAMO-19-164055 CAMO-19-164169 CAMO-19-164170 CAMO-19-164054 CAMO-19-164160 CAMO-19-164055 CAMO-19-164055 CAMO-19-164055 CAMO-19-164055 CAMO-19-164055 CAMO-19-164054 CAMO-19-164054 CAMO-19-164054 CAMO-19-164054 CAMO-19-164160 CAMO-19-164160 CAMO-19-164160 CAMO-19-164160 CAMO-19-164055 CAMO-19-164055 CAMO-19-164053 CAMO-19-164169 CAMO-19-164170 CAMO-19-164160 CAMO-19-164054 CAMO-19-164054 CAMO-19-164054 Field Sample ID

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

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	Location			Report	:		Lab	Field Prep	Sample		Method
Field Sample ID	2 5	Sample Date	Farameter Name	-	Units	Detected	Qualifier	Code	Purpose	Lab Method	Category
CAIMO-19-164160	74 04	11-13-2018	Chlordane[gamma-]	0.00679	ng/r	z	0	Ę,	REG	SW-846:8081B	PESTPCB
CAMO-19-164160	R-46	11-13-2018	DDT[4,4'-]	0.0102	ng/L	z	n	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164160	R-46	11-13-2018	Dieldrin	0.0102	ng/L	z	n	JN	REG	SW-846:8081B	PESTPCB
CAMO-19-164160	R-46	11-13-2018	Endosulfan I	0.00679	ng/L	z	n	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164160	R-46	11-13-2018	Endosulfan II	0.0102	ng/L	z	ם כ	5	REG	SW-846:8081B	PESTPCB
CAMO-19-164160	R-46	11-13-2018	Endrin	0.0102	ng/L	z	>	ħ	REG	SW-846:8081B	PESTPCB
CAMO-19-164160	R-46	11-13-2018	Heptachlor	0.00679	ng/L	z	ם כ	5	REG	SW-846:8081B	PESTPCB
CAMO-19-164160	R-46	11-13-2018	Toxaphene (Technical Grade)	0.153	ng/L	z	n	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164054	R-46	11-13-2018	Acenaphthene	0.313	ng/L	z	D	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Acenaphthylene	0.313	ng/L	z	ח	H.	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Aniline	4.38	ng/L	z	ח	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Anthracene	0.313	ng/L	z	ח	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Atrazine	3.13	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Azobenzene	3.13	J/gn	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Benzidine	4.06	ng/L	z	ח	JN	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Benzo(a)anthracene	0.313	ng/L	z	ח	片	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Benzo(a)pyrene	0.313	ng/L	z	ח	J.	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Benzo(b)fluoranthene	0.313	ng/L	z	ח	-JU	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Benzo(g,h,i)perylene	0.313	ng/L	z	n	JU	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Benzo(k)fluoranthene	0.313	ng/L	z	n	UF	REG	SW-846:8270D	svoc
CAMO-19-164054	R-46	11-13-2018	Benzoic Acid	14.4	ng/L	/	ſ	JU	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Benzyl Alcohol	3.13	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Bis(2-chloroethoxy)methane	3.13	ng/L	z	ח	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Bis(2-chloroethyl)ether	3.13	ng/L	z	n	- in	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Bis(2-ethylhexyl)phthalate	0.354	ng/L	\	ſ	UF	REG	SW-846:8270D	svoc
CAMO-19-164056	R-46	11-13-2018	Bis(2-ethylhexyl)phthalate	0.326	ng/L	×	ſ	UF	FD	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Bromophenyl-phenylether[4-]	3.13	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Butylbenzylphthalate	0.313	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Chloro-3-methylphenol[4-]	3.13	ng/L	z	ח	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Chloroaniline[4-]	3.44	ng/L	z	_ _	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Chloronaphthalene[2-]	0.427	ng/L	z	ח	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Chlorophenol[2-]	3.13	ng/L	z	ח	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Chlorophenyl-phenyl[4-] Ether	3.13	ng/L	z	כ	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Chrysene	0.313	ng/L	Z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Dibenz(a,h)anthracene	0.313	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Dibenzofuran	3.13	ng/L	z	l n	JN	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Dichlorobenzene[1,2-]	3.13	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Dichlorobenzene[1,3-]	3.13	ng/L	z	ח	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Dichlorobenzene[1,4-]	3.13	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Dichlorobenzidine[3,3'-]	3.13	ng/L	z	ח	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Dichlorophenol[2,4-]	3.13	ng/L	z	ח	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

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Method	Category	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC
	Lab Method	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D	SW-846:8270D
Sample	Purpose	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG
Field Prep	Code	UF	٦.	UF	UF	UF	UF	Η	JN	UF	Η	5	- I	JU	占	±5	占	Į,	J.	JU	UF	UF	- I	UF	UF	UF	٦	UF	UF	-F	UF	٦	UF	UF	UF	UF	-UF	-J	٦.	UF	Ή	-U-	Ę,
Lab	Qualifier	n	D.	n	n	n	n	n	ח	ר	n))	ס	ח	b	ם	ם	ם	ח	ח	n	n	D	n D	כ	o o	D	n	n	n	ח	Þ	n	D	ר ס	n	_ _	o	ם	n	ם	ב כ	ם
	Detected	z	z	z	z	z	Z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z
	Units	l J/Bn	J/Bn	ng/L	ng/L	ng/L	ng/L	1/6n	ng/L	l J/Bn	1/gn	ng/L	ng/L	1/gu	ng/L	ng/L	J/Bn	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	l J/gn	l J/Bn	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
Report	Result	0.313	0.313	3.13	0.313	3.13	5.21	3.13	3.13	0.313	3.13	3.13	3.13	0.313	0.313	3.13	3.13	3.13	3.13	0.313	3.65	0.313	0.313	3.13	3.85	0.313	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	0.313	3.13	0.313
	Parameter Name	Diethylphthalate	Dimethyl Phthalate	Dimethylphenol[2,4-]	Di-n-butylphthalate	Dinitro-2-methylphenol[4,6-]	Dinitrophenol[2,4-]	Dinitrotoluene[2,4-]	Dinitrotoluene[2,6-]	Di-n-octylphthalate	Dinoseb	Dioxane[1,4-]	Diphenylamine	Fluoranthene	Fluorene	Hexachlorobenzene	Hexachlorobutadiene	Hexachlorocyclopentadiene	Hexachloroethane	Indeno(1,2,3-cd)pyrene	Isophorone	Methylnaphthalene[1-]	Methylnaphthalene[2-]	Methylphenol[2-]	Methylphenol[3-,4-]	Naphthalene	Nitroaniline[2-]	Nitroaniline[3-]	Nitroaniline[4-]	Nitrobenzene	Nitrophenol[2-]	Nitrophenol[4-]	Nitrosodiethylamine[N-]	Nitrosodimethylamine[N-]	Nitroso-di-n-butylamine[N-]	Nitroso-di-n-propylamine[N-]	Nitrosopyrrolidine[N-]	Oxybis(1-chloropropane)[2,2'-]	Pentachlorobenzene	Pentachlorophenol	Phenanthrene	Phenol	Pyrene
	Sample Date	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018
Location	<u></u>	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46	R-46
	Field Sample ID	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054	CAMO-19-164054

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

able I. Alialytica	II IXCOULTS	7 37 11 2 11 2 11 2 11 2 11 2 11 2 11 2	Table 1. Small year 1. Smilled Cloud water Sampling at Neglonal Adules Well R-46, NOVERIBER 15, 2010, Condition No.	2		10, 140 VCIII.	12, 42	o, Collulator	NO. 30		
	Location			Report			Lab	Field Prep	Sample		Method
Field Sample ID	₽	Sample Date	Parameter Name	Result	Units	Detected	Qualifier	Code	Purpose	Lab Method	Category
CAMO-19-164054	R-46	11-13-2018	Pyridine	3.13	ng/L	Z	ח	JN	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Tetrachlorobenzene[1,2,4,5]	3.13	ng/L	Z	n	JU	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Tetrachlorophenol[2,3,4,6-]	3.13	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Trichlorobenzene[1,2,4-]	3.13	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Trichlorophenol[2,4,5-]	3.13	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164054	R-46	11-13-2018	Trichlorophenol[2,4,6-]	3.13	ng/L	z	D	J.	REG	SW-846:8270D	SVOC
CAMO-19-164054	K-46	11-13-2018	Acetone	2.5	ng/L	>	7	Į,	REG	SW-846:8260B	VOC
CAMO-19-164056	R-46	11-13-2018	Acetone	2.67	ng/L	>		UF.	FD	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Acetonitrile	8.00	ng/L	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164054	R-46	11-13-2018	Acrolein	1.50	ng/L	z	n	ΗÜ	REG	SW-846:8260B	NOC
CAMO-19-164054	R-46	11-13-2018	Acrylonitrile	1.50	ng/L	z	ח	H.	REG	SW-846:8260B	NOC
CAMO-19-164054	R-46	11-13-2018	Benzene	00:300	ng/L	z	ח	J.	REG	SW-846:8260B	NOC
CAMO-19-164054	R-46	11-13-2018	Bromobenzene	0.300	ng/L	z	כ	ħ	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Bromochloromethane	0.300	ng/L	z	ח	J.	REG	SW-846:8260B	NOC
CAMO-19-164054	R-46	11-13-2018	Bromodichloromethane	008.0	ng/L	z	כ	占	REG	SW-846:8260B	NOC
CAMO-19-164054	R-46	11-13-2018	Bromoform	0.300	ng/L	z	ם	ħ	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Bromomethane	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Butanol[1-]	15.0	ng/L	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164054	R-46	11-13-2018	Butanone[2-]	1.50	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Butylbenzene[n-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164054	R-46	11-13-2018	Butylbenzene[sec-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164054	R-46	11-13-2018	Butylbenzene[tert-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164054	R-46	11-13-2018	Carbon Disulfide	1.50	7/Bn	z	n	JN	REG	SW-846:8260B	NOC
CAMO-19-164054	R-46	11-13-2018	Carbon Tetrachloride	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Chloro-1,3-butadiene[2-]	0.300	ng/L	z	Π	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Chloro-1-propene[3-]	1.50	ng/L	z	l n	UF	REG	SW-846:8260B	NOC
CAMO-19-164054	R-46	11-13-2018	Chlorobenzene	0.300	ng/L	z	l n] IN	REG	SW-846:8260B	NOC
CAMO-19-164054	R-46	11-13-2018	Chlorodibromomethane	0.300	ng/L	z	l n	UF	REG	SW-846:8260B	NOC
CAMO-19-164054	R-46	11-13-2018	Chloroethane	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Chloroform	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Chloromethane	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Chlorotoluene[2-]	0.300	ng/L	z	ח	UF	REG	SW-846:8260B	NOC
CAMO-19-164054	R-46	11-13-2018	Chlorotoluene[4-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164054	R-46	11-13-2018	Dibromo-3-Chloropropane[1,2-]	0.500	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Dibromoethane[1,2-]	0.300	ng/L	z	n	JN	REG	SW-846:8260B	NOC
CAMO-19-164054	R-46	11-13-2018	Dibromomethane	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Dichlorobenzene[1,2-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164054	R-46	11-13-2018	Dichlorobenzene[1,3-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164054	R-46	11-13-2018	Dichlorobenzene[1,4-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
CAMO-19-164054	R-46	11-13-2018	Dichlorodifluoromethane	0.300	ng/L	z	Π	UF	REG	SW-846:8260B	VOC
CAMO-19-164054	R-46	11-13-2018	Dichloroethane[1,1-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC

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

Sample Date Parameter Name Result Units Detected Quality Code Purpose Lab Method 1:13-2018 Dictitoroptrane[1,2] 0.300 ugl. N U UF REG 3N-48a 8208B 1:1-3-2018 Dictitoroptrane[1,2] 0.300 ugl. N U UF REG 3N-48a 820BB 1:1-3-2018 Dictitoroptrane[1,2] 0.300 ugl. N U UF REG 3N-48a 820BB 1:1-3-2018 Dictitoroptrane[1,2] 0.300 ugl. N U U UF REG 3N-48a 820BB 1:1-3-2018 Dictitoroptrane[1,2] 0.300 ugl. N U U UF REG 3N-48a 820BB 1:1-3-2018 Dictitoroptrane[1,2] 0.300 ugl. N U U UF REG 3N-48a 820BB 1:1-3-2018 Dictitoroptrane[1,2] 0.300 ugl. N U UF REG 3N-48a 820BB 1:1-3-2018 Ethylkorterrelicit.		Location			Report			Lab de	Field Pren	Sample	1	Mathod
R446 11-12-2018 Dehrhorentheme(1-1-1) 0.300 ug/L N U UF REG SW4-86826BB R446 11-12-2018 Dehrhorentheme(1-1-1) 0.300 ug/L N U UF REG SW4-8682BB R44 11-12-2018 Dehrhorentheme(1-1-1) 0.300 ug/L N U UF REG SW4-8682BB R44 11-12-2018 Dehrhorentheme(1-1-1) 0.300 ug/L N U UF REG SW4-8682BB R44 11-12-2018 Dehrhorentheme(1-1-1) 0.300 ug/L N U UF REG SW4-8682BB R44 11-12-2018 Dehrhorentheme(1-1-1) 0.300 ug/L N U UF REG SW4-8682BB R44 11-12-2018 Dehrhorentheme(1-1-1) 0.300 ug/L N U UF REG SW4-8682BB R44 11-12-2018 Dehrhorentheme(1-1-1) 0.300 ug/L N U UF REG	Field Sample ID	Q	Sample Date	Parameter Name	Result	Units	Detected	Qualifier	Code	Purpose	Lab Method	Category
R446 11.13.2018 Dichlorocheme(si-1.2) 0.300 ug/L N U UF REG SW-946.8206B R446 11.13.2018 Dichlorocheme(si-1.2) 0.300 ug/L N U UF REG SW-946.8206B R446 11.13.2018 Dichlorocheme(si-1.2) 0.300 ug/L N U UF REG SW-946.8206B R446 11.13.2018 Dichloropropore(si-1.3) 0.300 ug/L N U UF REG SW-946.8206B R446 11.13.2018 Dichloropropore(si-1.3) 0.300 ug/L N U UF REG SW-946.8206B R446 11.13.2018 Dichloropropore(si-1.3) 0.300 ug/L N U UF REG SW-946.8206B R446 11.13.2018 Dichloropropore(si-1.3) 0.300 ug/L N U UF REG SW-946.8206B R446 11.13.2018 Dichloropropore(si-1.3) 0.300 ug/L N U UF	CAMO-19-164054	R-46	11-13-2018	Dichloroethane[1,2-]	0.300	ng/L	z	b	Ę,	REG	SW-846:8260B	VOC
R46 11-13-2018 Dichloroperheriginare-1-2j 0.300 ug/L N U UF REG SWA-66 5200B R46 11-13-2018 Dichloroperheriginare-1-2j 0.300 ug/L N U UF REG SWA-66 5200B R46 11-13-2018 Dichloroperheriginare-1-2j 0.300 ug/L N U UF REG SWA-66 5200B R446 11-13-2018 Dichloroperpenel(2-1-3) 0.300 ug/L N U UF REG SWA-66 5200B R446 11-13-2018 Dichloroperpenel(2-1-3-1) 0.300 ug/L N U UF REG SWA-66 5200B R446 11-13-2018 Dichloroperpenel(2-1-3-1) 0.300 ug/L N U U FREG SWA-66 5200B R446 11-13-2018 Dichloroperpenel(2-1-3-1) 0.300 ug/L N U U FREG SWA-66 5200B R446 11-13-2018 Dichloroperpenel(2-1-3-1) 0.300 ug/L N U	CAMO-19-164054	R-46	11-13-2018	Dichloroethene[1,1-]	0.300	ng/L	z	D	ΗD	REG	SW-846:8260B	VOC
R446 11-13-2018 Dichloroperane[1-2] 0.300 ug/L N U UF REG SWA-966 22000 R446 11-13-2018 Dichloroperane[1-2] 0.300 ug/L N U UF REG SWA-966 22000 R446 11-13-2018 Dichloroporane[1-3] 0.300 ug/L N U UF REG SWA-966 22000 R446 11-13-2018 Dichloroporane[1-1-3] 0.300 ug/L N U UF REG SWA-966 22000 R446 11-13-2018 Elb/Mucharopane[1-1-3] 0.300 ug/L N U UF REG SWA-966 22000 R446 11-13-2018 Elb/Mucharopane[1-1-3] 0.300 ug/L N U UF REG SWA-966 22000 R446 11-13-2018 Elb/Mucharopane[1-1-3] 0.300 ug/L N U U REG SWA-966 22000 R446 11-13-2018 Hearmorphila 1.50 ug/L N U U REG </td <td>CAMO-19-164054</td> <td>R-46</td> <td>11-13-2018</td> <td>Dichloroethene[cis-1,2-]</td> <td>0.300</td> <td>ng/L</td> <td>z</td> <td>כ</td> <td>JU</td> <td>REG</td> <td>SW-846:8260B</td> <td>VOC</td>	CAMO-19-164054	R-46	11-13-2018	Dichloroethene[cis-1,2-]	0.300	ng/L	z	כ	JU	REG	SW-846:8260B	VOC
R-46 11-13-2018 Dichlotopropamel [1-2] 0.300 ug/L N U PREG SW-486 82020 R-46 11-13-2018 Dichlotopropamel [1-2] 0.300 ug/L N U UF REG SW-486 82020 R-46 11-13-2018 Dichlotopropamel [2-2] 0.300 ug/L N U UF REG SW-486 82020 R-46 11-13-2018 Dichlotopropamel [3-1] 0.300 ug/L N U UF REG SW-486 82020 R-46 11-13-2018 Dichlotopropamel [3-1] 0.300 ug/L N U UF REG SW-486 82020 R-46 11-13-2018 Einhylenrene 1.50 ug/L N U UF REG SW-486 82020 R-46 11-13-2018 Einhylenrene 1.50 ug/L N U UF REG SW-486 82020 R-46 11-13-2018 Herbylenrene 1.50 ug/L N U UF REG SW-486 82020	CAMO-19-164054	R-46	11-13-2018	Dichloroethene[trans-1,2-]	0.300	ng/L	Z	ר	UF	REG	SW-846:8260B	NOC
R46 11-13-2018 Dichloropropamel [2-3] 0.300 ug/L N U P REG SW-946 82000 R46 11-13-2018 Dichloropropamel [1-3] 0.300 ug/L N U UF REG SW-946 82000 R46 11-13-2018 Dichloropropamel [1-3] 0.300 ug/L N U UF REG SW-946 82000 R46 11-13-2018 Dichloropropamel [1-3] 0.300 ug/L N U UF REG SW-946 82000 R46 11-13-2018 EIDMACOPTOPAMEL [1-3] 0.300 ug/L N U UF REG SW-946 82000 R46 11-13-2018 EIDMACOPTOPAMEL [1-3] 0.300 ug/L N U UF REG SW-946 82000 R46 11-13-2018 Heavarological [1-3] 1.30 ug/L N U UF REG SW-946 82000 R-46 11-13-2018 Heavarological [1-3] 1.30 ug/L N U UF REG </td <td>CAMO-19-164054</td> <td>R-46</td> <td>11-13-2018</td> <td>Dichloropropane[1,2-]</td> <td>0.300</td> <td>ng/L</td> <td>z</td> <td>n</td> <td>UF</td> <td>REG</td> <td>SW-846:8260B</td> <td>NOC</td>	CAMO-19-164054	R-46	11-13-2018	Dichloropropane[1,2-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
R46 I1-13-2018 Dichtoropopanel [1-2] 0.300 ug/L N U FREG SNV-468 (22008) R46 I1-13-2018 Dichtoropopanel [1-1] 0.300 ug/L N U UF REG SNV-468 (22008) R-46 I1-13-2018 Dichtoropopanel [1-1] 0.300 ug/L N U UF REG SNV-468 (22008) R-46 I1-13-2018 Dichtoropopanel [1-1] 0.300 ug/L N U UF REG SNV-468 (22008) R-46 I1-13-2018 Einhloropal (whiteldine 1.300 ug/L N U UF REG SNV-468 (22008) R-46 I1-13-2018 Headenord-Lindleine 1.300 ug/L N U UF REG SNV-468 (22008) R-46 I1-13-2018 Headenord-Lindleine 1.30 ug/L N U UF REG SNV-468 (22008) R-46 I1-13-2018 Headenord-Lindleine 1.50 ug/L N U UF REG	CAMO-19-164054	R-46	11-13-2018	Dichloropropane[1,3-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
R46 11-13-2018 Dichitoropenelicati-1-1 0.300 ug/L N U UF REG SW-9468280B R46 11-13-2018 Dichitoropropenelicati-1-3 0.300 ug/L N U UF REG SW-9468280B R46 11-13-2018 Dichitoropropenelicati-1-3 0.300 ug/L N U UF REG SW-9468280B R46 11-13-2018 Emply Methacytene 0.300 ug/L N U UF REG SW-9468280B R46 11-13-2018 Emply Methacytene 0.300 ug/L N U UF REG SW-9468280B R46 11-13-2018 Hearonoclean 1.50 ug/L N U UF REG SW-9468280B R46 11-13-2018 Hearonoclean 1.50 ug/L N U UF REG SW-9468280B R46 11-13-2018 Hearonoclean 1.50 ug/L N U UF REG SW-9468280B	CAMO-19-164054	R-46	11-13-2018	Dichloropropane[2,2-]	0.300	ng/L	Z	n	UF	REG	SW-846:8260B	NOC
R46 11-13-2018 Dichloropenelles 1-3-1 0.300 ug/L N U FREG SW-466 8208B R46 11-13-2018 Dichloropenelles 1-3-1 0.300 ug/L N U UF REG SW-466 8208B R46 11-13-2018 EUNPAHEIRESTHE 1.50 ug/L N U UF REG SW-466 8208B R46 11-13-2018 EUNPAHEIRESTHE 1.50 ug/L N U UF REG SW-466 820B R46 11-13-2018 Hexachorubladiene 0.300 ug/L N U UF REG SW-466 820B R46 11-13-2018 Hexachorubladiene 1.50 ug/L N U UF REG SW-466 820B R46 11-13-2018 Hexachorubladiene 1.50 ug/L N U UF REG SW-466 820B R46 11-13-2018 Incorpoylberzenet 1.50 ug/L N U U REG SW-466 820B	CAMO-19-164054	R-46	11-13-2018	Dichloropropene[1,1-]	0.300	ng/L	z	n	占	REG	SW-846:8260B	NOC
R-46 11-13-2018 Dichloroproperientaria-1.3-j 0.300 ug/L N U FREG SW-846 8206B R-46 11-13-2018 Ethyl Methacrystee 1.50 ug/L N U UF REG SW-846 820BB R-46 11-13-2018 Ethyl Methacrystee 0.300 ug/L N U UF REG SW-846 820BB R-46 11-13-2018 Hexarchirobutadiene 0.300 ug/L N U UF REG SW-846 820BB R-46 11-13-2018 Hexarchirobutadiene 1.50 ug/L N U UF REG SW-846 820BB R-46 11-13-2018 Hexarchirobutadiene 1.50 ug/L N U UF REG SW-846 820BB R-46 11-13-2018 Hexarchirobutadiene 1.50 ug/L N U UF REG SW-846 820BB R-46 11-13-2018 Methyl archarchirobutadiene 1.50 ug/L N U UF REG S	CAMO-19-164054	R-46	11-13-2018	Dichloropropene[cis-1,3-]	0.300	ng/L	z	ם	Ή	REG	SW-846:8260B	VOC
R46 11132018 Dienthy Methacrylate 0.300 ug/L N U UF REG SW4468.2808B R46 11132018 Einytherrzene 0.300 ug/L N U UF REG SW4468.2808B R46 11132018 Heazarlorobtaldene 0.300 ug/L N U UF REG SW4468.2808B R46 11132018 Heazarlorobtaldene 0.300 ug/L N U UF REG SW4468.280B R46 11132018 Heazarlorobtaldene 1.50 ug/L N U UF REG SW4468.280B R46 11132018 Heazarlorobtaldene 1.50 ug/L N U UF REG SW4468.280B R46 11132018 Methyl Methacylate 1.50 ug/L N U UF REG SW4468.280B R46 11132018 Methyl Methacylate 1.50 ug/L N U UF REG SW4468.280B	CAMO-19-164054	R-46	11-13-2018	Dichloropropene[trans-1,3-]	0.300	ng/L	z	n	占	REG	SW-846:8260B	VOC
R-46 11-13-2018 Ethyl Mehrach/ale 1.50 ug/L N U UF REG SW-846 8260B R-46 11-13-2018 Hexachorobuladene 0.300 ug/L N U UF REG SW-846 8260B R-46 11-13-2018 Hexachorobuladene 0.300 ug/L N U UF REG SW-846 8260B R-46 11-13-2018 Incorpos/benefal 1.50 ug/L N U UF REG SW-846 8260B R-46 11-13-2018 Isopropylenerel-1 0.300 ug/L N U UF REG SW-846 8260B R-46 11-13-2018 Methylenchel-1 0.300 ug/L N U UF REG SW-846 8260B R-46 11-13-2018 Methylenchel-1 0.300 ug/L N U U REG SW-846 8260B R-46 11-13-2018 Methylenchel-1 0.300 ug/L N U UF REG SW-846 8260B	CAMO-19-164054	R-46	11-13-2018	Diethyl Ether	0.300	J/gn	z)	F)	REG	SW-846:8260B	VOC
R46 11-13-2018 Ethylpherzene 0.300 ug/L N U UF REG SW-846 8260B R46 11-13-2018 Hezachkonobitadiene 0.300 ug/L N U UF REG SW-846 8260B R46 11-13-2018 Hexachkonobitadiene 1.50 ug/L N U UF REG SW-846 8260B R46 11-13-2018 Isobory/lenzene 0.300 ug/L N U UF REG SW-846 8260B R46 11-13-2018 Methazykalidene(4-1) 0.300 ug/L N U UF REG SW-846 8260B R46 11-13-2018 Methy/lexpertanoriet-1 1.50 ug/L N U UF REG SW-846 8260B R46 11-13-2018 Methy/lexpertanoriet-1 1.50 ug/L N U UF REG SW-846 8260B R46 11-13-2018 Methy/lexpertanoriet-1 1.50 ug/L N U UF REG SW-8	CAMO-19-164054	R-46	11-13-2018	Ethyl Methacrylate	1.50	ng/L	z	ے ا	ħ	REG	SW-846:8260B	VOC
R-46 11-13-2018 Hexacrhitorbutualiene 0.300 ug/L N U FREG SWy-846-8260B R-46 11-13-2018 Hexacrhitorbutualiene 1.50 ug/L N U UF REG SWy-846-8260B R-46 11-13-2018 Isopropylenzene 1.50 ug/L N U UF REG SWy-846-8260B R-46 11-13-2018 Isopropylenzene 0.300 ug/L N U UF REG SWy-846-8260B R-46 11-13-2018 Methyl tert-Butyl Ether 0.300 ug/L N U UF REG SWy-846-8260B R-46 11-13-2018 Methyl tert-Butyl Ether 0.300 ug/L N U UF REG SWy-846-8260B R-46 11-13-2018 Methyl tert-Butyl Ether 0.300 ug/L N U UF REG SWy-846-8260B R-46 11-13-2018 Methyl tert-Butyl Ether 0.300 ug/L N U UF REG	CAMO-19-164054	R-46	11-13-2018	Ethylbenzene	0.300	ng/L	z	ס	Ę)	REG	SW-846:8260B	VOC
R46 11-13-2018 Headmone(2-1) 1.50 ug/L N U FREG SW-346-8250B R46 11-13-2018 Isobuty alcohol 1.50 ug/L N U FREG SW-346-8250B R46 11-13-2018 Isopropyllenerene 0.300 ug/L N U FREG SW-346-8260B R46 11-13-2018 Methyl kerteene 0.300 ug/L N U FREG SW-346-8260B R46 11-13-2018 Methyl kerteenylate 1.50 ug/L N U UF REG SW-346-8260B R46 11-13-2018 Methyl kerteenylate 1.50 ug/L N U U FREG SW-346-8260B R46 11-13-2018 Methyl kerteenylate 1.50 ug/L N U U FREG SW-346-8260B R46 11-13-2018 Methyl kerteenylate 1.50 ug/L N U U FREG SW-346-8260B R46 11-13-2018	CAMO-19-164054	R-46	11-13-2018	Hexachlorobutadiene	0.300	J/Bn	z	ס	ħ	REG	SW-846:8260B	VOC
R46 11-13-2018 Iodomethane 1.50 ug/L N U FEG SW-466-8250B R46 11-13-2018 IsopropyReptrace 0.300 ug/L N U FEG SW-466-8260B R46 11-13-2018 IsopropyReptrace 0.300 ug/L N U FEG SW-466-8260B R46 11-13-2018 Methyl tert-Bulyl Ether 0.300 ug/L N U FEG SW-466-8260B R46 11-13-2018 Methyl tert-Bulyl Ether 0.300 ug/L N U FEG SW-466-8260B R46 11-13-2018 Methyl tert-Bulyl Ether 0.300 ug/L N U FEG SW-466-8260B R46 11-13-2018 Methyl tert-Bulyl Ether 1.50 ug/L N U FEG SW-466-8260B R46 11-13-2018 Methyl tert-Bulyl Ether 1.50 ug/L N U FEG SW-466-8260B R46 11-13-2018 Methyl tert-Bulyl Ether 1.50	CAMO-19-164054	R-46	11-13-2018	Hexanone[2-]	1.50	ng/L	z	b	ħ	REG	SW-846:8260B	NOC
R46 1113-2018 Isobuly alcohol 15.0 ug/L N U D REG SW-946 8260B R46 1113-2018 Isopropylbenzene 0.300 ug/L N U D REG SW-946 8260B R46 11-13-2018 Methyd Methacrylate 1.50 ug/L N U FREG SW-946 8260B R46 11-13-2018 Methyd Methacrylate 1.50 ug/L N U FREG SW-946 8260B R46 11-13-2018 Methyd tert-Buty Ether 0.300 ug/L N U FREG SW-946 8260B R46 11-13-2018 Methyd-2-pertanone(4-1 1.50 ug/L N U FREG SW-946 8260B R46 11-13-2018 Methyd-2-pertanone(4-1) 1.50 ug/L N U FREG SW-946 8260B R46 11-13-2018 Propionitrile 1.50 ug/L N U FREG SW-946 8260B R46 11-13-2018 Propionitrile <t< td=""><td>CAMO-19-164054</td><td>R-46</td><td>11-13-2018</td><td>lodomethane</td><td>1.50</td><td>ng/L</td><td>z</td><td>n</td><td>UF</td><td>REG</td><td>SW-846:8260B</td><td>VOC</td></t<>	CAMO-19-164054	R-46	11-13-2018	lodomethane	1.50	ng/L	z	n	UF	REG	SW-846:8260B	VOC
R46 11-13-2018 Isopropylenzene 0.300 ug/L N U DF REG SW-846 8260B R46 11-13-2018 Methoropyloluce[4-] 0.300 ug/L N U DF REG SW-846 8260B R46 11-13-2018 Methyl kerlacyloutile 1.50 ug/L N U DF REG SW-846 8260B R46 11-13-2018 Methyl kerlacyloutile 1.50 ug/L N U DF REG SW-846 8260B R46 11-13-2018 Methyl kerlauly Ether 0.300 ug/L N U DF REG SW-846 8260B R46 11-13-2018 Methyl kerlauly Ether 0.300 ug/L N U DF REG SW-846 8260B R46 11-13-2018 Methyl kerlauly Ether 0.300 ug/L N U DF REG SW-846 8260B R46 11-13-2018 Propylberzene[1-] 0.300 ug/L N U UF REG <t< td=""><td>CAMO-19-164054</td><td>R-46</td><td>11-13-2018</td><td>Isobutyl alcohol</td><td>15.0</td><td>ng/L</td><td>z</td><td>D</td><td>占</td><td>REG</td><td>SW-846:8260B</td><td>NOC</td></t<>	CAMO-19-164054	R-46	11-13-2018	Isobutyl alcohol	15.0	ng/L	z	D	占	REG	SW-846:8260B	NOC
R466 11-13-2018 Isopropylioluene[4-] 0.300 ug/L N U FREG SW-8468260B R46 11-13-2018 Methyl Lethacrylate 1.50 ug/L N U UF REG SW-8468260B R46 11-13-2018 Methyl Lethacrylate 1.50 ug/L N U UF REG SW-8468260B R46 11-13-2018 Methyl Lethacrylate 1.50 ug/L N U U FREG SW-8468260B R46 11-13-2018 Methylene Chioride 1.50 ug/L N U U FREG SW-8468260B R46 11-13-2018 Methylene Chioride 1.50 ug/L N U U FREG SW-8468260B R46 11-13-2018 Propylbenzene[1-] 0.300 ug/L N U U FREG SW-8468260B R46 11-13-2018 Propylbenzene[1-] 0.300 ug/L N U U FREG SW-8468260B	CAMO-19-164054	R-46	11-13-2018	Isopropylbenzene	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
R46 11-13-2018 Methacryloritrile 1.50 ug/L N U FREG SW-8468260B R46 11-13-2018 Methyl Methacrylate 1.50 ug/L N U FREG SW-8468260B R46 11-13-2018 Methyl Pet-Pauly [Erher 0.300 ug/L N U FREG SW-8468260B R46 11-13-2018 Methyl-2-pentanone[4-] 1.50 ug/L N U FREG SW-8468260B R46 11-13-2018 Methyl-2-pentanone[4-] 1.50 ug/L N U U FREG SW-8468260B R46 11-13-2018 Methyl-2-pentanone[4-] 0.300 ug/L N U U FREG SW-8468260B R46 11-13-2018 Froplothene 0.300 ug/L N U U FREG SW-8468260B R46 11-13-2018 Frozolorethane[1,1,2-] 0.300 ug/L N U U FREG SW-8468260B R46 11-13-2018 </td <td>CAMO-19-164054</td> <td>R-46</td> <td>11-13-2018</td> <td>Isopropyltoluene[4-]</td> <td>0.300</td> <td>ng/L</td> <td>z</td> <td>ם</td> <td>JN</td> <td>REG</td> <td>SW-846:8260B</td> <td>NOC</td>	CAMO-19-164054	R-46	11-13-2018	Isopropyltoluene[4-]	0.300	ng/L	z	ם	JN	REG	SW-846:8260B	NOC
R46 11-13-2018 Methyl Methacylate 1.50 ug/L N U FREG SW-846/8260B R-46 11-13-2018 Methyl Methacylate 0.300 ug/L N U FREG SW-846/8260B R-46 11-13-2018 Methyl-2-pertlanore[4] 1.50 ug/L N U UF REG SW-846/8260B R-46 11-13-2018 Methyl-2-pertlanore[4] 1.50 ug/L N U UF REG SW-846/8260B R-46 11-13-2018 Methyl-pertlanore[1] 0.300 ug/L N U UF REG SW-846/8260B R-46 11-13-2018 Propylbenzene[1] 0.300 ug/L N U UF REG SW-846/8260B R-46 11-13-2018 Tetrachloroethane[1],1,1,2-] 0.300 ug/L N U UF REG SW-846/8260B R-46 11-13-2018 Tetrachloroethane[1],1,2-2] 0.300 ug/L N U UF REG SW-846/8260B <td>CAMO-19-164054</td> <td>R-46</td> <td>11-13-2018</td> <td>Methacrylonitrile</td> <td>1.50</td> <td>ng/L</td> <td>z</td> <td>n</td> <td>٦Ü</td> <td>REG</td> <td>SW-846:8260B</td> <td>VOC</td>	CAMO-19-164054	R-46	11-13-2018	Methacrylonitrile	1.50	ng/L	z	n	٦Ü	REG	SW-846:8260B	VOC
R46 11-13-2018 Methyl tert-Bulyl Ether 0.300 ug/L N U FEG SW-846:8260B R46 11-13-2018 Methyl-z-pentlanonel4-1 1.50 ug/L N U UF REG SW-846:8260B R46 11-13-2018 Methylene Chloride 1.00 ug/L N U UF REG SW-846:8260B R46 11-13-2018 Proplentitule 1.50 ug/L N U UF REG SW-846:8260B R46 11-13-2018 Proplentitule 1.50 ug/L N U UF REG SW-846:8260B R46 11-13-2018 Tetrachloroethane[1,1,1,2] 0.300 ug/L N U UF REG SW-846:8260B R46 11-13-2018 Tetrachloroethane[1,1,1,2] 0.300 ug/L N U UF REG SW-846:8260B R46 11-13-2018 Tetrachloroethane[1,1,2,2] 0.300 ug/L N U UF REG SW-846:8	CAMO-19-164054	R-46	11-13-2018		1.50	ng/L	z	n	UF	REG	SW-846:8260B	NOC
R46 11-13-2018 Methyl2-pentanone[4-] 1.50 ug/L N U UF REG SW-846:3260B R46 11-13-2018 Methylene Chloride 1.00 ug/L N U UF REG SW-846:3260B R46 11-13-2018 Propinolitrile 1.50 ug/L N U UF REG SW-846:3260B R46 11-13-2018 Propylbenzene[1-] 0.300 ug/L N U UF REG SW-846:3260B R46 11-13-2018 Tetrachlorochhane[1,1,2,2-] 0.300 ug/L N U UF REG SW-846:3260B R46 11-13-2018 Tetrachlorochhane[1,1,2,2-] 0.300 ug/L N U UF REG SW-846:3260B R46 11-13-2018 Tetrachlorochhane[1,1,2,2-] 0.300 ug/L N U UF REG SW-846:3260B R46 11-13-2018 Trichlorochane[1,2,2-] 0.300 ug/L N U UF REG	CAMO-19-164054	R-46	11-13-2018	Methyl tert-Butyl Ether	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
R-46 11-13-2018 Methylene Chloride 1.00 ug/L N U FREG SW-846.8260B R-46 11-13-2018 Propionitrile 1.50 ug/L N U FREG SW-846.8260B R-46 11-13-2018 Propybarzene[1-] 0.300 ug/L N U FREG SW-846.8260B R-46 11-13-2018 Propybarzene[1-] 0.300 ug/L N U FREG SW-846.8260B R-46 11-13-2018 Tetrachloroethane[1,1,2-] 0.300 ug/L N U UF REG SW-846.8260B R-46 11-13-2018 Tetrachloroethane[1,1,2-] 0.300 ug/L N U UF REG SW-846.8260B R-46 11-13-2018 Trichloroethane[1,1,2-] 0.300 ug/L N U UF REG SW-846.8260B R-46 11-13-2018 Trichloroethane[1,2-] 0.300 ug/L N U UF REG SW-846.8260B R-46	CAMO-19-164054	R-46	11-13-2018	Methyl-2-pentanone[4-]	1.50	ng/L	z	n	UF	REG	SW-846:8260B	NOC
R46 11-13-2018 Naphthalene 0.300 ug/L N U PEG SW-846:8260B R46 11-13-2018 Propionitrile 1.50 ug/L N U UF REG SW-846:8260B R-46 11-13-2018 Propionitrile 0.300 ug/L N U UF REG SW-846:8260B R-46 11-13-2018 Tetrachloroethane[1,1,1,2,2] 0.300 ug/L N U UF REG SW-846:8260B R-46 11-13-2018 Tetrachloroethane[1,1,2,2] 0.300 ug/L N U UF REG SW-846:8260B R-46 11-13-2018 Ticchloroethane[1,1,2,2] 0.300 ug/L N U UF REG SW-846:8260B R-46 11-13-2018 Ticchloroethane[1,2,3] 0.300 ug/L N U UF REG SW-846:8260B R-46 11-13-2018 Ticchloroethane[1,2,4] 0.300 ug/L N U UF REG SW-846:8	CAMO-19-164054	R-46	11-13-2018	Methylene Chloride	1.00	ng/L	z	n	UF	REG	SW-846:8260B	VOC
R46 11-13-2018 Propionitrile 1.50 ug/L N U FEG SW-846:8260B R46 11-13-2018 Propylbenzene[1-] 0.300 ug/L N U FEG SW-846:8260B R46 11-13-2018 Tetrachloroethane[1,1,1,2-] 0.300 ug/L N U FEG SW-846:8260B R46 11-13-2018 Tetrachloroethane[1,1,2-] 0.300 ug/L N U FEG SW-846:8260B R46 11-13-2018 Tetrachloroethane[1,1,2-] 0.300 ug/L N U U FEG SW-846:8260B R46 11-13-2018 Trichloroethane[1,1,2-] 0.300 ug/L N U U FEG SW-846:8260B R46 11-13-2018 Trichloroethane[1,2,3-] 0.300 ug/L N U U FEG SW-846:8260B R46 11-13-2018 Trichloroethane[1,2,3-] 0.300 ug/L N U U FEG SW-846:8260B R46	CAMO-19-164054	R-46	11-13-2018	Naphthalene	0.300	ng/L	z	ס	UF	REG	SW-846:8260B	VOC
R46 11-13-2018 Propylbenzene[1-1] 0.300 ug/L N U PEG SW-846:8260B R46 11-13-2018 Etrachloroethane[1,1,2,2] 0.300 ug/L N U PEG SW-846:8260B R46 11-13-2018 Tetrachloroethane[1,1,2,2] 0.300 ug/L N U PEG SW-846:8260B R46 11-13-2018 Tetrachloroethane[1,1,2,2] 0.300 ug/L N U PEG SW-846:8260B R46 11-13-2018 Trichloroethane[1,1,2,2] 0.300 ug/L N U PEG SW-846:8260B R46 11-13-2018 Trichloroethane[1,1,2,2] 2.00 ug/L N U UF REG SW-846:8260B R46 11-13-2018 Trichloroethane[1,1,2,1] 0.300 ug/L N U UF REG SW-846:8260B R46 11-13-2018 Trichloroethane[1,1,2,1] 0.300 ug/L N U UF REG SW-846:8260B R46	CAMO-19-164054	R-46	11-13-2018	Propionitrile	1.50	ng/L	z	n	UF	REG	SW-846:8260B	VOC
R46 11-13-2018 Styrene 0.300 ug/L N U UF REG SW-846.8260B R46 11-13-2018 Tetrachloroethane[1,1,1,2,2-] 0.300 ug/L N U UF REG SW-846.8260B R46 11-13-2018 Tetrachloroethane[1,1,2,2-] 0.300 ug/L N U UF REG SW-846.8260B R46 11-13-2018 Trichloro-1,2,2-trifluoroethane[1,1,2-] 2.00 ug/L N U UF REG SW-846.8260B R46 11-13-2018 Trichloroethane[1,2,3-] 0.300 ug/L N U UF REG SW-846.8260B R46 11-13-2018 Trichloroethane[1,2,3-] 0.300 ug/L N U UF REG SW-846.8260B R46 11-13-2018 Trichloroethane[1,1,2-] 0.300 ug/L N U UF REG SW-846.8260B R46 11-13-2018 Trichloroethane[1,1,2-] 0.300 ug/L N U	CAMO-19-164054	R-46	11-13-2018	Propylbenzene[1-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
R46 11-13-2018 Tetrachloroethane[1,1,1,2-] 0.300 ug/L N U FRG SW-846:8260B R46 11-13-2018 Tetrachloroethane[1,1,2,2-] 0.300 ug/L N U FRG SW-846:8260B R46 11-13-2018 Tetrachloroethane[1,1,2,2-] 0.300 ug/L N U FRG SW-846:8260B R46 11-13-2018 Trichloroethane[1,1,2-] 2.00 ug/L N U FRG SW-846:8260B R46 11-13-2018 Trichloroethane[1,1,2-] 2.00 ug/L N U FRG SW-846:8260B R46 11-13-2018 Trichloroethane[1,2,4-] 0.300 ug/L N U UF RG SW-846:8260B R46 11-13-2018 Trichloroethane[1,1,1-] 0.300 ug/L N U UF RG SW-846:8260B R46 11-13-2018 Trichloroethane[1,1,1-] 0.300 ug/L N U UF RG SW-846:8260B R46	CAMO-19-164054	R-46	11-13-2018	Styrene	0.300	ng/L	z	ח	UF	REG	SW-846:8260B	VOC
R46 11-13-2018 Tetrachloroethane[1,1,2,2] 0.300 ug/L N U N EEG SW-846:8260B R46 11-13-2018 Tetrachloroethane[1,1,2,2] 0.300 ug/L N U N <td>CAMO-19-164054</td> <td>R-46</td> <td>11-13-2018</td> <td>Tetrachloroethane[1,1,1,2-]</td> <td>0.300</td> <td>ng/L</td> <td>z</td> <td>ח</td> <td>UF</td> <td>REG</td> <td>SW-846:8260B</td> <td>VOC</td>	CAMO-19-164054	R-46	11-13-2018	Tetrachloroethane[1,1,1,2-]	0.300	ng/L	z	ח	UF	REG	SW-846:8260B	VOC
R-46 11-13-2018 Tetrachloroethene 0.300 ug/L N U P REG SW-846:8260B R-46 11-13-2018 Trichloro-1.2.2-trifluoroethane[1,1,2] 2.00 ug/L N U FREG SW-846:8260B R-46 11-13-2018 Trichloroethane[1,2,3-] 0.300 ug/L N U FREG SW-846:8260B R-46 11-13-2018 Trichloroethane[1,2,3-] 0.300 ug/L N U FREG SW-846:8260B R-46 11-13-2018 Trichloroethane[1,2,4-] 0.300 ug/L N U FREG SW-846:8260B R-46 11-13-2018 Trichloroethane[1,1,1-] 0.300 ug/L N U UF REG SW-846:8260B R-46 11-13-2018 Trichloroethane[1,1,2-] 0.300 ug/L N U UF REG SW-846:8260B R-46 11-13-2018 Trichloroethane[1,2,3-] 0.300 ug/L N U UF REG SW-846:8260B	CAMO-19-164054	R-46	11-13-2018	Tetrachloroethane[1,1,2,2-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
R-46 11-13-2018 Toluene 0.300 ug/L N U P REG SW-846:8260B R-46 11-13-2018 Trichloro-1.2.2-trifluoroethane[1,1,2-] 2.00 ug/L N U FEG SW-846:8260B R-46 11-13-2018 Trichlorobenzene[1,2,3-] 0.300 ug/L N U FEG SW-846:8260B R-46 11-13-2018 Trichloroethane[1,2,4-] 0.300 ug/L N U UF REG SW-846:8260B R-46 11-13-2018 Trichloroethane[1,1,1-] 0.300 ug/L N U UF REG SW-846:8260B R-46 11-13-2018 Trichloroethane[1,1,2-] 0.300 ug/L N U UF REG SW-846:8260B R-46 11-13-2018 Trichloroethane[1,2,3-] 0.300 ug/L N U UF REG SW-846:8260B R-46 11-13-2018 Trinhoropropane[1,2,3-] 0.300 ug/L N U UF REG S	CAMO-19-164054	R-46	11-13-2018	Tetrachloroethene	0.300	ng/L	z	D	UF	REG	SW-846:8260B	VOC
R-46 11-13-2018 Trichloro-1.2,2-trifluoroethane[1,1,2] 2.00 ug/L N U P REG SW-846:8260B R-46 11-13-2018 Trichlorobenzene[1,2,3-] 0.300 ug/L N U FEG SW-846:8260B R-46 11-13-2018 Trichlorobenzene[1,2,4-] 0.300 ug/L N U FEG SW-846:8260B R-46 11-13-2018 Trichloroethane[1,1,1-] 0.300 ug/L N U FEG SW-846:8260B R-46 11-13-2018 Trichloroethane[1,1,2-] 0.300 ug/L N U FEG SW-846:8260B R-46 11-13-2018 Trichloroethane[1,1,2-] 0.300 ug/L N U FEG SW-846:8260B R-46 11-13-2018 Trichloroethane[1,2,3-] 0.300 ug/L N U FEG SW-846:8260B R-46 11-13-2018 Trimethylbenzene[1,2,4-] 0.300 ug/L N U FEG SW-846:8260B R-46 11-13-2018 <td>CAMO-19-164054</td> <td>R-46</td> <td>11-13-2018</td> <td>Toluene</td> <td>0.300</td> <td>ng/L</td> <td>z</td> <td>ס</td> <td>Ę,</td> <td>REG</td> <td>SW-846:8260B</td> <td>VOC</td>	CAMO-19-164054	R-46	11-13-2018	Toluene	0.300	ng/L	z	ס	Ę,	REG	SW-846:8260B	VOC
R-46 11-13-2018 Trichlorobenzene[1,2,3-] 0.300 ug/L N U PEG SW-846:8260B R-46 11-13-2018 Trichlorobenzene[1,2,4-] 0.300 ug/L N U PEG SW-846:8260B R-46 11-13-2018 Trichloroethane[1,1,1-] 0.300 ug/L N U PEG SW-846:8260B R-46 11-13-2018 Trichloroethane[1,1,2-] 0.300 ug/L N U PEG SW-846:8260B R-46 11-13-2018 Trichloroethane[1,1,2-] 0.300 ug/L N U PEG SW-846:8260B R-46 11-13-2018 Trichloroethane[1,2,3-] 0.300 ug/L N U PEG SW-846:8260B R-46 11-13-2018 Trimethylbenzene[1,2,3-] 0.300 ug/L N U PEG SW-846:8260B R-46 11-13-2018 Trimethylbenzene[1,2,4-] 0.300 ug/L N U PEG SW-846:8260B R-46 11-13-2018 Trimethylbenzene[CAMO-19-164054	R-46	11-13-2018	Trichloro-1,2,2-trifluoroethane[1,1,2-]	2.00	ng/L	z	D	UF	REG	SW-846:8260B	NOC
R-46 11-13-2018 Trichlorobenzene[1,2,4-] 0.300 ug/L N U PEG SW-846:8260B SW-846:8260B R-46 11-13-2018 Trichloroethane[1,1,1-] 0.300 ug/L N U UF REG SW-846:8260B SW-846:8260B R-46 11-13-2018 Trichloroethane[1,1,2-] 0.300 ug/L N U UF REG SW-846:8260B SW-846:8260B R-46 11-13-2018 Trichloroethane 0.300 ug/L N U N SW-846:8260B SW-846:8260B R-46 11-13-2018 Trichloroptopane[1,2,3-] 0.300 ug/L N U N SW-846:8260B R-46 11-13-2018 Trimethylbenzene[1,2,4-] 0.300 ug/L N U N SR-8 SW-846:8260B R-46 11-13-2018 Trimethylbenzene[1,2,4-] 0.300 ug/L N U N REG SW-846:8260B	CAMO-19-164054	R-46	11-13-2018	Trichlorobenzene[1,2,3-]	0.300	ng/L	z	ס	UF	REG	SW-846:8260B	NOC
R-46 11-13-2018 Trichloroethane[1,1,1-] 0.300 ug/L N U PEG SW-846:8260B SW-846:8260B R-46 11-13-2018 Trichloroethane[1,1,2-] 0.300 ug/L N U PEG SW-846:8260B SW-846:8260B R-46 11-13-2018 Trichloroptopane[1,2,3-] 0.300 ug/L N U PEG SW-846:8260B R-46 11-13-2018 Trichloroptopane[1,2,3-] 0.300 ug/L N U PEG SW-846:8260B R-46 11-13-2018 Trimethylbenzene[1,2,4-] 0.300 ug/L N U PEG SW-846:8260B R-46 11-13-2018 Trimethylbenzene[1,2,4-] 0.300 ug/L N U PEG SW-846:8260B R-46 11-13-2018 Trimethylbenzene[1,2,4-] 0.300 ug/L N U PEG SW-846:8260B	CAMO-19-164054	R-46	11-13-2018	Trichlorobenzene[1,2,4-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
R-46 11-13-2018 Trichloroethane[1,1,2-] 0.300 ug/L N U PEG SW-846:8260B SW-846:8260B R-46 11-13-2018 Trichloroethene 0.300 ug/L N U N SW-846:8260B SW-846:8260B R-46 11-13-2018 Trichloropropane[1,2,3-] 0.300 ug/L N U N SW-846:8260B R-46 11-13-2018 Trimethylbenzene[1,2,4-] 0.300 ug/L N U N SW-846:8260B R-46 11-13-2018 Trimethylbenzene[1,2,4-] 0.300 ug/L N U N SW-846:8260B	CAMO-19-164054	R-46	11-13-2018	Trichloroethane[1,1,1-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
R-46 11-13-2018 Trichloroethene 0.300 ug/L N U PEG SW-846:8260B R-46 11-13-2018 Trichloropromethane 0.300 ug/L N U PEG SW-846:8260B R-46 11-13-2018 Trimethylbenzene[1,2,4] 0.300 ug/L N U PEG SW-846:8260B R-46 11-13-2018 Trimethylbenzene[1,2,4] 0.300 ug/L N U PEG SW-846:8260B R-46 11-13-2018 Trimethylbenzene[1,2,4] 0.300 ug/L N U PEG SW-846:8260B	CAMO-19-164054	R-46	11-13-2018	Trichloroethane[1,1,2-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
R-46 11-13-2018 Trichlorofluoromethane 0.300 ug/L N U VF REG SW-846:8260B R-46 11-13-2018 Trichloropropane[1,2,4-] 0.300 ug/L N U VF REG SW-846:8260B R-46 11-13-2018 Trimethylbenzene[1,2,4-] 0.300 ug/L N U VF REG SW-846:8260B R-46 11-13-2018 Trimethylbenzene[1,3,5-] 0.300 ug/L N U NFG SW-846:8260B	CAMO-19-164054	R-46	11-13-2018	Trichloroethene	0.300	ng/L	z	n	UF	REG	SW-846:8260B	NOC
R-46 11-13-2018 Trichloropropane[1,2,4-] 0.300 ug/L N U UF REG SW-846:8260B R-46 11-13-2018 Trimethylbenzene[1,2,4-] 0.300 ug/L N U N SW-846:8260B R-46 11-13-2018 Trimethylbenzene[1,3,5-] 0.300 ug/L N U N SW-846:8260B	CAMO-19-164054	R-46	11-13-2018	Trichlorofluoromethane	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
R-46 11-13-2018 Trimethylbenzene[1,3,5-] 0.300 ug/L N U UF REG SW-846:8260B R-46 11-13-2018 Trimethylbenzene[1,3,5-] 0.300 ug/L N U UF REG SW-846:8260B	CAMO-19-164054	R-46	11-13-2018	Trichloropropane[1,2,3-]	0.300	ng/L	z	n	UF	REG	SW-846:8260B	VOC
R-46 11-13-2018 Trimethylbenzene[1,3,5-] 0.300 ug/L N U UF REG SW-846:8260B	CAMO-19-164054	R-46	11-13-2018	Trimethylbenzene[1,2,4-]	0.300	ng/L	z	ח	UF	REG	SW-846:8260B	VOC
	CAMO-19-164054	R-46	11-13-2018	Trimethylbenzene[1,3,5-]	0.300	ng/L	z	ח	占	REG	SW-846:8260B	VOC

LCMS/MS HE LCMS/MS HE LCMS/MS HE LCMS/MS HE LCMS/MS HE LCMS/MS HE Method Category SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8260B SW-846:8330B SW-846.8330B SW-846.8330B SW-846:8330B SW-846:8330B SW-846:8330B Lab Method Purpose Sample REG REG REG REG REG Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-46, November 13, 2018, Condition No. 36 요 Field Prep Code 빌빌 (H) 片 5 느느 焅 띩 Qualifier Lab \supset Detected z z z z z Z z z Units J/gn ng/L ng/L ng/L ng/L ng/L ng/L ng/L ng/L ng/L Result Report 0.0842 0.0842 0.300 0.086 0.086 1.50 0.300 0.300 Xylene[1,3-]+Xylene[1,4-] [rinitrotoluene[2,4,6-] Trinitrotoluene[2,4,6-] Parameter Name Vinyl Chloride Vinyl acetate Xylene[1,2-] HMX SD. RDX XX 11-13-2018 Sample Date 11-13-2018 11-13-2018 11-13-2018 11-13-2018 11-13-2018 11-13-2018 11-13-2018 11-13-2018 Location R-46 R-46 R-46 R-46 R-46 R-46 R46 R-46 R46 R46 ₽ CAMO-19-164054 CAMO-19-164054 CAMO-19-164166 CAMO-19-164166 CAMO-19-164166 CAMO-19-164054 CAMO-19-164160 CAMO-19-164160 CAMO-19-164160 CAMO-19-164054 Field Sample ID

SAMPLE PURPOSE KEY

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
1	Chain-of custody.	Attached
m	Location Map	Attachment 15

EPC-DO: 19-018						∢	ATTACHMENT 13	IMEN	T 13											LA-UR-19-20526
LANL SMO																			8	COC/Lab Request #.
	<u>-</u>		Chain	of	ರ	Ist	n of Custody/Analysis Request	Á	na	 	<u>Si</u> :	R	jg	les					50	2019-456
Los Alamos NM	1K-46			;											,					Page 1 of 1
Client Contact:	Lab Agreement #:	ment #:		Site h	Site Name:		N3B LANL	ANL												
	Project Number:	mber:						əj											Rad	Rad Screening Info:
	Analysis Tu	Analysis Tumeround Time:			+		1	lora			7				-	4				
	24 Hour -	Other-	B		-			ιчΟν			Od-	_								
	7 Days				_	-		94+			+20									
	14 Days -					_	S	9 _R G			N/E	J(- 0/			_			4	ab Reporting Limit Type:
	21 Days -			_				_		£-1	_		714						_	Method Detection Limit
	28 Days -			_	_	_			_	1-77		_	יעא							
Field Sample ID	Sample Date	Sample Time	Sample Matrix	WZGE	-98W	-dsM	-4SW	-98W	-dSW	-48M	I-98W	I-98W	-48W							
CAMO-19-164053	Nov 13 2018	8 12:51	W		_		1	1			1		-							
CAMO-19-164055	Nov 13 2018	8 12:51	Α				1	1			-									
CAMO-19-164054	Nov 13 2018	8 12:51	Χ	-	3 2	2		1	1	1		1 1	_							
CAMO-19-164056	Nov 13 2018	8 12:51	W	-	3 2	2		1	1	_		1	1							
CAMO-19-164057	Nov 13 2018	12:51	W		1															
					_															
												-	_							
								_												
						_		_				-								
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Special Instructions:												8								
Relinquished by: All Lange	Shan Int Print Name:	int Name:	THE STATE OF THE S	(Date/	Date/Time:	11.3	20	Received by:	/ed by	1	1	1	10	Print	Name	Ka	te t	Print Name: Late Ellers	Date/Time: //./5.18
	Pri	Print Name:	2 = 2		Date/Time:	Time:			Received by:	ved by					Print	Print Name:	*			Date/Time:
Relinquished by:	Prí	Print Name:			Date/Time:	Time:			Received by:	ved by	اۃا				Print	Print Name:				Date/Time:

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID:

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-10-16/160

SAMPLE ID:	CAMO-19-164	160			WOR	RK O	RDER	:		
	AS PLAN	800	OLLE	CTED				<u>as</u> Planned	AS COLL	ECTED
Date Collected (MM/DD/YYY):	11/13	/18	01	<	FIELD MA	ATRIX	(: _:	WG		·k
TIME COLLECT (HH:MM):	ED 25	1	1		MEDIA:			OK		
PRS ID:	ok				SAMPLE CODE:	TECH	1 -	GSP	(
LOCATION ID:	R-46				FIELD PR	REP:		UF		
LOCATION TYP	PE:		_		FIELD Q	С ТҮР	E:	REG		
TOP DEPTH:					SAMPLE	USA	GE:	INV	\	\bigvee
BOTTOM DEPT	н:У		Y		EXCAVA.	TED:	-		YES / NO (NA
PRIORITY	ORDER	CONTAINER	#	PRE	SERVATIVE		COI	LLECTED Y/N	SPECIAL INS	TRUCTIONS
NA	DP-TP-8081	1 LITER GLASS	3		ICE			Y	1	JA.
1	DP-TP-8330	1 LITER AMBER GLASS	3		ICE			\overline{V}	,	
SAMPLE COM	MENTS: Sum	pled about	40	ft. fr	om punni	ha d	iesel	generator		
LOCATION CO	MMENTS: No	me				•				
FIELD PARAMI	ETERS:									
Sample Time		H:MM Cas	ing Volu		3	UNITL	ESS.	Discharge Rate	5.00	gal/min
Dissolved Oxygen	6.67 mg	g/L Flo	w (in gp	m)	5.00	GPM		Groundwater Elevation	5879.66	ft
Oxidation-Reduction Potential	269.8 M		riod Purç √olume	ge	NA	gal		рН	7.96	SU
Purge Volume	175.0 gal		Specific nductare	ce	121.4	uS/cm		Temperature	241	deg C
Total Volume Pumped	2 <u>99.0</u> gal	1	urbidity		0.36	NTU				

COLLECTED BY (PRINT): A. Vigila K	.Tou	21 21/	
RELINQUISHED BY (Printed Name) Allisyn Stanfield (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name)		(Printed Name)	
(Signature)		(Signature)	
Report Date: 11/05/2018	·	10	

Report Date: 11/05/2018 EPC-DO: 19-018

ATTACHMENT 13

LA-UR-19-20526 14465

LA-UR-19-20526 14466

EVENT ID:

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

					EVENT	MAIVIE:	Discharge Pe	TITILL IVI Y 13	<i>3</i> Q1
SAMPLE ID:	CAMO-19-164	169			WORK O	RDER	:		
	AS PLANI	400	OLLE	CTED			AS PLANNED	AS C	OLLECTED
Date Collected (MM/DD/YYY):	11/13/	18	OK		FIELD MATRIX	X: _	WG		OK
TIME COLLECT (HH:MM):	ED 1251				MEDIA:	_	OK		
PRS ID:	_OK				SAMPLE TEC CODE:	н -	GSP	90	
LOCATION ID:	R-46				FIELD PREP:		F		
LOCATION TYP	E:OK	-	+		FIELD QC TYF	PE:	REG	-	
TOP DEPTH:				<u> </u>	SAMPLE USA	GE:	INV		$\overline{}$
BOTTOM DEPT	н:		*		EXCAVATED:			YES / N	NO 1 🚳
PRIORITY	ORDER	CONTAINER	#	PRESE	RVATIVE	coı	LECTED Y/N	SPECIA	L INSTRUCTION
NA	DP-Ra226+228	1 LITER POLY	4	Н	NO3		Y		NA
SAMPLE COM	MENTS:								-
LOCATION CO	MMENTS:								
FIELD PARAME	ETERS:								
Sample Time	нн	I:MM Casi	ing Volu	me m) \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	118 UNIT	LE82	Discharge Rate	_	gal/min
Dissolved Oxygen	mg		w (in gpr	m) // // 💆	GPM		Groundwater Elevation	-	ft
kidation-Reduction Potential	MV	///	riod Purg Volume	10	gal		рН	-	\$U
Purge Volume	gal	///Con	Specific nductano	ce –	uS/cr	m	Temperature	-	deg C
Total Volume Pumped	gal	A T	urbidity	-	NTU				
								j.	
								J C	
COLLECTED B	Y (PRINT): A.	Vigils K.	Tol	له'		2 /	1//		
			11/1		RECEIVED B (Printed Nam (Signature)		ME		Date/Time
RELINQUISHED				te/Time	RECEIVED B		10 S		Date/Time
(Signature) Report Date: 11/05/20	018				(Signature)				
EPC-D	O: 19-018			ATTAC	HMENT 13			LA-	UR-19-2952966

Report Date: 11/05/2018 EPC-DO: 19-018

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID:	12119				EVENT	NAME:	Discharge Pe	rmit MY1	9 Q1
SAMPLE ID:	CAMO-19-164	166			WORK C	RDER:			
	AS PLAN		OLLE	ECTED			AS PLANNED	AS C	OLLECTED
Date Collected (MM/DD/YYY):	11/13/	18.	01		FIELD MATRI	X: _	WG		014
TIME COLLECT (HH:MM):	ED 25	1	1		MEDIA:		OK)
PRS ID:	- CK				SAMPLE TEC CODE:	н	GSP		
LOCATION ID:	R-46				FIELD PREP:		UF		
LOCATION TYP	E: OK				FIELD QC TY	PE: _	FD	2	-117
TOP DEPTH:		,	1		SAMPLE USA	GE:	QC		1
BOTTOM DEPT	н:		V		EXCAVATED:	_		YES / N	10 (NA)
PRIORITY	ORDER	CONTAINER	#	PRES	ERVATIVE	COL	LECTED Y/N	SPECIA	LINSTRUCTIONS
NA	DP-TP-8081	1 LITER GLASS	3		ICE		Y		NA
1	DP-TP-8330	1 LITER AMBER GLASS	3		ICE		$\overline{\psi}$		$\overline{\downarrow}$
SAMPLE COM	MENTS:	1							
LOCATION CO	MMENTS:								
FIELD PARAME	ETERS:								
Sample Time	HH		ıg Volu	ime	/13/180NIT	LESS	Discharge Rate Groundwater		gal/min
Dissolved Oxygen Oxidation-Reduction	mg	Pen	(in gp	ge			Elevation	-	ft SU
Potential Purge Volume	MV		ofume pecific		gal uS/cr		pH Temperature	-	deg C
Total Volume Pumped	gal	Con	ductan irbidity		NTU		remperature	-	_ deg o
			_						
COLLECTED B	Y (PRINT): A	Vigils K.	0	W		1 /	211		
RELINQUISHED (Printed Name) (Signature)	Allisyn Stanf	reld	11/	ate/Time 13/18 45	RECEIVED B (Printed Nam (Signature)		WK.		Date/Time
RELINQUISHED (Printed Name) (Signature)	DBY		Da	nte/Time	RECEIVED B (Printed Nam (Signature)				Date/Time

ATTACHMENT 13

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID:	12119
-----------	-------

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID:	
------------	--

): CAMO-	-19-1641	170			WORK C	RDER	:		
	AS PLANI		OLLE	CTED			AS PLANNED	AS CC	LLECTED
ted Y):	1/13/	18	OK	, -	FIELD MATRIX	X:	WG		ok
ECTED	251				MEDIA:		OK		1
_	OK				SAMPLE TEC CODE:	H :-	GSP		
ID:	R-46				FIELD PREP:		F		
TYPE:	OK		_		FIELD QC TYP	PE:	FD		
l: «				,	SAMPLE USA	GE:	QC		V
ЕРТН:	V		Y	0	EXCAVATED:			YES / N	0160
OR	DER	CONTAINER	#	PRES	ERVATIVE	COI	LECTED Y/N	SPECIAL	. INSTRUCTION
DP-Ra2	226+228	1 LITER POLY	4	H	HNO3		Y		VA-
OMMENTS:									
AMETERS:	HH: mg/ MV gal	L Flow	ing Volu w (in gp iod Puv Jolume Specific ductant urbidity	m) ge/13/	GPM gal uS/cn		Discharge Rate Groundwater Elevation pH Temperature		gal/min ft SU deg C
HED BY me) Allisy, HED BY	55 9 0 P	ligils K.T	Da 11/	ate/Time 13/18 345 ate/Time		Y	Mot	e.	Date/Time
Company to		12			Date/Time	Date/Time RECEIVED B	Date/Time RECEIVED BY (Printed Name)	Date/Time RECEIVED BY (Printed Name)	Date/Time RECEIVED BY (Printed Name)

R-60 annual ground water monitoring report

EPC-DO: 19-018

LA-UR-19-20526

Date: _____ JAN 3 1 2019

GEN CHEM GEN CHEM GEN_CHEM GEN_CHEM GEN CHEM GEN CHEM GEN_CHEM LCMS/MS Category METALS METALS PESTPCB METALS METALS METALS Method METALS METALS METALS METALS METALS METALS PESTPCB PESTPCB PESTPCB METALS METALS METALS METALS METALS METALS PESTPCB METALS METALS RAD RAD SW-846:8081B SW-846:8082 SW-846:8082 SW-846:8082 SW-846:6010C SW-846:6020 SW-846:6020 SW-846:6010C SW-846:6010C SW-846:6010C SW-846:6010C SW-846:6010C SW-846:6010C SW-846:6010C SW-846:6020 SW-846:6020 SW-846:6020 SW-846:6850 SW-846:6020 SW-846:6020 SW-846:8082 SW-846:6020 SW-846:6020 SW-846:60100 Lab Method EPA:300.0 EPA:351.2 EPA:300.0 EPA:300.0 EPA:335.4 EPA:245.2 EPA:350.1 EPA:353.2 EPA:160.1 EPA:245.2 EPA:903.1 EPA:904 Field Sample REG Field Prep Code 5 5 H 当 H 占 J. Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-60, November 13, 2018, Condition No. 36 Qualifier ra P \supset \supset \supset \supset \supset \supset \supset Detected z z z z Z Z Z z z z z Z z Z z z z Units ng/L ug/L ng/r ng/L ng/∟ pCi/L J/Bn mg/l mg/L mg/L 1∕8n √gn J/gn √g/L ng/L mg/L ng∕L ug/L pCi/L UB/L ng/L √gn mg/l mg/ mg/ ng/L ng∕L ng∕L √gn ng∕L √gn ug/L √g N υg/L ug/L ΝS 0,0354 0.00707 0.0354 0.0354 Result 1.84 68.0 0.00167 0,348 0.409 0.300 1.00 0.500 0.949 0.519 2.02 0.033 24.6 15.0 3.00 30.0 2.00 0.067 0.067 0.600 2.00 0.300 3.30 0.147 0.475 159 1.00 Nitrate-Nitrite as Nitrogen Total Kjeldahl Nitrogen Ammonia as Nitrogen **Total Dissolved Solids** Parameter Name Cyanide (Total) Aroclor-1016 Aroclor-1232 Aroclor-1242 Aroclor-1221 Molybdenum Radium-226 Radium-228 Manganese Perchlorate Aluminum Chromium Cadmium Sulfate Beryllium Selenium Chloride Fluoride Arsenic Barium Mercury Mercury Jranium Boron Cobalt Copper Silver Aldrin Nickel Lead Iron Zinc 핍 Sample Date 11-13-2018 Location ID R-60 ield Measuremen CAMO-19-164058 ZAMO-19-164058 CAMO-19-164058 CAMO-19-164058 CAMO-19-164058 CAMO-19-164058 CAMO-19-164058 CAMO-19-164058 CAMO-19-164058 CAMO-19-164058 CAMO-19-164059 CAMO-19-164058 CAMO-19-164058 CAMO-19-164058 CAMO-19-164058 CAMO-19-164058 CAMO-19-164058 CAMO-19-164058 CAMO-19-164059 CAMO-19-164058 CAMO-19-164058 CAMO-19-164059 CAMO-19-164058 CAMO-19-164058 CAMO-19-164058 CAMO-19-164058 ZAMO-19-164058 CAMO-19-164058 CAMO-19-164058 CAMO-19-164171 CAMO-19-164161 CAMO-19-164059 CAMO-19-164059 CAMO-19-164059 CAMO-19-164059 CAMO-19-164171 Field Sample ID

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	Lab Method	Method
CAMO-19-164059	R-60	11-13-2018	Aroclor-1248	0.0354	1/Bn	z	ס	J.	REG	SW-846:8082	PESTPCB
CAMO-19-164059	R-60	11-13-2018	Aroclor-1254	0.0354	ng/L	z	n	H.	REG	SW-846:8082	PESTPCB
CAMO-19-164059	R-60	11-13-2018	Aroclor-1260	0.0354	1/Bn	z	n	J.	REG	SW-846:8082	PESTPCB
CAMO-19-164059	R-60	11-13-2018	Aroclor-1262	0.0354	ng/L	z	n	ä	REG	SW-846:8082	PESTPCB
CAMO-19-164161	R-60	11-13-2018	BHC[alpha-]	0.00707	1/8n	z	ם	J.	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	BHC[beta-]	70700.0	_1/gn	z	n	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	BHC[gamma-]	0.00707	⊓/Bn	z	Π	J.	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	Chlordane(alpha/gamma)	0.0814	7/Bn	z	Ω	'n	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	Chlordane[alpha-]	0.00707	ug/L	z	n	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	Chlordane[gamma-]	0.00707	1/Bn	z	Π	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	DDT[4,4'-]	0.0106	1/Bn	z	Π	j.	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	Dieldrin	0,0106	ng/L	z	n	'n	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	Endosulfan i	0.00707	1/gn	z	ח	'n	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	Endosulfan II	0.0106	ng/L	z	n	JN	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	Endrin	0.0106	⊓R/r	z	n	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	Heptachlor	0.00707	J/gn	z	n	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164161	R-60	11-13-2018	Toxaphene (Technical Grade)	0.160	7/8n	z	Π	UF	REG	SW-846:8081B	PESTPCB
CAMO-19-164059	R-60	11-13-2018	Acenaphthene	0.300	ng/L	z	ח	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Acenaphthylene	0.300	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Aniline	4.20	ng/L	z	ח	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Anthracene	0.300	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Atrazine	3.00	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Azobenzene	3.00	T/Bn	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Benzidine	3.90	1/8n	z	n	JN	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Benzo(a)anthracene	0.300	ng/L	z	n	J.	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Benzo(a)pyrene	0.300	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Benzo(b)fluoranthene	0.300	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Benzo(g,h,i)perylene	0.300	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Benzo(k)fluoranthene	0.300	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Benzoic Acid	6.00	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Benzyl Alcohol	3.00	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Bis(2-chloroethoxy)methane	3.00	ng/L	z	Π	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Bis(2-chloroethyl)ether	3.00	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Bis(2-ethylhexyl)phthalate	0.300	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Bromophenyl-phenylether[4-]	3.00	∏/Bn	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Butylbenzylphthalate	0.300	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Chloro-3-methylphenol[4-]	3.00	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Chloroaniline[4-]	3.30	ng/L	z	ח	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Chloronaphthalene[2-]	0.410	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
CAMO-19-164059	R-60	11-13-2018	Chlorophenal[2-]	3.00	ng/L	z	n	UF	REG	SW-846:8270D	SVOC

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

11-13-2018 Chlorophenyl-phenyl[4-] Ether 3.00 11-13-2018 Chrysene 0.300 11-13-2018 Dibenzofuran 3.00 11-13-2018 Dichlorobenzene[1,2-] 3.00 11-13-2018 Dichlorobenzene[1,2-] 3.00 11-13-2018 Dichlorophenzene[1,4-] 3.00 11-13-2018 Dichlorophenzene[1,4-] 3.00 11-13-2018 Dichlorophenzene[1,4-] 3.00 11-13-2018 Dichlorophenzene[1,4-] 3.00 11-13-2018 Dintrophenol[2,4-] 3.00 11-13-2018 Dinntroplenol[2,4-] 3.00 11-13-2018 Dintroplenol[2,4-] 3.00 11-13-2018 Hexachloropentagiene 3.00 11-13-2018 Hexachloropentagiene 3.00 11-13-2018 Hexachloropentagiene 3.00 <th< th=""><th>Field Sample ID Location ID</th><th>ID Sample Date</th><th>Parameter Name</th><th>Report Result</th><th>Units</th><th>Detected</th><th>Lab Qualifier</th><th>Field Prep Code</th><th>Sample</th><th>Lab Method</th><th>Method</th></th<>	Field Sample ID Location ID	ID Sample Date	Parameter Name	Report Result	Units	Detected	Lab Qualifier	Field Prep Code	Sample	Lab Method	Method
R-60 11-13-2018 Chyesne 0.300 ug/L N R-60 11-13-2018 Dibenzioliran 0.300 ug/L N R-60 11-13-2018 Dichlorobenzene[1,2] 3.00 ug/L N R-60 11-13-2018 Dichlorobenzene[1,3] 3.00 ug/L N R-60 11-13-2018 Dichlorobenzene[1,4] 3.00 ug/L N R-60 11-13-2018 Dichlorobenzene[1,4] 3.00 ug/L N R-60 11-13-2018 Dichlorobenzene[1,4] 3.00 ug/L N R-60 11-13-2018 Dichlorobenzene[2,4] 3.00 ug/L N R-60 11-13-2018 Dichlorobenzene[2,4] 3.00 ug/L N R				3.00	ng/L	z	D	ä	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Dibendial/painthacene 0.300 ug/L N R-60 11-13-2018 Dichlorobenzenel[1,3-] 3.00 ug/L N R-60 11-13-2018 Dichlorobenzenel[1,3-] 3.00 ug/L N R-60 11-13-2018 Dichlorobenzenel[1,4-] 3.00 ug/L N R-60 11-13-2018 Dichlorobenzenel[2,4-] 3.00 ug/L N R-60 11-13-2018 Dichlorobenzenel[2,4-] 3.00 ug/L <				0.300	7/∄n	z	n	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Diblenzofuran 3.00 ug/L N R-60 11-13-2018 Dichloroberzene[1,2-] 3.00 ug/L N R-60 11-13-2018 Dichloroberzene[1,3-] 3.00 ug/L N R-60 11-13-2018 Dichloroberzene[1,4-] 3.00 ug/L N R-60 11-13-2018 Dichloroberzene[1,4-] 3.00 ug/L N R-60 11-13-2018 Dichloroberzene[1,4-] 3.00 ug/L N R-60 11-13-2018 Dichloroberzene[2,4-] 3.00 ug/L N R-60 11-13-2018 Dichloroberzene[2,4-] 3.00 ug/L N R-60 11-13-2018 Dichloroberzene[2,4-] 3.00 ug/L N		1		0.300	ng/L	Z	n	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Dichloroberatele[1,2-] 3.00 ug/L N R-60 11-13-2018 Dichloroberatele[1,2-] 3.00 ug/L N R-60 11-13-2018 Dichloroberatele[1,3-] 3.00 ug/L N R-60 11-13-2018 Dichloroberatele[1,4-] 3.00 ug/L N R-60 11-13-2018 Dichlorophenol[2,4-] 3.00 ug/L N R-60 11-13-2018 Dichlorophenol[2,4-] 3.00 ug/L N R-60 11-13-2018 Dimetrylphenol[2,4-] 3.00 ug/L N R-60 11-13-2018 Dintrophenol[2,4-] 3.00 ug/L N <t< td=""><td></td><td>+</td><td></td><td>3.00</td><td>ng/L</td><td>Z</td><td>n</td><td>UF</td><td>REG</td><td>SW-846:8270D</td><td>SVOC</td></t<>		+		3.00	ng/L	Z	n	UF	REG	SW-846:8270D	SVOC
Refo 11-13-2018 Dichlorobenzene(1,3-1) 3.00 ug/L N Refo 11-13-2018 Dichlorobenzene(1,4-1) 3.00 ug/L N Refo 11-13-2018 Dinntropheno(1,4-1) 3.00 ug/L N Refo 11-13-2018 Dinntropheno(1,4-1) 3.00 ug/L N Refo 11-13-2018 Dintropheno(1,4-1) 3.00 ug/L N Refo 11-13-2018 Dintropheno(1,2-1) 3.00 ug/L N <t< td=""><td></td><td>1</td><td></td><td>3.00</td><td>ng/L</td><td>Z</td><td>n</td><td>JU</td><td>REG</td><td>SW-846:8270D</td><td>SVOC</td></t<>		1		3.00	ng/L	Z	n	JU	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Dichloroberacene[1,4-] 3.00 ug/L N R-60 11-13-2018 Dichloroberacine[1,4-] 3.00 ug/L N R-60 11-13-2018 Dichlorophenol[2,4-] 3.00 ug/L N R-60 11-13-2018 Dichlorophenol[2,4-] 3.00 ug/L N R-60 11-13-2018 Dimethylphthalate 0.300 ug/L N R-60 11-13-2018 Dintrophenol[2,4-] 3.00 ug/L N R-60 11-13-2018 Hexachlorobenzene 3.00 ug/L N				3.00	UB/L	z	n	Э'n	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Dichloroberadine[3,3-] 3.00 ug/L N R-60 11-13-2018 Dichlorophenol[2,4-] 3.00 ug/L N R-60 11-13-2018 Dichlorophenol[2,4-] 3.00 ug/L N R-60 11-13-2018 Dimbrylphenol[2,4-] 3.00 ug/L N R-60 11-13-2018 Dimbrophenol[2,4-] 3.00 ug/L N R-60 11-13-2018 Dinitrophenol[2,4-] 3.00 ug/L N R-60 11-13-2018 Dinitrophenol[2,4-] 3.00 ug/L N R-60 11-13-2018 Dinitrophenol[2,4-] 3.00 ug/L N R-60 11-13-2018 Dinaseb 3.00 ug/L N R-60 11-13-2018 Diopenylamine 3.00 ug/L N R-60 11-13-2018 Hexachlorobenzene 3.00 ug/L N R-60 11-13-2018 Hexachlorocyclopenzadene 3.00 ug/L N R-60 </td <td></td> <td></td> <td></td> <td>3.00</td> <td>l J/Bn</td> <td>z</td> <td>n</td> <td>UF</td> <td>REG</td> <td>SW-846:8270D</td> <td>SVOC</td>				3.00	l J/Bn	z	n	UF	REG	SW-846:8270D	SVOC
Ref0 11-13-2018 Dichlorophenol(2,4) 3.00 ug/L N Ref0 11-13-2018 Dichlorophenol(2,4) 0.300 ug/L N Ref0 11-13-2018 Dimetrly/phthalate 0.300 ug/L N Ref0 11-13-2018 Dintrophenol(3,4) 3.00 ug/L N Ref0 11-13-2018 Dintrophenol(4,6-1) 5.00 ug/L N Ref0 11-13-2018 Dintrophenol(1,6-1) 3.00 ug/L N Ref0 11-13-2018 Dintrophenol(1,4-1) 3.00 ug/L N Ref0 11-13-2018 Hexachlorobenzene 3.00 ug/L N Ref0 11-13-2018 Hexachlorobenzene 3.00 ug/L N		+		3.00	ng/L	z	Π	JU	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Diethylohthalate 0.300 ug/L N R-60 11-13-2018 Dimethylohthalate 0.300 ug/L N R-60 11-13-2018 Dimethylohthalate 0.300 ug/L N R-60 11-13-2018 Dimitro 2-methylohthalate 0.300 ug/L N R-60 11-13-2018 Dimitro 2-methylohthalate 0.300 ug/L N R-60 11-13-2018 Dimitrophenol(4,6-1) 3.00 ug/L N R-60 11-13-2018 Polyhenylamine 3.00 ug/L N R-60 11-13-2018 Hexachlorocyclopentadiene 3.00 ug/L N R-60 11-13-2018 Hexachlorocyclopentadiene 3.00 ug/L N <		7		3.00	ng/L	z	U	UF	REG	SW-846:8270D	SVOC
Ref0 11-13-2018 Dimethyl Phthalate 0.300 ug/L N Ref0 11-13-2018 Dimethylphenol(3,4) 3.00 ug/L N Ref0 11-13-2018 Dinitro-2-methylphenol(4,6) 3.00 ug/L N Ref0 11-13-2018 Dinitrophenol(2,4) 3.00 ug/L N Ref0 11-13-2018 Dinoseb 3.00 ug/L N Ref0 11-13-2018 Hexachloropenzene 3.00 ug/L N <				0.300	ng/L	z	Π	JU	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Dimethylphenol[2,4-] 3.00 ug/L N R-60 11-13-2018 Dintrophutplalate 0.300 ug/L N R-60 11-13-2018 Dintrophutplalate 3.00 ug/L N R-60 11-13-2018 Diphenylamine 3.00 ug/L N R-60 11-13-2018 Hexachloropenzene 3.00 ug/L N R-60 11-13-2018 Hexachloropenzene 3.00 ug/L N R-60 11-13-2018 Hexachlorocyclopenzene 3.00 ug/L N R-60		\dashv		0.300	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Di-h-butylpitchalate 0.300 ug/L N R-60 11-13-2018 Dintro2-methylphenol(4,6-] 3.00 ug/L N R-60 11-13-2018 Dintro2-methylphenol(2,4-] 5.00 ug/L N R-60 11-13-2018 Dintro10uene[2,4-] 3.00 ug/L N R-60 11-13-2018 Dintro2-cyphthalate 0.300 ug/L N R-60 11-13-2018 Diphenylamine 3.00 ug/L N R-60 11-13-2018 Plousane[1,4-] 3.00 ug/L N R-60 11-13-2018 Hexachlorocycloentadiene 0.300 ug/L N R-60 11-13-2018 Hexachlorocycloentadiene 3.00 ug/L N R-60 11-13-2018 Hexachlorocycloentadiene 3.00 ug/L N R-60 11-13-2018 Hexachlorocycloentadiene 3.00 ug/L N R-60 11-13-2018 Methylphaninalmalene[1-] 0.300 ug/L N				3.00	ng/L	Z	n	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Dinitro-2-methylphenol(4,6-] 3.00 ug/L N R-60 11-13-2018 Dinitrophenol(2,4-] 5.00 ug/L N R-60 11-13-2018 Dinitrophenol(2,4-] 3.00 ug/L N R-60 11-13-2018 Dinoseb 3.00 ug/L N R-60 11-13-2018 Dinoseb 3.00 ug/L N R-60 11-13-2018 Dinoseb 3.00 ug/L N R-60 11-13-2018 Fluorene 0.300 ug/L N R-60 11-13-2018 Hexachloroberace 3.00 ug/L N R-60 11-13-2018 Hexachloropentadiene 3.00 ug/L N R-60 11-13-2018 Hexachloropentadiene 3.00 ug/L N R-60 11-13-2018 Hexachloropentadiene 3.00 ug/L N R-60 11-13-2018 Methylphenol(1,2,3-cd)pyrene 3.00 ug/L N R-60 1		\dashv		0.300	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Dinitrophenol[2,4-] 5.00 ug/L N R-60 11-13-2018 Dinitrotoluene[2,6-] 3.00 ug/L N R-60 11-13-2018 Dinitrotoluene[2,6-] 3.00 ug/L N R-60 11-13-2018 Din-trotoluene[2,6-] 3.00 ug/L N R-60 11-13-2018 Din-trotoluene[2,6-] 3.00 ug/L N R-60 11-13-2018 Diphenylamine 3.00 ug/L N R-60 11-13-2018 Fluoranthene 0.300 ug/L N R-60 11-13-2018 Hexachlorobutadiene 3.00 ug/L N R-60 11-13-2018 Hexachlorobutadiene 3.00 ug/L N R-60 11-13-2018 Hexachlorocyclopentadiene 3.00 ug/L N R-60 11-13-2018 Hexachlorocyclopentadiene 3.00 ug/L N R-60 11-13-2018 Methylaphanilanelel-1 0.300 ug/L N		┪		3.00	ng/L	z	Ω] IN	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Dinitrotoluene[2,4-] 3.00 ug/L N R-60 11-13-2018 Dinitrotoluene[2,6-] 3.00 ug/L N R-60 11-13-2018 Dinoseb 3.00 ug/L N R-60 11-13-2018 Diposeb 3.00 ug/L N R-60 11-13-2018 Diphenylamine 3.00 ug/L N R-60 11-13-2018 Fluorene 0.300 ug/L N R-60 11-13-2018 Hexachlorobenzene 3.00 ug/L N R-60 11-13-2018 Hexachlorocharadiene 3.00 ug/L N R-60 11-13-2018 Methylphenol(2] 3.00 ug/L N R-60 11-13-2018<		1		2.00	ng/L	Z	n	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Dinitrotoluene[2,6-] 3.00 ug/L N R-60 11-13-2018 Di-n-ctylphthalate 0.300 ug/L N R-60 11-13-2018 Di-n-ctylphthalate 3.00 ug/L N R-60 11-13-2018 Dioxane[1,4-] 3.00 ug/L N R-60 11-13-2018 Fluoranthene 0.300 ug/L N R-60 11-13-2018 Hexachlorobenzene 0.300 ug/L N R-60 11-13-2018 Hexachlorocyclopentacliene 3.00 ug/L N R-60 11-13-2018 Methylnaphthalene[1-] 0.300 ug/L N R-60 11-13-2018 Methylnaphthalene[2-] 0.300 ug/L N <				3.00	ng/L	z	n	l JN	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Di-n-octylphthalate 0.300 ug/L N R-60 11-13-2018 Dinoseb 3.00 ug/L N R-60 11-13-2018 Dioxane[1,4-] 3.00 ug/L N R-60 11-13-2018 Fluoranthene 0.300 ug/L N R-60 11-13-2018 Fluoranthene 0.300 ug/L N R-60 11-13-2018 Hexachlorobutadiene 3.00 ug/L N R-60 11-13-2018 Hexachlorocyclopentadiene 3.00 ug/L N R-60 11-13-2018 Hexachlorocyclopentadiene 3.00 ug/L N R-60 11-13-2018 Hexachlorocyclopentadiene 3.00 ug/L N R-60 11-13-2018 Methylnaphthalene[1-] 0.300 ug/L N R-60 11-13-2018 Methylnaphthalene[1-] 3.00 ug/L N R-60 11-13-2018 Methylnaphthalene[1-] 3.00 ug/L N <td< td=""><td></td><td>\dashv</td><td></td><td>3.00</td><td>ng/L</td><td>z</td><td>n</td><td>UF</td><td>REG</td><td>SW-846:8270D</td><td>SVOC</td></td<>		\dashv		3.00	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Dinoseb 3.00 ug/L N R-60 11-13-2018 Diphenylamine 3.00 ug/L N R-60 11-13-2018 Fluoranthene 0.300 ug/L N R-60 11-13-2018 Hexachlorobenzene 3.00 ug/L N R-60 11-13-2018 Hexachlorobenzene 3.00 ug/L N R-60 11-13-2018 Hexachlorocyclopenzadiene 3.00 ug/L N R-60 11-13-2018 Methylphenol(1,2,3-cd)pyrene 0.300 ug/L N R-60 11-13-2018 Methylphenol(2,3-cd)pyrene 3.50 ug/L N R-60 11-13-2018 Methylphenol(3,4-1) 3.00 ug/L N		-		0.300	ng/L	Z	n	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Dioxane[1,4-] 3.00 ug/L N R-60 11-13-2018 Diphenylamine 3.00 ug/L N R-60 11-13-2018 Fluoranthene 0.300 ug/L N R-60 11-13-2018 Hexachlorobenzene 3.00 ug/L N R-60 11-13-2018 Hexachlorocyclopentadiene 3.00 ug/L N R-60 11-13-2018 Methylnaphthalene[1-] 0.300 ug/L N R-60 11-13-2018 Methylnaphthalene[1-] 0.300 ug/L N R-60 11-13-2018 Methylphenol[2-] 3.00 ug/L N R-60 11-13-2018 Methylphenol[3-4-] 3.00 ug/L N		7		3.00	ng/L	z	n	l in	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Diphenylamine 3.00 ug/L N R-60 11-13-2018 Fluoranthene 0.300 ug/L N R-60 11-13-2018 Hexachlorobenzene 3.00 ug/L N R-60 11-13-2018 Hexachlorobenzene 3.00 ug/L N R-60 11-13-2018 Hexachlorocyclopentadiene 3.00 ug/L N R-60 11-13-2018 Hexachlorocyclopentadiene 3.00 ug/L N R-60 11-13-2018 Hexachlorocyclopentadiene 3.00 ug/L N R-60 11-13-2018 Methylnaphthalene[1-] 0.300 ug/L N R-60 11-13-2018 Methylnaphthalene[1-] 0.300 ug/L N R-60 11-13-2018 Methylnaphthalene[1-] 0.300 ug/L N R-60 11-13-2018 Methylnaphthalene[2-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[2-] 3.00 ug/L N <t< td=""><td></td><td>1</td><td></td><td>3.00</td><td>ng/L</td><td>z</td><td>n</td><td>UF</td><td>REG</td><td>SW-846:8270D</td><td>SVOC</td></t<>		1		3.00	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Fluoranthene 0.300 ug/L N R-60 11-13-2018 Hexachlorobenzene 3.00 ug/L N R-60 11-13-2018 Hexachlorobutadiene 3.00 ug/L N R-60 11-13-2018 Hexachlorocyclopentadiene 3.00 ug/L N R-60 11-13-2018 Methylnaphtalene[1-] 0.300 ug/L N R-60 11-13-2018 Methylnaphthalene[1-] 0.300 ug/L N R-60 11-13-2018 Methylphenol[2-] 3.00 ug/L N R-60 11-13-2018 Methylphenol[3-4-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[2-] 3.00 ug/L N		\exists		3.00	ng/l	Z	n	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Fluorene 0.300 ug/L N R-60 11-13-2018 Hexachlorobenzene 3.00 ug/L N R-60 11-13-2018 Hexachlorocyclopentadiene 3.00 ug/L N R-60 11-13-2018 Methylnaphthalene[1-] 0.300 ug/L N R-60 11-13-2018 Methylphenol[2-] 3.00 ug/L N R-60 11-13-2018 Methylphenol[2-] 3.00 ug/L N R-60 11-13-2018 Nitropenzene 3.00 ug/L N R-60 11-13-2018 Nitropenzene 3.00 ug/L N R-60 11-13-2018 Nitropenzene 3.00 ug/L N R-60 <td></td> <td>7</td> <td></td> <td>0.300</td> <td>ng/L</td> <td>z</td> <td>n</td> <td>UF</td> <td>REG</td> <td>SW-846:8270D</td> <td>SVOC</td>		7		0.300	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Hexachlorobenzene 3.00 ug/L N R-60 11-13-2018 Hexachlorobutadiene 3.00 ug/L N R-60 11-13-2018 Hexachlorocyclopentadiene 3.00 ug/L N R-60 11-13-2018 Hexachlorocyclopentadiene 3.00 ug/L N R-60 11-13-2018 Indeno(1,2,3-cd)pyrene 0.300 ug/L N R-60 11-13-2018 Methylnaphthalene[1-] 0.300 ug/L N R-60 11-13-2018 Methylphenol[2-] 3.00 ug/L N R-60 11-13-2018 Methylphenol[3-] 3.00 ug/L N R-60 11-13-2018 Methylphenol[2-] 3.00 ug/L N R-60 11-13-2018 Nitropenzene 3.00 ug/L N R-60 11-13-2018 Nitrophenol[4-] 3.00 ug/L N R-60 11-13-2018 Nitrophenol[6-] 3.00 ug/L N R-		┪		0.300	√gn	z	n) In	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Hexachlorobutadiene 3.00 ug/L N R-60 11-13-2018 Hexachlorocyclopentadiene 3.00 ug/L N R-60 11-13-2018 Hexachlorocyclopentadiene 3.00 ug/L N R-60 11-13-2018 Indeno(1,2,3-cd)pyrene 0.300 ug/L N R-60 11-13-2018 Methylnaphthalene[1-] 0.300 ug/L N R-60 11-13-2018 Methylphaphthalene[2-] 0.300 ug/L N R-60 11-13-2018 Methylphenol[2-] 3.00 ug/L N R-60 11-13-2018 Nitropaline[2-] 3.00 ug/L N R-60 11-13-2018 Nitropenzene 3.00 ug/L N R-60 <td></td> <td>\dashv</td> <td></td> <td>3.00</td> <td>ng/L</td> <td>z</td> <td>n</td> <td>UF</td> <td>REG</td> <td>SW-846:8270D</td> <td>SVOC</td>		\dashv		3.00	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Hexachlorocyclopentadiene 3.00 ug/L N R-60 11-13-2018 Hexachlorocthane 3.00 ug/L N R-60 11-13-2018 Indeno(1,2,3-cd)pyrene 0.300 ug/L N R-60 11-13-2018 Methylnaphthalene[1-] 0.300 ug/L N R-60 11-13-2018 Methylpaphthalene[2-] 0.300 ug/L N R-60 11-13-2018 Methylphenol[2-] 3.00 ug/L N R-60 11-13-2018 Methylphenol[2-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[2-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[3-] 3.00 ug/L N R-60 11-13-2018 Nitropenzene 3.00 ug/L N R-60 11-13-2018 Nitropenzene 3.00 ug/L N R-60 11-13-2018 Nitropenzene 3.00 ug/L N R-60		+		3.00	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Hexachloroethane 3.00 ug/L N R-60 11-13-2018 Indeno(1,2,3-cd)pyrene 0.300 ug/L N R-60 11-13-2018 Methylnaphthalene[1-] 0.300 ug/L N R-60 11-13-2018 Methylphenol[2-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[2-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[3-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[4-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[4-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[4-] 3.00 ug/L N R-60		+		3.00	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Indeno(1,2,3-cd)pyrene 0.300 ug/L N R-60 11-13-2018 Methylnaphthalene[1-] 0.300 ug/L N R-60 11-13-2018 Methylnaphthalene[2-] 0.300 ug/L N R-60 11-13-2018 Methylphenol[2-] 3.00 ug/L N R-60 11-13-2018 Methylphenol[3-,4-] 3.70 ug/L N R-60 11-13-2018 Methylphenol[2-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[2-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[3-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[4-] 3.00 ug/L N R-60				3.00	ng/L	Z	n	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Isophorone 3.50 ug/L N R-60 11-13-2018 Methylnaphthalene[1-] 0.300 ug/L N R-60 11-13-2018 Methylphenol[2-] 3.00 ug/L N R-60 11-13-2018 Methylphenol[2-] 3.00 ug/L N R-60 11-13-2018 Methylphenol[2-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[2-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[3-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[4-] 3.00 ug/L N R-60 11-13-201		7		0.300	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Methylnaphthalene[1-] 0.300 ug/L N R-60 11-13-2018 Methylnaphthalene[2-] 0.300 ug/L N R-60 11-13-2018 Methylphenol[2-] 3.00 ug/L N R-60 11-13-2018 Methylphenol[2-] 3.70 ug/L N R-60 11-13-2018 Nitroaniline[2-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[3-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[4-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[3-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[4-] 3.00 ug/L N R-60 <		H		3.50	ng/L	z	D	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Methylnaphthalene[2-] 0.300 ug/L N R-60 11-13-2018 Methylphenol[2-] 3.00 ug/L N R-60 11-13-2018 Methylphenol[2-] 3.70 ug/L N R-60 11-13-2018 Nitroaniline[2-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[4-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[4-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[4-] 3.00 ug/L N R-60 11-13-2018 Nitrophenzene 3.00 ug/L N		\forall		0.300	ng/L	z	O	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Methylphenol[2-] 3.00 ug/L N R-60 11-13-2018 Methylphenol[3-,4-] 3,70 ug/L N R-60 11-13-2018 Nitroaniline[2-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[4-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[4-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[4-] 3.00 ug/L N R-60 11-13-2018 Nitropenzene 3.00 ug/L N R-60 11-13-2018 Nitrophenol[2-] 3.00 ug/L N		1		0.300	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Methylphenol([3-,4-]) 3,70 ug/L N R-60 11-13-2018 Nitroaniline[2-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[4-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[4-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[4-] 3.00 ug/L N R-60 11-13-2018 Nitrophenzene 3.00 ug/L N R-60 11-13-2018 Nitrophenol[2-] 3.00 ug/L N R-60 11-13-2018 Nitrophenol[2-] 3.00 ug/L N R-60 11-13-2018 Nitrophenol[2-] 3.00 ug/L N		_		3.00	ng/L	z	U	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Naphthalene 0,300 ug/L N R-60 11-13-2018 Nitroaniline[2-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[4-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[4-] 3.00 ug/L N R-60 11-13-2018 NitrophenZene 3.00 ug/L N R-60 11-13-2018 NitrophenOl[2-] 3.00 ug/L N R-60 11-13-2018 NitrophenOl[2-] 3.00 ug/L N R-60 11-13-2018 NitrophenOl[2-] 3.00 ug/L N				3,70	l √gn	z	n	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Nitroaniline[2-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[4-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[4-] 3.00 ug/L N R-60 11-13-2018 Nitrophenol[2-] 3.00 ug/L N				0.300	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Nitroaniline[3-] 3.00 ug/L N R-60 11-13-2018 Nitroaniline[4-] 3.00 ug/L N R-60 11-13-2018 Nitrophenol[2-] 3.00 ug/L N R-60 11-13-2018 Nitrophenol[2-] 3.00 ug/L N R-60 11-13-2018 Nitrophenol[2-] 3.00 ug/L N				3.00	l 7/8n	z	n	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Nitroaniline[4-] 3.00 ug/L N R-60 11-13-2018 Nitrophenol[2-] 3.00 ug/L N R-60 11-13-2018 Nitrophenol[2-] 3.00 ug/L N R-60 11-13-2018 Nitrophenol[2-] 3.00 ug/L N		П		3.00	ng/L	z	Ο	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Nitrobenzene 3.00 ug/L N R-60 11-13-2018 Nitrophenol[2-] 3.00 ug/L N R-60 11-13-2018 Nitrophenol[4-] 3.00 ug/L N		_		3.00	l J/Bn	N	n	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Nitrophenol[2-] 3.00 ug/L N R-60 11-13-2018 Nitrophenol[4-] 3.00 ug/L N				3.00	ng/L	Z	n	UF	REG	SW-846:8270D	SVOC
R-60 11-13-2018 Nitrophenol[4-] 3.00 ug/L N		\forall		3.00	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
14 12 200 C 111 2 C C C C C C C C C C C C C C C C		+		3.00	ng/L	z	n	UF	REG	SW-846:8270D	SVOC
K-bu 11-13-2018 Nifrosodiethylamine[N-] 3.00 ug/L N	.19-164059 R-60	11-13-2018		3,00	ng/L	z	Ð	- I	REG	SW-846:8270D	SVOC

Category SVOC SVOC SVOC SVOC SVOC SVOC SVOC SVOC SW-846:8260B SW-846:8260B SW-846:8270D SW-846:8260B SW-846:8270D SW-846:8270D SW-846:8270D SW-846:8260B Sample REG FB REG E. REG REG REG REG REG REG REG Field Prep Code ۳ 片 5 H 5 H 5 5 쁴 느 5 片 4 |5 片 告 告 Ŧ 造 当当 片 片 占 'n 当当 当当 当当 告 Ъ 当 占 4 띩 片 片 Table 1. Analytical Results from Annual Groundwater Sampling at Regional Aquifer Well R-60, November 13, 2018, Condition No. 36 Qualifier \supset \supset Detected z Z z z z z z Z Z z z z z z z z z z ug/L √gn UB/L √gn √gn 1/gn √gn η/gn √gn 1∕Bn √l Ng/I ug/L √g/I ng/I ug/L ng∕L η/βn ng∕L ng∕L ug/L √gn l∕8n l∕gu ng/l l/gn /gn l∕8n ug/l l/gn l∕gu ng/I υg/l √gn √gn ug/I νg/I υg∕l Ug/I l∕gu ug/l Report Result 0.300 0,300 0.300 0.300 0.300 0.300 0,300 0.300 0.300 0.300 0.300 0.300 0.300 0.300 0.300 3.00 3.00 3.00 3.00 3.00 3.00 3.00 3.00 3,00 3.00 3.00 1.50 1.50 15.0 1.50 0.300 1.50 1.50 0.300 3.00 3.00 3.00 2.21 2.74 8.00 Nitroso-di-n-propylamine[N-] Oxybis(1-chloropropane)[2,2 Tetrachlorobenzene[1,2,4,5] Nitrosodimethylamine[N-] Nitroso-di-n-butylamine[N-Tetrachlorophenol[2,3,4,6-Chlorodibromomethane Trichlorobenzene[1,2,4-Bromodichloromethane Trichlorophenol[2,4,5-] Trichlorophenol[2,4,6-] Bromochloromethane Chloro-1,3-butadiene[2 Nitrosopyrrolidine[N-] Pentachlorobenzene Carbon Tetrachloride Pentachlorophenol Chloro-1-propene[3-Butylbenzene[tert-Parameter Name Butylbenzene[sec-Butylbenzene[n-] Carbon Disulfide Bromomethane Chlorobenzene Phenanthrene Bromobenzene Chloroethane Bromoform Chloroform Acrylonitrile Butanone[2-Acetonitrile Butanol[1-] Pyridine Acetone Acrolein Benzene Pyrene Acetone Phenal Sample Date 11-13-2018 Location ID R-60 CAMO-19-164059 CAMO-19-164060 CAMO-19-164059 CAMO-19-164059 CAMO-19-164059 CAMO-19-164059 CAMO-19-164059 CAMO-19-164059 CAMO-19-164059 CAMO-19-164059 CAMO-19-164059 Field Sample ID

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LA-UR-19-20526

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

Method	Category	VOC	VOC	VOC	VOC	VOC	VOC	XOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Lab Method	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B	SW-846:8260B
Sample	Purpose	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG
Field Prep	Code	UF	UF	JUF	UF	٦n	-J	#h	ä	J.	Ę,	'n	in in	Į,	-In	UF	UF	-J	UF	UF	UF	JO	UF	UF	ŋ.	J.	JU	UF	UF	UF	UF	UF	UF	J.	'n	±5	in in	₽.	٦.	UF	JU	- J
Lab	Qualifier	ח	ח	n	כ	b	5	ח	5	כ	b	b	ם	כ	כ	ח	n	n	η	n	ח	n	ס	n	ם כ	n	n	n	n	n	n	n	n	ח	ח	D	ס	D	ס	n	n	ח
	Detected	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	Z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z
	Onits	ng/L	ng/L	ng/L	T/Bn	1/Bn	ng/L	1/Bn	ng/L	ng/L	1/Bn	1/Sn	ng/L	ng/L	1/Bn	ng/L	1/Bn	l J/Bn	l J/Bn	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	J/Bn	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	1/Bn	1/8n	1/Bn	ng/L	1/Bn	J/Bn	ng/L	ng/L	1/8n
Report	Kesult	0.300	0,300	0,300	0.500	0.300	0.300	0.300	0.300	0.300	0,300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	1.50	0.300	0.300	1.50	1.50	15.0	0.300	0,300	1.50	1.50	0.300	1.50	1.00	0:300	1.50	0.300	0.300	0.300	0.300
	Parameter Name	Chloromethane	Chlorotoluene[2-]	Chlorotoluene <u>[</u> 4-]	Dibromo-3-Chloropropane[1,2-]	Dibromoethane[1,2-]	Dibromomethane	Dichlorobenzene[1,2-]	Dichlorobenzene[1,3-]	Dichlorobenzene[1,4-]	Dichlorodifluoromethane	Dichloroethane[1,1-]	Dichloroethane[1,2-]	Dichloroethene[1,1-]	Dichloroethene[cis-1,2-]	Dichloroethene[trans-1,2-]	Dichloropropane[1,2-]	Dichloropropane[1,3-]	Dichloropropane[2,2-]	Dichloropropene[1,1-]	Dichloropropene[cis-1,3-]	Dichloropropene[trans-1,3-]	Diethyl Ether	Ethyl Methacrylate	Ethylbenzene	Hexachlorobutadiene	Hexanone[2-]	lodomethane	Isobutyl alcohol	Isopropylbenzene	Isopropyltoluene[4-]	Methacrylonitrile	Methyl Methacrylate	Methyl tert-Butyl Ether	Methyl-2-pentanone[4-]	Methylene Chloride	Naphthalene	Propionitrile	Propylbenzene[1-]	Styrene	Tetrachloroethane[1,1,1,2-]	Tetrachloroethane[1,1,2,2-]
1	Sample Date	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018	11-13-2018
	-	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60	R-60
Gold Common Distriction	rieid Salliple ID	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059	CAMO-19-164059

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

		1		Report			Lab	Field Prep	Sample		Method
Field Sample ID	Location ID	Location ID Sample Date	Parameter Name	Result	Units	Detected	Qualifier	Code	Purpose	Lab Method	Category
CAMO-19-164059	R-60	11-13-2018	Tetrachloroethene	00:300	ng/L	z	ח	J.O.	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Toluene	0.300	ng/L	z	ם	-H	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Trichloro-1,2,2-trifluoroethane[1,1,2-]	2.00	ng/L	z	ח	J.	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Trichlorobenzene[1,2,3-]	0.300	ng/L	z	ם כ	-J	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Trichlorobenzene[1,2,4-]	0.300	ng/L	z	ם	ħ	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Trichloroethane[1,1,1-]	0.300	ng/L	z	כ כ	5	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Trichloroethane[1,1,2-]	0.300	ng/L	z	כ	JO	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Trichloroethene	0.300	1/Bn	z	כ	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Trichlorofluoromethane	0.300	ng/L	z	5	ďη	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Trichloropropane[1,2,3-]	00:300	1/8n	z	Þ	'n	REG	SW-846:8260B	NOC
CAMO-19-164059	R-60	11-13-2018	Trimethylbenzene[1,2,4-]	0.300	ng/L	z	D	UF	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Trimethylbenzene[1,3,5-]	0.300	ng/L	z	ס	J.	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Vinyl acetate	1.50	ng/L	z	D	J	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Vinyl Chloride	0.300	1/8n	z	ם	JN	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Xylene[1,2-]	0.300	1/Bn	z	ח	'n.	REG	SW-846:8260B	VOC
CAMO-19-164059	R-60	11-13-2018	Xylene[1,3-]+Xylene[1,4-]	0.300	1/8n	z	כ	-J	REG	SW-846:8260B	VOC
CAMO-19-164161	R-60	11-13-2018	HMX	980.0	ng/L	z	ס	'n	REG	SW-846:8330B	LCMS/MS HE
CAMO-19-164161	R-60	11-13-2018	RDX	980.0	1/Bn	z	כ	Ę,	REG	SW-846:8330B	LCMS/MS HE
CAMO-19-164161	R-60	11-13-2018	Trinitrotoluene[2,4,6-]	0.086	ng/L	z	D	an Th	REG	SW-846:8330B	LCMS/MS HE
SAMPLE PURPOSE KEY											

SAMPLE PURPOSE KEY
REG means regular field sample
FD means field duplicate sample

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

a	Sample Date	11/13/2018
b	Sample Time	1108
С	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
	Chain-of custody.	Attached
n	Location Map	Attachment 15

EPC-DO: 19-018						7	ATTACHMENT 14	HME	1T 14											_	LA-UR-19-20526	(0
LANL SMO										-										8 8	COC/Lab Request #:	st #:
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Client Contact:	Lab Agreement #:	nt #:		Site	Site Name:		N3B	N3B LANL												-		
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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID:

12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164161

WORK OPDER

SAMPLE ID:	CAMO	D-19-164	1161				W	ORK C	RDER			
		A: PLAN		AS C	OLL	ECTED				AS PLANNED	AS COLL	ECTED
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PRS ID:		0	<u> </u>				SAMPL CODE:	E TEC	н	GSP		
LOCATION ID:		R-60					FIELD I	PREP:		UF		
LOCATION TY	PE:	OK					FIELD (ас туб	PE:	REG		
TOP DEPTH:	:=				\dashv		SAMPL	E USA	GE:	INV	Ň	/
BOTTOM DEPT	гн: "_	V			V		EXCAV	ATED:			YES / NO /	(NA)
PRIORITY	OF	RDER	CONT	AINER	#	PRE	SERVATI	/E	COI	LECTED Y/N	SPECIAL IN	STRUCTIONS
NA	DP-T	P-8081	1 LITER	GLASS	3		ICE			Y	1	A
V	DP-T	P-8330		TER GLASS	3		ICE			\downarrow		
SAMPLE COM	IMENTS:	Sam	pled:	≈ 40	ft.	from n	nnning	dies	elg	enerator		
LOCATION CO	OMMENT	s: No	ne				v					
FIELD PARAM	ETERS:											
Sample Time	110	_	H:MM:	Casin	g Volu		3	UNIT	ESS	Discharge Rate	3.61	gal/min
issolved Oxygen	5.94	<u>.</u> mg	ı/L	Flow	(in gp	m) 2	5.61	GPM		Groundwater Elevation	5894.44	ft
ridation-Reduction Potential	237.0	2 MV	1		od Pur olume	ge	NA	gal		рН	8.23	su
Purge Volume	126.35				oecific Juctan	ce	126.4	uS/cm	ı	Temperature	22.6	deg C
Total Volume Pumped	220.1	3 gal		Tu	rbidity	2	2.09	NTU				

COLLECTED BY (PRINT): A. VIGIL K. TOW

RELINQUISHED BY (Printed Name) Allisyn Straffic I.J. (Signature)	Date/Time 11/13/18 13:45	(Printed Name) Servood	Date/Time
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(Printed Name)		(Printed Name)	
(Signature)		(Signature)	
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Report Date: 11/05/2018

EPC-DO: 19-018

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENTID:

12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID:	CAMO-19-164	171			WORK C	RDEF	₹:	
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Date Collected (MM/DD/YYY):	11/13/	<u>′18 </u>	0	<u>(</u>	FIELD MATRI	X :	WG	ok
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LOCATION ID:	R-60				FIELD PREP:		F	7.
LOCATION TYP	E:	۷			FIELD QC TY	PE:	REG	
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NA	DP-Ra226+228	1 LITER POLY	4		HNO3		Y	NA
SAMPLE COM	MENTS:							
LOCATION CO								
FIELD PARAME	ETERS:							
Sample Time	HH	:MM Casii	ng Vol	ume	- HNIG	ŒSS	Diecharge Rate	gal/min
Dissolved Oxygen	mg.		(in gp	. 10	15/GAM		Groundwater Elevation	ft
exidation-Reduction Potential	MV	Pen V	od Pali	/ /	gal		рН	SU
Purge Volume	gal	f.	hicker		uS/cm	1	Temperature	deg C
Total Volume Pumped	gal	TI	urbidity	•	NTU			
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DEL INOLIIGUET			Da N/	ate/Time 13/18 3'45	RECEIVED BY (Printed Name (Signature)		her wow	Date/Time 11 1 3 1 8

Report Date: 11/05/2018 EPC-DO: 19-018

RELINQUISHED BY

(Printed Name)

(Signature)

ATTACHMENT 14

RECEIVED BY

(Printed Name)

(Signature)

Date/Time

LA-UR-19-20526 **14479**

Date/Time

Inspection Date:	February 4, 2019	DP #:	1132
		Facility Name:	Radioactive Liquid Waste Treatment Facility
	formation – Scheduling Inspection ction - provide contact information ed: Bob Beers	☐ Unan	nounced Ins pection
Phone Number	: 505-667-7969		
Facility Description Waste Type: D Directions to Facili	om - WW High Strength	491	
Inspection Informa Start Time: 9:00 NMED Inspector(s):		nd Time:	12:00 PM
Verify that NMED presented: Facility Represents	ative(s) present during the	□ No	Bob Beers
Inspection/Discuss Reason for Inspect			

Discussion, Observations and Information Obtained

If "other", describe reason for

inspection:

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

Inspection Report Form Page 1 of 2





Photos Taken? Yes - see attached	▼ No					
Sample Information						
Samples						
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?	▼ 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

EPC-DO: 19-052

LA-UR: 19-21332

Locates Action No.: U1801172

Symbol:

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 <u>Karen.Armijo@nnsa.doe.gov</u>, or Robert S. Beers by telephone at (505) 667-7969 or by email at <u>bbeers@lanl.gov</u> 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

Page 3

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)
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Michael T. Saladen, EPC-CP, saladen@lanl.gov, (E-File)

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Robert S. Beers, EPC-CP, bbeers@lanl.gov, (E-File)

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

EPC-DO: 19-052

LA-UR-19-21332

Date: _____







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

OCT 1 1 2018

EPC-DO-18-365

18-29518

LA-UR: Locates Action No.: U1801172

Date:

Symbol:

GROUND WATER

OCT 1 5 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 RI.WTF 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	RLWCS1 vault	Communication Failure
PLC11_SM776	TA-03-029	RLWCS vault	Communication Failure
PLC14_SM758	TA-03-130	RLWCS yault	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

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 <u>Karen.Armijo@nnsa.doe.gov</u>, or Robert S. Beers by telephone at (505) 667-7969 or by email at <u>bbeers@lanl.gov</u> if you have questions regarding this report.

Sincerely

Taunia S. Van Valkenburg

Group Leader

Sincerely,

Karen E. Armyo '

Permitting and Compliance Program Manager

Ms. Michelle Hunter EPC-DO-18-365

ARG:KEA:MTS:RSB/jdm

Copy: Shelly Lemon, NMED/SWQB, (E-File)
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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)

epc-correspondence@lanl.gov, (E-File)

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







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

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 GROUND WATER
DEC 0 4 2018
BUREAU

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.

Page 2

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.

EPC-DO: 19-052 EPC-DO:18-432 Ms. Michelle Hunter DEC 0 4 2018 Page 3

Please contact Karen E. Armijo by telephone at (505) 665-7314 or by email at <u>Karen.Armijo@nnsa.doe.gov</u>, or Robert S. Beers by telephone at (505) 667-7969 or by email at <u>bbeers@lanl.gov</u> 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)

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Gerald Knutson, NMED/GWQB, Gerald Knutson@state.nm.us, (E-File)

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locatesteam@lanl.gov, (E-File)

epc-correspondence@lanl.gov, (E-File)

Beers, Bob

From:

Romero, Andrew C, NMENV < Andrew C.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 2 0 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.



Ms. Michelle Hunter EPC-DO-19-069

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 <u>Karen.Armijo@nnsa.doe.gov</u>, or Robert S. Beers by telephone at (505) 667-7969 or by email at <u>bbeers@lanl.gov</u> if you have questions regarding this update.

Sincerely,

Enrique Kiki" Torres

Division Leader

Environmental Protection & Compliance

Triad National Security, LLC

ET/KEA/MTS/RSB:jdm

Sincerely,

Karen E. Armijo

Permitting and Compliance Program Manager

National Nuclear Security Administration

U.S. Department of Energy

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

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ATTACHMENT 1

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

EPC-DO: 19-069

LA-UR-19-21981

MAR 2 0 2019

Date:







LA-UR-19-21981
GROUND WATER
NOV 1 9 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 1 9 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.



- 2

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 <u>Karen.Armijo@nnsa.doe.gov</u>, or Robert S. Beers by telephone at (505) 667-7969 or by email at <u>bbeers@lanl.gov</u> 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)

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- 3 -

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ENCLOSURE 1

DP-1132, Verification of Secondary Containment

EPC-DO: 18-403

LA-UR-18-30432

Date: NOV 1 9 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 Tr	eatment:	
M1	Collection system	TA-03, 35, 48, 50, 55, 59
M2		50-250
_M3	Emergency influent storage	50-250
M4		50-01
M5	Microfilter	50-01
_M6	Pressure filters	50-01
M7	Perchlorate ion exchange	50-01
M8		50-01
M10	Effluent storage	50-01
Transura	anic:	
T1	TRU Collection system	TA50, 55
T2	TRU Influent storage	50-66
	TRU Treatment	50-01
T4	TRU Sludge	50-01
T5	TRU Effluent	50-01
Seconda	ry 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).

EPC-DO-18-403

ENCLOSURE 1

LA-UR-18-30432

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.

ENCLOSURE 1

EPC-DO-19-069

ATTACHMENT 1

LA-UR-19-21981

					Vessel			Secondary Containment	inment
	Treatment Unit	Vessel	Location	Capacity (gals.)	Category	Material	Structure	Material	Leak Detection
Main Tr	Main Treatment:								
M	Collection system	Piping (~ 4 miles)	Six TAs	!	In-ground	Polyethylene	Pipe	Polvethvlene	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	1	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
M	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	200	On-ground	Polyethylene	Floor	Concrete	RUF_71A_A1
		Cleaning tanks (2)	50-01-70	200	On-ground	Polyethylene	Floor	Concrete	RUF 71A A1
9W	Pressure filters	Filters (3)	50-01-63	100	Aboveground	Lined Steel	Floor	Concrete	SMP 16 A2
Δ	Perchlorate ion exchange	IX vessels (8)	50-01-16	20	Aboveground	Fiberglass	Floor	Concrete	SMP 16 A2
		тК09 г	50-01-62	10,000	Aboveground	Steel	Floor	Concrete	ı.
₩ W	Primary reverse osmosis	R72 RO unit	50-01-72	40	Aboveground	Steel	Floor	Concrete	RUF_71A_A1
		R72 CIP tank	50-01-72	200	Aboveground	Polyethylene	Floor	Concrete	RUF_71A_A1
		M8 RO unit	50-01-36	09	Aboveground	Fiberglass	Floor	Concrete	
		M8 CIP tank	50-01-36	300	Aboveground	Polyethylene	Floor	Concrete	L
M	Effluent storage	N.Frac, S.Frac	50-01-34B	20,000	Aboveground	Steel	Floor	Concrete	SMP_34B_A1
Transuranic:	ınic:								
T1	TRU Collection system	Piping (~1 mile)	TA50, TA55	[In-ground	PVDF, PP	Pipe	PVDF, PP	CTL_WM57_A1
		Vaults (1)	50-201	Í	In-ground	Concrete	Floor	Concrete	CTL_WM57_A1
T2	TRU Influent storage	Acid tank	99-09	3,900	Aboveground	Steel	Floor	Concrete	CTL_WM66_A4
Annual Control of Control		Caustic tank	50-66	3,000	Aboveground	Steel	Floor	Concrete	CTL_WM66_A4
Т3	TRU Treatment	TK1	50-01-60	006	Aboveground	Steel	Floor	Concrete	ш
		TK2	50-01-60	800	Aboveground	Fiberglass	Floor	Concrete	u.
14	TRU Sludge	TK-7A	50-01-60A	006	Aboveground	Steel	Floor	Concrete	L.
TS	TRU Effluent	TK3	50-01-60	1,000	Aboveground	Fiberglass	Floor	Concrete	u.

Notes: See Page 6

ENCLOSURE 1

Table 2: RLWTF Vessels and Secondary Containment (conduded)

				Vessel			Secondary Containment	ainment
Treatment Unit	Vessel	Location	Capacity (gals.)	Category	Material	Structure	Material	acitated Jeel
Secondary Treatment:								Topical Action
S1 Secondary reverse osmosis	RO vessel	50-01-24	10	Aboveground	Fiberglass	Floor	Concrete	ш
	TK25	50-01-24	300		Polyethylene	Floor	Concrete	. ш
	TK73	50-01-70	3,700		Steel	Floor	Concrete	RUF 714 A1
S2 Rotary vacuum filter	Vacuum filter	50-01-116	006	1	S.Steel	Floor	Concrete	SMP 16 A2
	TK08	50-01-61	8,000	Aboveground	Steel	Floor	Concrete	! ! !
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:

- Vessel Descriptions, per definition CC of DP-1132: Aboveground, On-ground, In-ground.
 - When multiple tanks or vessels are identified, capacity is for each vessel.
- Collection systems: Each access vault is equipped with a sump and leak detection probe-alarm
- Collection system: 1 7 6 4
- 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.
 - Location: Technical Area-Bldg-Room
 - F means a leak detection system for the listed containment needs to be installed. 6. 5.

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