

MICHELLE LUJAN GRISHAM  
Governor

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](http://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

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.

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Taunia S. Van V  
Group Leader  
Environmental P  
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Los Alamos, NM

PS Form 3800, April 2015 PSN 7530-02-000-9000

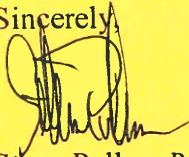


The information submitted in the workplan satisfies Condition #30 of the Discharge Permit. The installation of the soil moisture monitoring system must be implemented as described in the workplan. The Permittees shall take every precaution to preclude moisture from entering the boreholes during construction.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

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Michael T. Saladen, EPC-CP  
Robert S. Beers, EPC-CP  
Steven G. Pearson, EPC-CP









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Phone (505) 827-2900 Fax (505) 827-2965  
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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

**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 includes 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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| City, State  | Environmental Protection & Compliance |
|  | Triad National Security, LLC          |
|  | Po Box 1663, K490                     |
|  | Los Alamos, NM 87545                  |
| PS Form 3800, April 2015 PSN 7530-02-000-9000                          |                                       |



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.

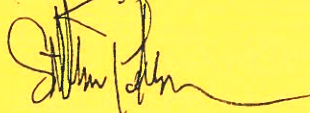
The alluvial groundwater monitoring wells shall be installed in accordance with the attachment *Ground Water Discharge Permit Monitoring Well Construction and Abandonment Conditions*, Revision 1.1, March 2011 (copy enclosed), and the approved work plan schedule. Construction and lithologic logs for the 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 Kielling, NMED/HWB  
Michael W. Hazen, ALDESHQSS  
William H. Schwettnann, 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 30 2019**

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

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

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

Dear Ms. Hunter and Ms. Lemon:

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

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

Sincerely,

Taunia S. Van Valkenburg  
Group Leader  
Environmental Protection & Compliance

TSV/MTS/BMI:jdm

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

Copy: Nancy Williams, USEPA/Region 6, [williams.nancy@epa.gov](mailto:williams.nancy@epa.gov), (E-File)  
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# **Attachment 1**

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

EPC-DO: 19-021

LA-UR-19-20574

Date: JAN 30 2019

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

| Occurrence Date | Type of Release | Location  | Organization | Comments  |       |
|-----------------|-----------------|---|--------------|---|-------|
| 10/2/2018       | Potable Water   | TA-35-88; Fire Suppression System                           | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. | 14355 |
| 10/2/2018       | Potable Water   | TA-55-10; Fire Suppression System - Discharge Point-1469-59 | TA-55        | ~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/2/2018       | Potable Water   | TA-55-11; Fire Suppression System - Discharge Point-1458-57 | TA-55        | ~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/3/2018       | Potable Water   | TA-03-29-09; Fire Suppression System                        | TA-55        | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/3/2018       | Potable Water   | TA-03-29-05; Fire Suppression System                        | TA-55        | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/3/2018       | Potable Water   | TA-3-1690; Fire Suppression System-SPW                      | LOG-FP       | ~500 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/3/2018       | Potable Water   | TA-22; Hydrant-422  | UI           | ~2,800 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.       |       |
| 10/3/2018       | Potable Water   | TA-22; Hydrant-903  | UI           | ~2,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.       |       |
| 10/4/2018       | Potable Water   | TA-03-29-07; Fire Suppression System                        | TA-55        | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/4/2018       | Potable Water   | TA-53-54; Fire Suppression System                           | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/4/2018       | Potable Water   | TA-53-988; Fire Suppression System                          | LOG-FP       | ~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/4/2018       | Potable Water   | TA-16-180; Fire Suppression System                          | LOG-FP       | ~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/4/2018       | Potable Water   | TA-33; Hydrant-456  | UI           | ~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.       |       |
| 10/5/2018       | Potable Water   | TA-03-29-03; Fire Suppression System                        | TA-55        | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/5/2018       | Potable Water   | TA-3-521; Fire Suppression System-SPW                       | LOG-FP       | ~275 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/9/2018       | Potable Water   | TA-55-11; Fire Suppression System - Discharge Point-1458-57 | TA-55        | ~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/9/2018       | Potable Water   | TA-55-10; Fire Suppression System - Discharge Point-1469-59 | TA-55        | ~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/9/2018       | Potable Water   | TA-35-88; Fire Suppression System                           | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/9/2018       | Potable Water   | TA-16-969; Fire Suppression System-SPW                      | LOG-FP       | ~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/9/2018       | Potable Water   | TA-16-202; Fire Suppression System-SPW                      | LOG-FP       | ~275 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/9/2018       | Potable Water   | TA-46-535; Fire Suppression System-SPW                      | LOG-FP       | ~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |



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

| Occurrence Date | Type of Release | Location  | Organization | Comments  | 14356 |
|-----------------|-----------------|---|--------------|---|-------|
| 10/10/2018      | Potable Water   | TA-55-04; Fire Suppression System - Discharge Point-111 | TA-55        | ~70 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/10/2018      | Potable Water   | TA-55-04; Fire Suppression System - Discharge Point-306 | TA-55        | ~80 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/10/2018      | Potable Water   | TA-55-04; Fire Suppression System - North               | TA-55        | ~20 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/10/2018      | Potable Water   | TA-55-04; Fire Suppression System - South               | TA-55        | ~120 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/10/2018      | Potable Water   | TA-46-535; Fire Suppression System-SPW                  | LOG-FP       | ~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/10/2018      | Potable Water   | TA-16-450; Fire Suppression System-SPW                  | LOG-FP       | ~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/10/2018      | Potable Water   | TA-9-21; Fire Suppression System-SPW                    | LOG-FP       | ~375 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/10/2018      | Potable Water   | TA-39; Hydrant  | UI           | ~4,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.       |       |
| 10/11/2018      | Potable Water   | TA-16-261; Fire Suppression System-SPW                  | LOG-FP       | ~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/11/2018      | Potable Water   | TA-16-263; Fire Suppression System-SPW                  | LOG-FP       | ~325 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/11/2018      | Potable Water   | TA-3-2322; Fire Suppression System-SPW                  | LOG-FP       | ~325 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/11/2018      | Potable Water   | TA-16-218; Fire Suppression System-SPW                  | LOG-FP       | ~275 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/11/2018      | Potable Water   | TA-16-180; Fire Suppression System                      | LOG-FP       | ~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/11/2018      | Potable Water   | TA-53-988; Fire Suppression System                      | LOG-FP       | ~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/11/2018      | Potable Water   | TA-53-54; Fire Suppression System                       | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/11/2018      | Potable Water   | TA-40; Hydrant-533                                      | UI           | ~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.       |       |
| 10/12/2018      | Potable Water   | TA-16-304; Fire Suppression System-SPW                  | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/12/2018      | Potable Water   | TA-16-411; Fire Suppression System-SPW                  | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/12/2018      | Potable Water   | TA-16-304; Fire Suppression System-SPW                  | LOG-FP       | ~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/12/2018      | Potable Water   | TA-48-01; Fire Suppression System-SPW                   | LOG-FP       | ~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/12/2018      | Potable Water   | TA-33-114; Fire Suppression System-SPW                  | LOG-FP       | ~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |

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

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



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

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

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| Occurrence Date | Type of Release | Location   | Organization | Comments  | 14359 |
|-----------------|-----------------|--|--------------|---|-------|
| 10/18/2018      | Potable Water   | TA-55-02; Fire Suppression System - Discharge<br>Point-1391-2    | TA-55        | ~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/18/2018      | Potable Water   | TA-55-28; Fire Suppression System - Discharge<br>Point-1466-N    | TA-55        | ~40 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/18/2018      | Potable Water   | TA-55-03; Fire Suppression System - Discharge<br>Point-1393      | TA-55        | ~40 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/18/2018      | Potable Water   | TA-55-03; Fire Suppression System - Discharge<br>Point-1393-1    | TA-55        | ~25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/18/2018      | Potable Water   | TA-55-28; Fire Suppression System - Discharge<br>Point-1466      | TA-55        | ~40 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/18/2018      | Potable Water   | TA-55-02; Fire Suppression System - Discharge<br>Point-1391      | TA-55        | ~20 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/18/2018      | Potable Water   | TA-55-02; Fire Suppression System - Discharge<br>Point-1391      | TA-55        | ~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/18/2018      | Potable Water   | TA-55-114; Fire Suppression System - Discharge<br>Point-1252-2   | TA-55        | ~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/18/2018      | Potable Water   | TA-16-180; Fire Suppression System                               | LOG-FP       | ~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/18/2018      | Potable Water   | TA-55-142; Fire Suppression System - Discharge<br>Point-1929-210 | TA-55        | ~5 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 10/18/2018      | Potable Water   | TA-55-114; Fire Suppression System - Discharge<br>Point-1252     | TA-55        | ~5 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 10/18/2018      | Potable Water   | TA-55-142; Fire Suppression System - Discharge<br>Point-1929     | TA-55        | ~30 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/18/2018      | Potable Water   | TA-8-22; Fire Suppression System-SPW                             | LOG-FP       | ~500 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/18/2018      | Potable Water   | TA-3-132; Fire Suppression System-SPW                            | LOG-FP       | ~700 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/19/2018      | Potable Water   | TA-16-260; Fire Suppression System-SPW                           | LOG-FP       | ~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/22/2018      | Potable Water   | TA-16-207; Fire Suppression System-SPW                           | LOG-FP       | ~650 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/22/2018      | Potable Water   | TA-3-440; Fire Suppression System-SPW                            | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/22/2018      | Potable Water   | TA-3-261; Fire Suppression System-SPW                            | LOG-FP       | ~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/23/2018      | Potable Water   | TA-55-11; Fire Suppression System - Discharge<br>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<br>Point-1469-59   | TA-55        | ~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/23/2018      | Potable Water   | TA-35-88; Fire Suppression System                                | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |

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| Occurrence Date | Type of Release | Location  | Organization | Comments  | 14360 |
|-----------------|-----------------|---|--------------|---|-------|
| 10/23/2018      | Potable Water   | TA-16-207; Fire Suppression System-SPW                      | LOG-FP       | ~500 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/23/2018      | Potable Water   | TA-16-267; Fire Suppression System-SPW                      | LOG-FP       | ~450 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/23/2018      | Potable Water   | TA-3-508; Fire Suppression System-SPW                       | LOG-FP       | ~400 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/25/2018      | Potable Water   | TA-55-371; Fire Suppression System - Discharge Point-904    | TA-55        | ~25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/25/2018      | Potable Water   | TA-55-371; Fire Suppression System - Discharge Point-1445   | TA-55        | ~25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/25/2018      | Potable Water   | TA-53-54; Fire Suppression System                           | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/25/2018      | Potable Water   | TA-53-988; Fire Suppression System                          | LOG-FP       | ~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/25/2018      | Potable Water   | TA-16-180; Fire Suppression System                          | LOG-FP       | ~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/26/2018      | Potable Water   | TA-3-1819; Fire Suppression System-SPW                      | LOG-FP       | ~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/26/2018      | Potable Water   | TA-46-30; Fire Suppression System-SPW                       | LOG-FP       | ~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/26/2018      | Potable Water   | TA-46-31; Fire Suppression System-SPW                       | LOG-FP       | ~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/26/2018      | Potable Water   | TA-46-32; Fire Suppression System-SPW                       | LOG-FP       | ~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/28/2018      | Potable Water   | TA-54-38; Fire Suppression System                           | TA-55        | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/29/2018      | Potable Water   | TA-3-32; Fire Suppression System-SPW                        | LOG-FP       | ~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/29/2018      | Potable Water   | TA-46-158; Fire Suppression System-SPW                      | LOG-FP       | ~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/29/2018      | Potable Water   | TA-46-75; Fire Suppression System-SPW                       | LOG-FP       | ~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/29/2018      | Potable Water   | TA-46-77; Fire Suppression System-SPW                       | LOG-FP       | ~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/29/2018      | Potable Water   | TA-46-154; Fire Suppression System-SPW                      | LOG-FP       | ~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 10/29/2018      | Potable Water   | TA-55-371; Fire Suppression System - Discharge Point-904    | TA-55        | ~25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/29/2018      | Potable Water   | TA-55-371; Fire Suppression System - Discharge Point-1445   | TA-55        | ~25 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/30/2018      | Potable Water   | TA-55-11; Fire Suppression System - Discharge Point-1458-57 | TA-55        | ~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |



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| Occurrence Date | Type of Release | Location  | Organization | Comments   | 14361 |
|-----------------|-----------------|---|--------------|--|-------|
| 10/30/2018      | Potable Water   | TA-55-10; Fire Suppression System - Discharge Point-1469-59 | TA-55        | ~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/30/2018      | Potable Water   | TA-35-88; Fire Suppression System                           | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/30/2018      | Potable Water   | TA-3-123; Fire Suppression System-SPW                       | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/30/2018      | Potable Water   | TA-46-200; Fire Suppression System-SPW                      | LOG-FP       | ~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/30/2018      | Potable Water   | TA-46-250; Fire Suppression System-SPW                      | LOG-FP       | ~325 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 10/30/2018      | Potable Water   | TA-46-161; Fire Suppression System-SPW                      | LOG-FP       | ~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 11/1/2018       | Potable Water   | TA-33-114; Fire Suppression System-SPW                      | LOG-FP       | ~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 11/1/2018       | Potable Water   | TA-3-422; Fire Suppression System-SPW                       | LOG-FP       | ~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 11/1/2018       | Potable Water   | TA-53-54; Fire Suppression System                           | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 11/1/2018       | Potable Water   | TA-53-988; Fire Suppression System                          | LOG-FP       | ~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 11/1/2018       | Potable Water   | TA-16-180; Fire Suppression System                          | LOG-FP       | ~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/1/2018       | Potable Water   | TA-03-29 NW; Fire Suppression System                        | TA-55        | ~4,500 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 11/1/2018       | Potable Water   | TA-03-29 SE; Fire Suppression System                        | TA-55        | ~4,500 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 11/5/2018       | Potable Water   | TA-48-01; Fire Suppression System-SPW                       | LOG-FP       | ~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 11/5/2018       | Potable Water   | TA-60-245; Fire Suppression System-SPW                      | LOG-FP       | ~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 11/5/2018       | Potable Water   | TA-36-01; Water Line  | UI           | ~900 gallons of potable water discharged to the environment from a water line leak at TA-36-01. The water line was isolated upon discovery to stop the discharge and repairs were completed. The release did not reach a watercourse, cause erosion, or adversely impact any SWMUs or AOCs.      |       |
| 11/5/2018       | Potable Water   | TA-3-3093; Fire Suppression System-SPW                      | LOG-FP       | ~275 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 11/5/2018       | Potable Water   | TA-49-153; Water Line                                       | UI           | ~3,000 gallons of potable water discharged from a broken water line near TA-49-153. The water line was isolated upon discovery of the release to stop the discharge and repairs were completed. The discharge did not cause erosion, reach a watercourse, or adversely impact any SWMUs or AOCs. |       |
| 11/6/2018       | Potable Water   | TA-55-11; Fire Suppression System - Discharge Point-1458-57 | TA-55        | ~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |

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| Occurrence Date | Type of Release | Location   | Organization | Comments  | 14362 |
|-----------------|-----------------|--|--------------|---|-------|
| 11/6/2018       | Potable Water   | TA-55-10; Fire Suppression System - Discharge<br>Point-1469-59 | TA-55        | ~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/6/2018       | Potable Water   | TA-54-38; Fire Suppression System                              | TA-55        | ~5,000 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system. |       |
| 11/6/2018       | Potable Water   | TA-35-88; Fire Suppression System                              | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/6/2018       | Potable Water   | TA-48-01; Fire Suppression System-SPW                          | LOG-FP       | ~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/7/2018       | Potable Water   | TA-55-10; Fire Suppression System - Discharge<br>Point-1469-59 | TA-55        | ~60 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.    |       |
| 11/7/2018       | Potable Water   | TA-55-11; Fire Suppression System - Discharge<br>Point-1458-47 | TA-55        | ~60 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.    |       |
| 11/7/2018       | Potable Water   | TA-48-01; Fire Suppression System-SPW                          | LOG-FP       | ~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/7/2018       | Potable Water   | TA-54-38; Fire Suppression System                              | TA-55        | ~80 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.    |       |
| 11/7/2018       | Potable Water   | TA-63-147; Fire Suppression System                             | TA-55        | ~100 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/7/2018       | Potable Water   | TA-22; Hydrant-422   | UI           | ~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.         |       |
| 11/7/2018       | Potable Water   | TA-22; Hydrant-903   | UI           | ~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.         |       |
| 11/7/2018       | Potable Water   | TA-33; Hydrant-456   | UI           | ~4,000 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.         |       |
| 11/8/2018       | Potable Water   | TA-63-147; Fire Suppression System                             | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/8/2018       | Potable Water   | TA-53-988; Fire Suppression System                             | LOG-FP       | ~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/8/2018       | Potable Water   | TA-16-180; Fire Suppression System                             | LOG-FP       | ~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.    |       |
| 11/8/2018       | Potable Water   | TA-03-141; Fire Suppression System-SPW                         | LOG-FP       | ~375 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/8/2018       | Potable Water   | TA-39; Hydrant   | UI           | ~4,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.         |       |
| 11/8/2018       | Potable Water   | TA-53-54; Fire Suppression System                              | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/9/2018       | Potable Water   | TA-15; Hydrant-536   | UI           | ~3,000 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.         |       |
| 11/9/2018       | Potable Water   | TA-15; Hydrant-932   | UI           | ~3,000 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.         |       |
| 11/9/2018       | Potable Water   | TA-15; Hydrant-171   | UI           | ~2,700 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.         |       |

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| Occurrence Date | Type of Release | Location  | Organization | Comments   |       |
|-----------------|-----------------|---|--------------|--|-------|
| 11/13/2018      | Potable Water   | TA-55-11; Fire Suppression System - Discharge Point-1458-57 | TA-55        | ~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  | 14363 |
| 11/13/2018      | Potable Water   | TA-55-10; Fire Suppression System - Discharge Point-1469-59 | TA-55        | ~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 11/13/2018      | Potable Water   | TA-16-260; Fire Suppression System-SPW                      | LOG-FP       | ~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 11/13/2018      | Potable Water   | TA-9-29; Fire Suppression System-SPW                        | LOG-FP       | ~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 11/13/2018      | Potable Water   | TA-6-124; Fire Suppression System-SPW                       | LOG-FP       | ~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 11/13/2018      | Potable Water   | TA-46; Hydrant-673  | UI           | ~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.  |       |
| 11/13/2018      | Potable Water   | TA-3-410; Fire Suppression System-SPW                       | LOG-FP       | ~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 11/13/2018      | Potable Water   | TA-3-1411; Fire Suppression System-SPW                      | LOG-FP       | ~375 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 11/14/2018      | Potable Water   | TA-55-04; Fire Suppression System - Discharge Point-111     | TA-55        | ~90 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/14/2018      | Potable Water   | TA-55-04; Fire Suppression System - Discharge Point-306     | TA-55        | ~90 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/14/2018      | Potable Water   | TA-55-04; Fire Suppression System - North                   | TA-55        | ~20 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/14/2018      | Potable Water   | TA-55-04; Fire Suppression System - South                   | TA-55        | ~90 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/14/2018      | Potable Water   | TA-51; Water Line   | UI           | ~900 gallons of potable water discharged to the environment from a water line leak at TA-51. The water line was isolated upon discovery to stop the discharge and repairs were completed. The release did not reach a watercourse, cause erosion, or adversely impact any SWMUs or AOCs. |       |
| 11/14/2018      | Potable Water   | TA-8-70; Fire Suppression System-SPW                        | LOG-FP       | ~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 11/14/2018      | Potable Water   | TA-9-29; Fire Suppression System-SPW                        | LOG-FP       | ~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 11/14/2018      | Potable Water   | TA-3-2327; Fire Suppression System-SPW                      | LOG-FP       | ~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 11/14/2018      | Potable Water   | TA-3-2010; Fire Suppression System-SPW                      | LOG-FP       | ~375 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 11/14/2018      | Potable Water   | TA-63-147; Fire Suppression System                          | TA-55        | ~80 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/14/2018      | Potable Water   | TA-40; Hydrant-533  | UI           | ~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.  |       |
| 11/15/2018      | Potable Water   | TA-53-54; Fire Suppression System                           | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |

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



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

| Occurrence Date | Type of Release | Location  | Organization | Comments  | 14365 |
|-----------------|-----------------|---|--------------|---|-------|
| 11/26/2018      | Potable Water   | TA-40-23; Fire Suppression System-SPW                       | LOG-FP       | ~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/26/2018      | Potable Water   | TA-03; Water Line   | UI           | ~500 gallons of potable water discharged to the environment when a water line was inadvertently struck in a construction project. The water line was isolated upon discovery to stop the discharge and repairs were completed. The release did not cause erosion, reach a watercourse, or adversely impact any SWMUs or AOCs. |       |
| 11/27/2018      | Potable Water   | TA-55-11; Fire Suppression System - Discharge Point-1458-57 | TA-55        | ~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/27/2018      | Potable Water   | TA-55-10; Fire Suppression System - Discharge Point-1469-59 | TA-55        | ~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/27/2018      | Potable Water   | TA-35-88; Fire Suppression System                           | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/27/2018      | Potable Water   | TA-3-40; Fire Suppression System-SPW                        | LOG-FP       | ~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/27/2018      | Potable Water   | TA-3-1076; Fire Suppression System-SPW                      | LOG-FP       | ~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/27/2018      | Potable Water   | TA-3-562; Fire Suppression System-SPW                       | LOG-FP       | ~225 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/27/2018      | Potable Water   | TA-3-316; Fire Suppression System-SPW                       | LOG-FP       | ~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/27/2018      | Potable Water   | TA-22-34; Fire Suppression System-SPW                       | LOG-FP       | ~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/28/2018      | Potable Water   | TA-3-494; Fire Suppression System-SPW                       | LOG-FP       | ~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/28/2018      | Potable Water   | TA-3-40; Fire Suppression System-SPW                        | LOG-FP       | ~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/28/2018      | Potable Water   | TA-63-147; Fire Suppression System                          | TA-55        | ~80 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 11/29/2018      | Potable Water   | TA-63-64; Fire Suppression System                           | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/29/2018      | Potable Water   | TA-53-988; Fire Suppression System                          | LOG-FP       | ~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 11/29/2018      | Potable Water   | TA-16-180; Fire Suppression System                          | LOG-FP       | ~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/3/2018       | Potable Water   | TA-3-1498; Fire Suppression System-SPW                      | LOG-FP       | ~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 12/3/2018       | Potable Water   | TA-46-335; Fire Suppression System-SPW                      | LOG-FP       | ~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 12/4/2018       | Potable Water   | TA-55-11; Fire Suppression System - Discharge Point-1458-57 | TA-55        | ~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 12/4/2018       | Potable Water   | TA-55-10; Fire Suppression System - Discharge Point-1469-59 | TA-55        | ~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |

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

| Occurrence Date | Type of Release | Location                               | Organization | Comments   | 14366 |
|-----------------|-----------------|--|--------------|--|-------|
| 12/4/2018       | Potable Water   | TA-35-126; Water Line                  | STO          | ~40 gallons of potable water discharged to the environment when a water line at TA-35-126 broke. The water line was isolated upon discovery to stop the discharge and repairs were completed. The release did not cause erosion, reach a watercourse, or adversely impact any SWMUs or AOCs. |       |
| 12/4/2018       | Potable Water   | TA-35-88; Fire Suppression System      | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/4/2018       | Potable Water   | TA-53-365; Fire Suppression System-SPW | LOG-FP       | ~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/4/2018       | Potable Water   | TA-3-38; Fire Suppression System-SPW   | LOG-FP       | ~775 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/5/2018       | Potable Water   | TA-3-38; Fire Suppression System-SPW   | LOG-FP       | ~775 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/5/2018       | Potable Water   | TA-22; Hydrant-422                     | UI           | ~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.  |       |
| 12/5/2018       | Potable Water   | TA-22; Hydrant-903                     | UI           | ~3,500 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.  |       |
| 12/6/2018       | Potable Water   | TA-53-54; Fire Suppression System      | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/6/2018       | Potable Water   | TA-53-988; Fire Suppression System     | LOG-FP       | ~750 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/6/2018       | Potable Water   | TA-16-180; Fire Suppression System     | LOG-FP       | ~50 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.   |       |
| 12/6/2018       | Potable Water   | TA-16-192; Fire Suppression System-SPW | LOG-FP       | ~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/6/2018       | Potable Water   | TA-33; Hydrant-456                     | UI           | ~2,700 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.  |       |
| 12/7/2018       | Potable Water   | TA-22-34; Fire Suppression System-SPW  | LOG-FP       | ~450 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/7/2018       | Potable Water   | TA-15-564; Fire Suppression System-SPW | LOG-FP       | ~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/7/2018       | Potable Water   | TA-15-312; Fire Suppression System-SPW | LOG-FP       | ~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/7/2018       | Potable Water   | TA-15; Hydrant-536                     | UI           | ~3,100 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.  |       |
| 12/7/2018       | Potable Water   | TA-15; Hydrant-932                     | UI           | ~2,900 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.  |       |
| 12/7/2018       | Potable Water   | TA-15; Hydrant-171                     | UI           | ~3,300 gallons of dechlorinated potable water was discharged to the environment from a hydrant flow test.  |       |
| 12/10/2018      | Potable Water   | TA-22-34; Fire Suppression System-SPW  | LOG-FP       | ~450 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/10/2018      | Potable Water   | TA-3-1400; Fire Suppression System-SPW | LOG-FP       | ~300 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |

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

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

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

| Occurrence Date | Type of Release | Location  | Organization | Comments   | 14368 |
|-----------------|-----------------|---|--------------|--|-------|
| 12/14/2018      | Potable Water   | TA-3-2009; Fire Suppression System-SPW                      | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/14/2018      | Potable Water   | TA-3-2008; Fire Suppression System-SPW                      | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/14/2018      | Potable Water   | TA-3-2007; Fire Suppression System-SPW                      | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/14/2018      | Potable Water   | TA-3-2006; Fire Suppression System-SPW                      | LOG-FP       | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/14/2018      | Potable Water   | TA-16-267; Fire Suppression System                          | WFO          | ~3 gallons of potable water discharged from the fire suppression system at TA-16-267 due to a pressure surge. The discharge was stopped upon discovery of the release and did not cause erosion, reach a watercourse, or adversely impact any SWMUs or AOCs. |       |
| 12/15/2018      | Potable Water   | TA-3-680; Water Line  | UI           | ~900 gallons of dechlorinated potable water was discharged to the environment while connecting a water line.   |       |
| 12/15/2018      | Potable Water   | TA-46-119; Water Line                                       | UI           | ~3,500 gallons of dechlorinated potable water was discharged to the environment while connecting a water line.   |       |
| 12/16/2018      | Potable Water   | TA-46-778; Water Line                                       | UI           | ~4,500 gallons of dechlorinated potable water was discharged to the environment while connecting a water line.   |       |
| 12/16/2018      | Potable Water   | TA-46-778; Water Line                                       | UI           | ~4,000 gallons of dechlorinated potable water was discharged to the environment while connecting a water line.   |       |
| 12/17/2018      | Potable Water   | TA-3-29-2; Fire Suppression System                          | TA-55        | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/17/2018      | Potable Water   | TA-3-29-7; Fire Suppression System                          | TA-55        | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/17/2018      | Potable Water   | TA-16-200; Fire Suppression System-SPW                      | LOG-FP       | ~350 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/17/2018      | Potable Water   | TA-53-02; Fire Suppression System-SPH                       | LOG-FP       | ~400 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/17/2018      | Potable Water   | TA-63-144; Fire Suppression System                          | TA-55        | ~600 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/18/2018      | Potable Water   | TA-55-11; Fire Suppression System - Discharge Point-1458-57 | TA-55        | ~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/18/2018      | Potable Water   | TA-55-10; Fire Suppression System - Discharge Point-1469-59 | TA-55        | ~256 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/18/2018      | Potable Water   | TA-3-29-1; Fire Suppression System                          | TA-55        | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/18/2018      | Potable Water   | TA-3-29-4; Fire Suppression System                          | TA-55        | ~200 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/18/2018      | Potable Water   | TA-60-17; Fire Suppression System-SPW                       | LOG-FP       | ~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |
| 12/18/2018      | Potable Water   | TA-60-02; Fire Suppression System-SPW                       | LOG-FP       | ~250 gallons of dechlorinated potable water was discharged to the environment from the fire suppression system.  |       |



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

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



***Environmental Protection & Compliance Division  
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*Symbol:* EPC-DO-19-018  
*LA-UR:* 19-20526  
*Locates Action No.:* U1801172  
*Date:* **JAN 31 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 1<sup>st</sup> 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 1<sup>st</sup> 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.

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### **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**.

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**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.

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**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.
-

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**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.

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**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.

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**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.

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**Condition No. 29: Effluent Sampling**

*The Permittees shall sample and analyze effluent waste streams discharged to Outfall 051, SET, and MES.*

- *Treated effluent samples shall be collected once per calendar month for any month in which a discharge occurs to Outfall 051.*
  - ✓ No treated effluent was discharged to Outfall 051 during the monitoring period.
- *Treated effluent samples shall be collected once per calendar month for any month in which a discharge occurs to the MES or SET. The Permittees shall collect a grab sample of treated effluent which shall be analyzed for TKN, NO<sub>3</sub>-N, TDS, Cl, F and perchlorate.*
  - ✓ No treated effluent was discharged to the SET during the monitoring period.
  - ✓ Analytical results from sampling treated effluent discharged to the MES on September 24, 2018, were not available in time for submittal in the third quarter monitoring report (EPC-DO-18-375). The results for TKN, NO<sub>3</sub>+NO<sub>2</sub>-N, TDS, Cl, F, and perchlorate are provided in **Attachment 9, Table 1**. All results were less than the effluent limits specified in permit Condition No. 17.

**Condition No. 29: Effluent Sampling (cont)**

- ✓ Monthly sampling of treated effluent discharged to the MES was conducted on October 3, November 7, and December 5, 2018, for TKN, NO<sub>3</sub>+NO<sub>2</sub>-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 3<sup>rd</sup> 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.

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**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.

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**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, NO<sub>3</sub>-N, TDS, Cl, F and perchlorate. The Permittees shall prepare ground water monitoring reports describing, in detail, the sampling and analytical methods used. The ground water monitoring report shall be submitted to NMED with the quarterly monitoring report required in this Discharge Permit.*

- *Replacement Alluvial Wells #1 and #2 Quarterly.*
- ✓ A work plan for the installation of two replacement monitoring wells was submitted to NMED on November 19, 2018 (EPC-DO-18-414). Following NMED approval of the plan, the replacement alluvial wells will be installed. Sampling will begin following well installation.



- *MCOI-6 Quarterly.*
  - ✓ **Attachment 10** provides the complete groundwater monitoring report, including Chain-of-Custody and analytical results, from the quarterly sampling of perched/intermediate groundwater monitoring well MCOI-6 on November 8, 2018. Quarterly results for TKN, NO<sub>3</sub>+NO<sub>2</sub>-N, TDS, chloride, and fluoride are provided in **Table 1**. All results from the November 8<sup>th</sup> sampling at MCOI-6 were below NMWQCC Regulation 3103 Ground Water Standards (20.6.2.3103 NMAC) with the exception of the following:
    - Nitrate-Nitrite as Nitrogen (NO<sub>3</sub>+NO<sub>2</sub>-N) was detected at a concentration of 11.2 mg/L; the NMWQCC Regulation 3103 Ground Water Standard is 10 mg/L. The average NO<sub>3</sub>+NO<sub>2</sub>-N concentration at MCOI-6 during the 5-yr period from 2014 through 2018 was 9.0 mg/L. The maximum NO<sub>3</sub>+NO<sub>2</sub>-N concentration during the referenced period was 11.5 mg/L. Detections of NO<sub>3</sub>+NO<sub>2</sub>-N at MCOI-6 at concentrations greater than the ground water standard were previously identified and reported to NMED. Monitoring well MCOI-6 will continue to be routinely sampled for NO<sub>3</sub>+NO<sub>2</sub>-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 to 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**.
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**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.

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

Sincerely,



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

Sincerely,



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

ET/KEA/MTS/RSB:jdm

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



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

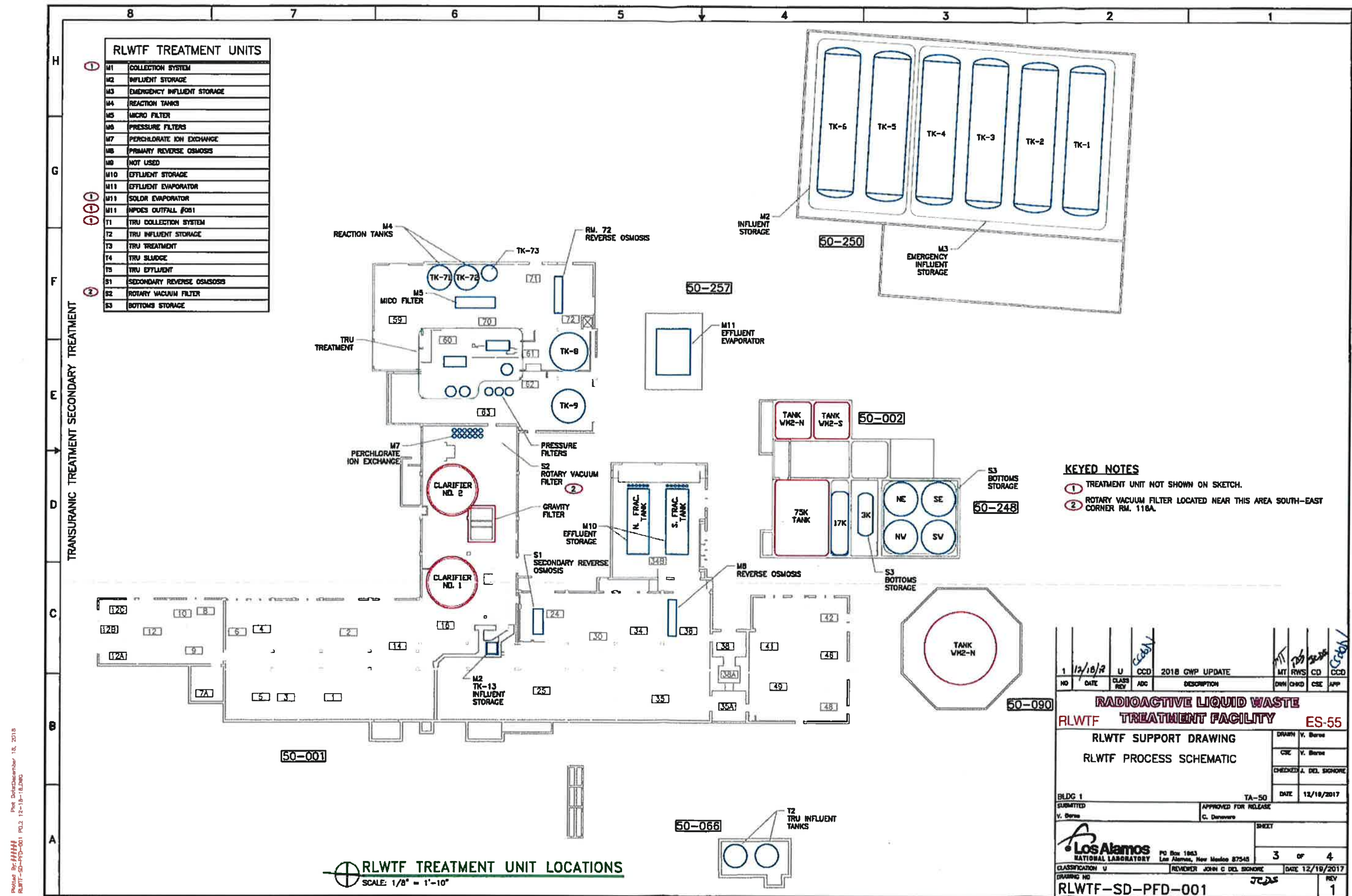
# ATTACHMENT 1

Updated schematic of all major structures at the RLWTF

EPC-DO: 19-018

LA-UR-19-20526

Date: JAN 3 1 2019



Revised By: J. Del Signore  
RLWTF-SD-PFD-001  
12-18-2017

## **ATTACHMENT 2**

**Schematic showing treatment units to be  
stabilized at the RL WTF**

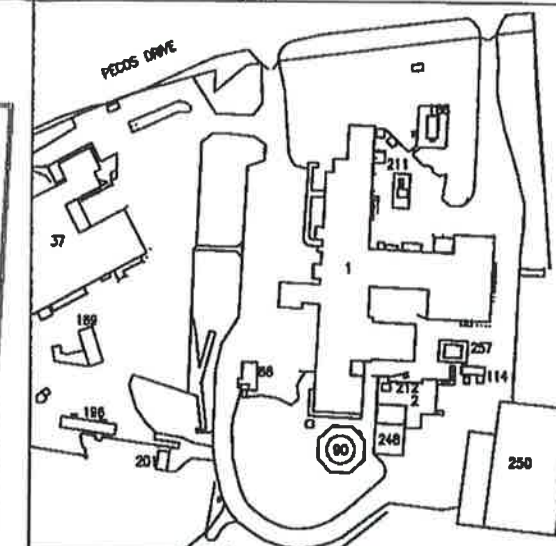
**EPC-DO: 19-018**

**LA-UR-19-20526**

**Date: JAN 31 2019**



RLWTF PROCESS: TREATMENT UNITS TO BE STABILIZED  
SCALE: 1/8" = 1'-10"



LOCATION PLAN  
SCALE: NONE TA-50

#### GENERAL NOTES

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

| NO   | DATE | CLASS | REV | ADC | DESCRIPTION | OWN | CHKD | CSE | APP |
|--|------|-------|-----|-----|-------------|-----|------|-----|-----|
| <b>RADIOACTIVE LIQUID WASTE</b>  |      |       |     |     |             |     |      |     |     |
| <b>RLWTF TREATMENT FACILITY</b>  |      |       |     |     |             |     |      |     |     |
| <b>ES-55</b>   |      |       |     |     |             |     |      |     |     |
| <b>RLWTF SUPPORT DRAWING</b>   |      |       |     |     |             |     |      |     |     |
| <b>RLWTF PROCESS: TREATMENT UNITS TO BE STABILIZED</b>                           |      |       |     |     |             |     |      |     |     |
| BLDG 1<br>SUBMITTED<br>V. Bore   |      |       |     |     |             |     |      |     |     |
| APPROVED FOR RELEASE<br>C. Demers  |      |       |     |     |             |     |      |     |     |
| DATE<br>07/11/2018   |      |       |     |     |             |     |      |     |     |
| SHEET<br>004   |      |       |     |     |             |     |      |     |     |
| 4 OF 4   |      |       |     |     |             |     |      |     |     |
| Los Alamos<br>NATIONAL LABORATORY<br>PO Box 1663<br>Los Alamos, New Mexico 87548 |      |       |     |     |             |     |      |     |     |
| CLASSIFICATION U<br>REVIEWER M. Martinez   |      |       |     |     |             |     |      |     |     |
| DATE 7-25-18   |      |       |     |     |             |     |      |     |     |
| RLWTF-SD-PFD-001   |      |       |     |     |             |     |      |     |     |

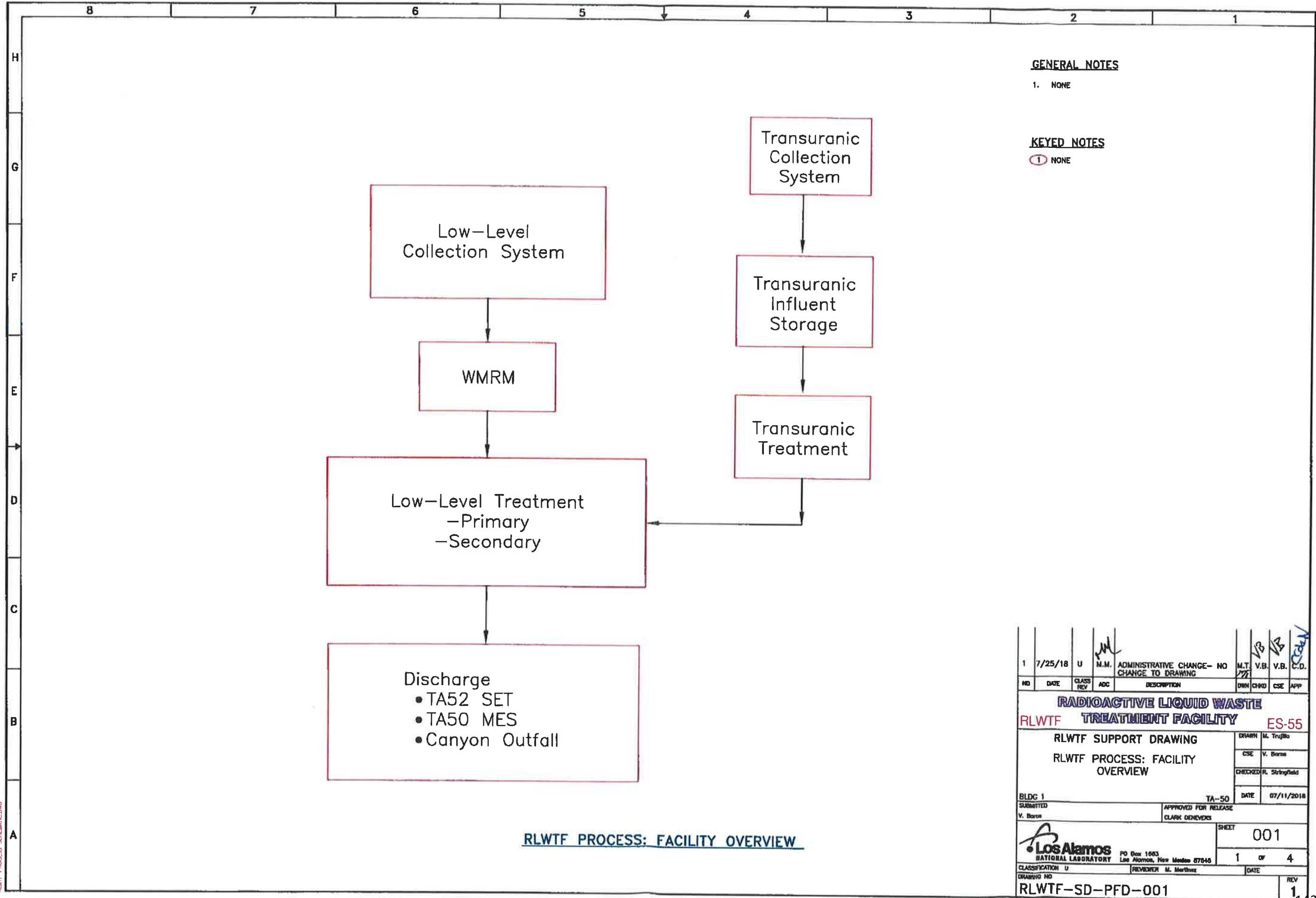
# **ATTACHMENT 3**

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

EPC-DO: 19-018

LA-UR-19-20526

Date: JAN 31 2019



|  |         |           |      |   |                      |                |      |      |
|--|---------|-----------|------|---|----------------------|----------------|------|------|
| 1  | 7/25/18 | U         | M.M. | ADMINISTRATIVE CHANGE- NO CHANGE TO DRAWING | M.T.                 | V.B.           | V.B. | C.D. |
| NO   | DATE    | CLASS REV | ADC  | DESCRIPTION                                 | DWN                  | CHKD           | CSE  | APP  |
| <b>RADIOACTIVE LIQUID WASTE TREATMENT FACILITY ES-55</b> |         |           |      |   |                      |                |      |      |
| RLWTF SUPPORT DRAWING                                    |         |           |      |   | DRWN                 | M. Trujillo    |      |      |
| RLWTF PROCESS: FACILITY OVERVIEW                         |         |           |      |   | CSE                  | V. Barone      |      |      |
|  |         |           |      |   | CHECKED              | R. Stringfield |      |      |
| BLDG 1   |         |           |      |   | DATE                 | 07/11/2018     |      |      |
| SUBMITTED  |         |           |      |   | APPROVED FOR RELEASE |                |      |      |
| V. Barone  |         |           |      |   | CLARK O'DONOVAN      |                |      |      |
| SHEET  |         |           |      |   | 001                  |                |      |      |
| 1 OF 4   |         |           |      |   |                      |                |      |      |
| CLASSIFICATION U   |         |           |      |   | REVIEWER M. Martinez |                |      |      |
| DRAWING NO   |         |           |      |   | DATE                 |                |      |      |
| RLWTF-SD-PFD-001   |         |           |      |   | REV 1                |                |      |      |

Revised by: HHHHH Plot Date: July 25, 2018 RLWTF PROCESS SCHEMATIC.DWG

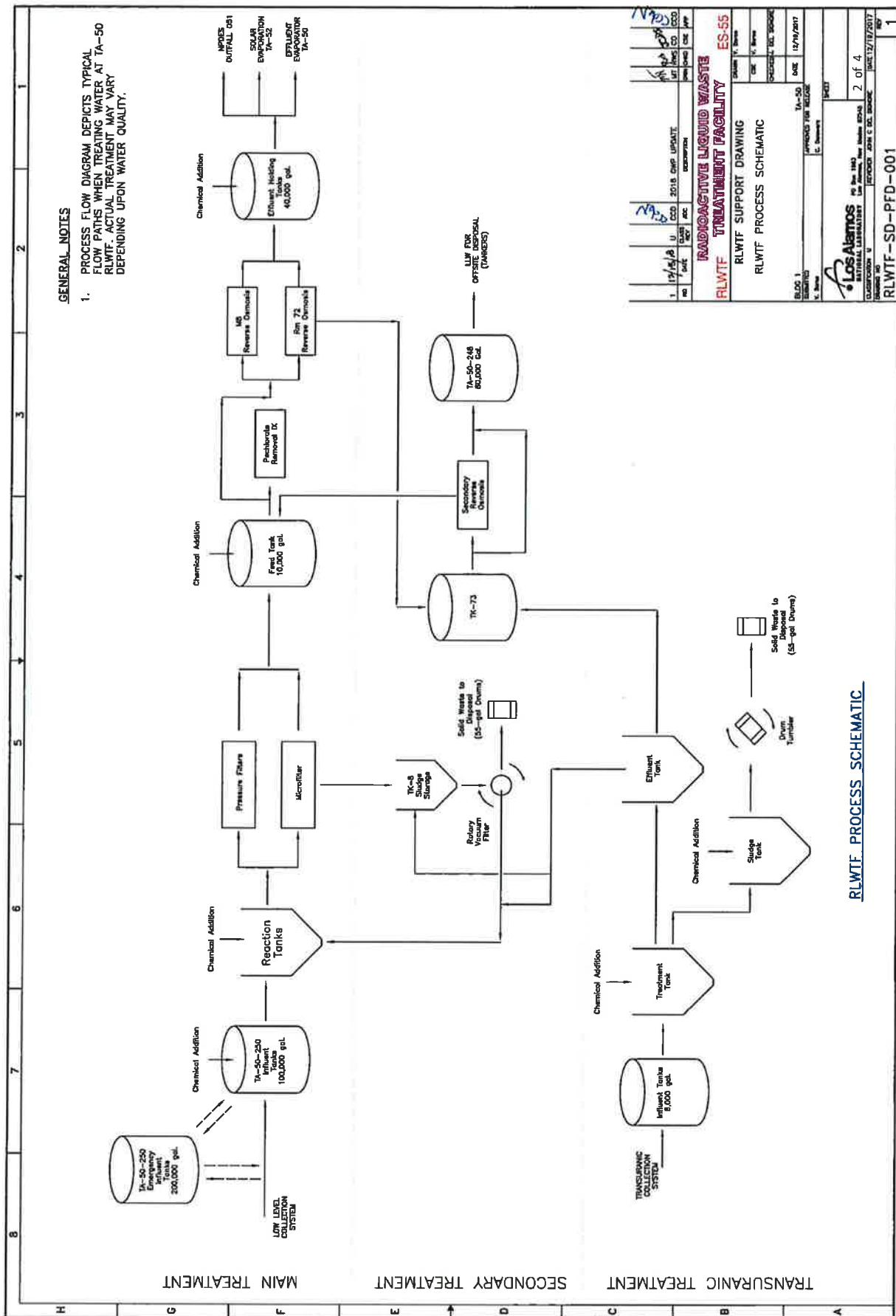
# **ATTACHMENT 4**

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

EPC-DO: 19-018

LA-UR-19-20526

Date: **JAN 31 2019**





# ATTACHMENT 5

Updated narrative describing systems and  
treatment units at the RLWTF

EPC-DO: 19-018

LA-UR-19-20526

Date: JAN 31 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<sup>A</sup>. 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                  |
|-------------------------------|-------------------------|---------------------------|
| <b>Main Treatment:</b>        |                         |                           |
| M1 Collection system          | ----                    | TA-03, 35, 48, 50, 55, 59 |
| M2 Influent storage           | W5, W6                  | 50-250                    |
| M3 Emergency influent storage | WMRM tanks (4)          | 50-250                    |
| M4 Reaction tanks             | TK71, TK72              | 50-01                     |
| M5 Microfilter                | ----                    | 50-01                     |
| M6 Pressure filters           | ----                    | 50-01                     |
| M7 Perchlorate ion exchange   | TK09                    | 50-01                     |
| M8 Primary reverse osmosis    | ----                    | 50-01                     |
| M9 Reserved                   | ----                    | ----                      |
| M10 Effluent storage          | N.Frac, S.Frac          | 50-01                     |
| M11 Mechanical evaporator     | ----                    | 50-257                    |
| M11 Solar evaporation         | ----                    | TA52                      |
| M11 NPDES Outfall #051        | ----                    | Mortandad Canyon          |
| <b>Transuranic:</b>           |                         |                           |
| 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                     |
| <b>Secondary Treatment:</b>   |                         |                           |
| 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                    |

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

## **MAIN TREATMENT PROCESS**

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

### **M1. RADIOACTIVE LIQUID WASTE COLLECTION SYSTEM**

The majority of RLW is transferred by direct pipeline between generator facilities and the RLWTF<sup>B</sup>. 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

<sup>B</sup> The remaining RLW, typically less than 2,000 gallons per month, is transferred from small generators via truck.

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

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

#### **M6. PRESSURE FILTERS**

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

#### **M7. PERCHLORATE ION EXCHANGE**

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

#### **M8. PRIMARY REVERSE OSMOSIS**

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

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

#### **M9. RESERVED**

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

**M10. EFFLUENT STORAGE**

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

**M11. DISCHARGE OF TREATED WATER TO THE ENVIRONMENT****11A. DISCHARGE VIA MECHANICAL EVAPORATION**

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

**11B. DISCHARGE VIA SOLAR EVAPORATION**

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

**11C. DISCHARGE VIA NPDES OUTFALL 051**

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

**TRANSURANIC TREATMENT PROCESS**

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

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

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



**T1. TRANSURANIC COLLECTION SYSTEM**

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

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

**T2. TRANSURANIC INFLUENT STORAGE**

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

**T3. TRANSURANIC TREATMENT**

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

**T4. TRANSURANIC SOLIDS**

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

**T5. TRANSURANIC EFFLUENT**

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

## **SECONDARY TREATMENT PROCESSES**

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

### **S1. SECONDARY REVERSE OSMOSIS**

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

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

### **S2. VACUUM FILTER**

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

### **S3. BOTTOMS STORAGE**

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

TABLE 2: VESSEL INFORMATION FOR RLWTF TREATMENT UNITS

| Treatment Unit  |                          | Vessel(s)                  | Location                          | Vessel      |              | Secondary Containment |           |              |                  |
|-----------------|--------------------------|----------------------------|-----------------------------------|-------------|--------------|-----------------------|-----------|--------------|------------------|
|                 |                          |                            |                                   | Capacity    | Category     | Material              | Structure | Material     | Leak Detection   |
| Main Treatment: | M1                       | Collection system          | Piping (~ 4 miles)<br>Vaults (63) | ---         | Inground     | Polyethylene          | Pipe      | Polyethylene | 63 alarms        |
|                 | M2                       | Influent storage           | WMRM tanks (2)<br>Xfer piping     | 50,000 ea.  | Aboveground  | Concrete              | Floor     | Concrete     | 63 alarms        |
|                 |                          |                            |                                   | ---         | Inground     | Fiberglass            | Floor     | Concrete     | 250 SMP3         |
|                 | M3                       | Emergency influent storage | Xfer pump room                    | ---         | Inground     | Polyethylene          | Pipe      | Polyethylene | 250_Inf, 250_Eff |
|                 |                          |                            | WMRM tanks (4)                    | ---         | Aboveground  | Steel                 | Floor     | Concrete     | PLC250_SMP1      |
|                 |                          |                            |                                   | 50,000 ea.  | Aboveground  | Fiberglass            | Floor     | Concrete     | 250_SMP3         |
|                 | M4                       | Reaction Tanks             | TK71, TK72                        | 10,000 ea.  | Aboveground  | Steel                 | Floor     | Concrete     | RUF_71A_A1       |
|                 | M5                       | Microfilter                | Filter                            | 40          | Aboveground  | Steel                 | Floor     | Concrete     | RUF_71A_A1       |
|                 |                          |                            | Concentrate tank                  | 500         | Onground     | Polyethylene          | Floor     | Concrete     | RUF_71A_A1       |
|                 |                          |                            | Cleaning tanks (2)                | 400         | Onground     | Polyethylene          | Floor     | Concrete     | RUF_71A_A1       |
|                 | M6                       | Pressure filters           | Filters (3)                       | 300         | Aboveground  | Lined Steel           | Floor     | Concrete     | SMP_16_A2        |
| M7              | Perchlorate ion exchange | IX vessels (8)             | 400                               | Aboveground | Fiberglass   | Floor                 | Concrete  | SMP_16_A2    |                  |
|                 |                          | TK09                       | 10,000                            | Aboveground | Steel        | Floor                 | Concrete  | ID           |                  |
| M8              | Primary reverse osmosis  | R72 RO unit                | 40                                | Aboveground | Steel        | Floor                 | Concrete  | RUF_71A_A1   |                  |
|                 |                          | R72 CIP tank               | 500                               | Aboveground | Polyethylene | Floor                 | Concrete  | RUF_71A_A1   |                  |
|                 |                          | M8 RO unit                 | 60                                | Aboveground | Fiberglass   | Floor                 | Concrete  | ID           |                  |
| M9              | Reserved                 | M8 CIP tank                | 300                               | Aboveground | Polyethylene | Floor                 | Concrete  | ID           |                  |
| M10             | Effluent storage         | N.Frac, S.Frac             | 20,000                            | Aboveground | Steel        | Floor                 | Concrete  | SMP_34B_A1   |                  |
| M11             | Effluent evaporator      | ---                        | 1,200                             | Aboveground | S.Steel      | Floor                 | Hypalon,  | ---          |                  |
| M11             | Solar evaporation        | E.Tank, W.Tank             | 380,000                           | Inground    | HDPE         | Liner                 | HDPE,     | ID           |                  |
| M11             | NPDES Outfall #051       | ---                        | ---                               | Inground    | ---          | ---                   | ---       | ---          |                  |
| Transuranic:    | T1                       | TRU Collection system      | Piping (~1 mile)<br>Vaults (1)    | ---         | Inground     | PVDF, PP              | Pipe      | PVDF, PP     | CTL_WM57_A1      |
|                 |                          |                            | Acid tank                         | ---         | Inground     | Concrete              | Floor     | Concrete     | CTL_WM57_A1      |
|                 | T2                       | TRU Influent storage       | Caustic tank                      | 3,900       | Aboveground  | Steel                 | Floor     | Concrete     | CTL_WM66_A4      |
|                 |                          |                            |                                   | 3,000       | Aboveground  | Steel                 | Floor     | Concrete     | CTL_WM66_A4      |
|                 | T3                       | TRU Treatment              | TK1<br>TK2                        | 900<br>800  | Aboveground  | Steel                 | Floor     | Concrete     | ID               |
|                 |                          |                            | 50-01-60                          | Aboveground | Fiberglass   | Floor                 | Concrete  | ID           |                  |
| T4              | TRU Solids               | TK-7A                      | 900                               | Aboveground | Steel        | Floor                 | Concrete  | ID           |                  |
| T5              | TRU Effluent             | TK3                        | 1,000                             | Aboveground | Fiberglass   | Floor                 | Concrete  | ID           |                  |

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

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

**Notes:**

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

# **ATTACHMENT 6**

Ground water flow direction report

EPC-DO: 19-018

LA-UR-19-20526

Date: **JAN 3 1 2019**



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

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

- Perched alluvial groundwater is a limited area of saturated rocks and sediments directly below canyon bottoms. Surface water percolates through the alluvium until downward flow is disrupted by less permeable layers of rock, resulting in shallow perched bodies of groundwater. Most of the canyons on the Pajarito Plateau have infrequent surface water flow and, therefore, little or no alluvial groundwater.
- Perched-intermediate groundwater occurs within the lower part of the Bandelier Tuff and the underlying Puye Formation and Cerros del Rio basalt underneath some canyons. These intermediate-depth groundwater bodies are formed in part by water moving downward from alluvial groundwater until the water reaches a layer of relatively impermeable rock. Depths of the perched-intermediate groundwater zones vary. The depth to perched-intermediate groundwater is approximately 500 to 750 feet beneath Mortandad Canyon.
- The regional aquifer is a widespread area of mainly saturated sands and gravels that provide the water supply for Los Alamos County and LANL. The uppermost level of water in the regional aquifer (known as the water table) occurs at a depth of approximately 1,200 feet below ground surface along the western edge of the plateau and 600 feet below ground surface along the eastern edge. Groundwater in the regional aquifer generally flows east or southeast. The speed of groundwater flow varies but is typically around 30 feet per year. The regional aquifer is separated from alluvial and perched-intermediate groundwater by layers of unsaturated tuff, basalt, and sediment with generally low moisture content.

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

**Regional Aquifer**

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

**Regional Aquifer (con't)**

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

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

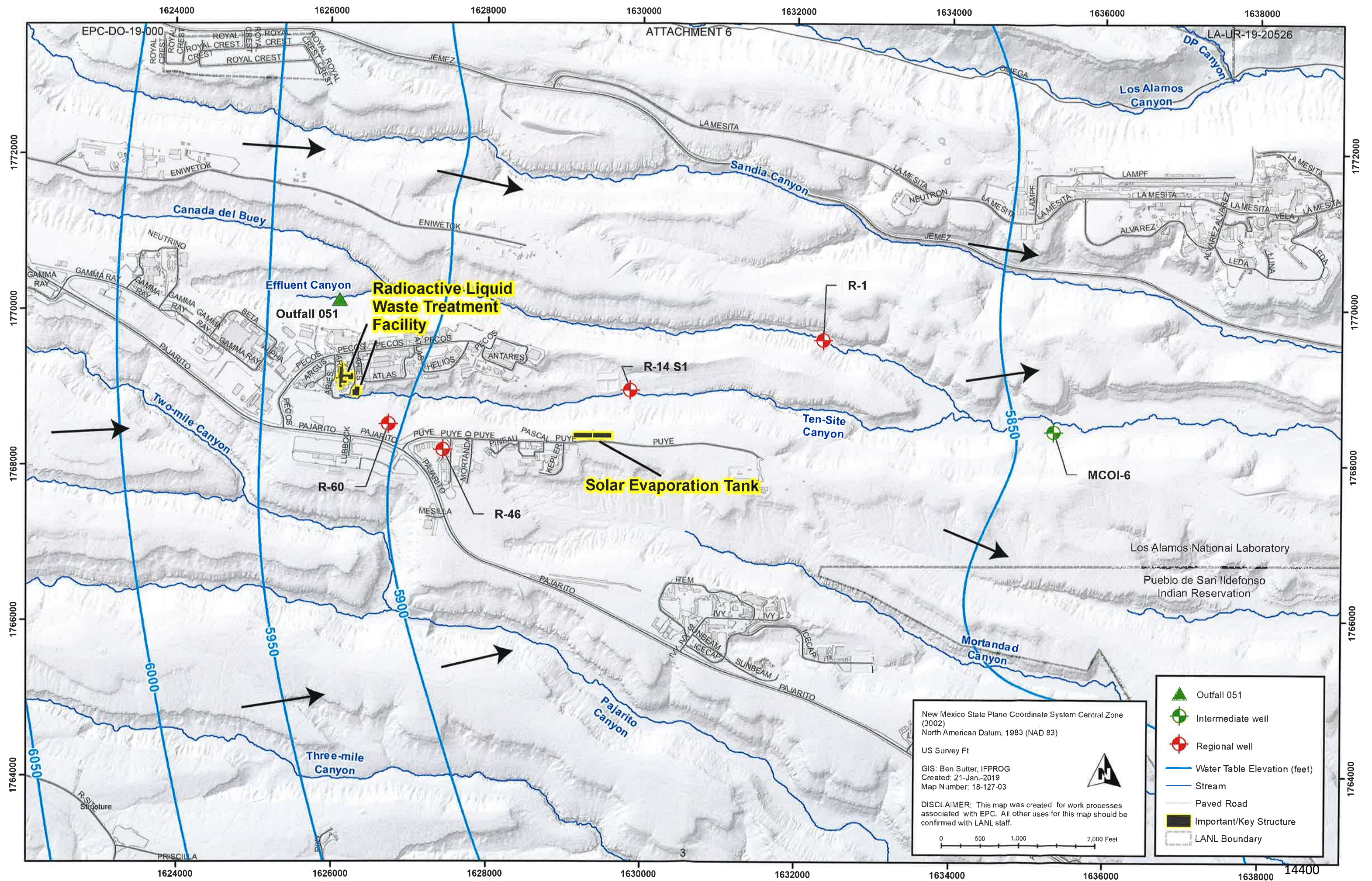
**Water-Table Contouring Process**

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

**References**

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







# **ATTACHMENT 7**

Summary of maintenance and repair activities  
conducted at the RL WTF

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)**

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

Task Types:

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



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

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

## Task Types:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Key to Acronyms

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

# **ATTACHMENT 8**

**Daily volume of RLW influent wastewater  
received by the RLWTF**

**EPC-DO: 19-018**

**LA-UR-19-20526**

**Date: JAN 3 1 2019**



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

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

All flows are in Liters.

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

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

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

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

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

# **ATTACHMENT 9**

Monthly and quarterly treated effluent monitoring results

EPC-DO: 19-018

LA-UR-19-20526

Date: JAN 31 2019

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

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

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

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

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

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

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

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

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

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



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

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

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

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

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

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

**Sample Purpose Notes:**

REG means regular field sample

FD means field duplicate sample

# **ATTACHMENT 10**

**MCOI-6 quarterly and annual  
ground water monitoring report**

**EPC-DO: 19-018**

**LA-UR-19-20526**

**Date: JAN 3 1 2019**

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

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

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

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



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

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

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

| Field Sample ID | Location ID | Sample Date | Parameter Name                 | Report Result | Units | Detected | Lab Qualifier | Field Prep Code | Sample Purpose | Lab Method   | Method Category |
|-----------------|-------------|-------------|--------------------------------|---------------|-------|----------|---------------|-----------------|----------------|--------------|-----------------|
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Diethylphthalate               | 0.313         | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Dimethyl Phthalate             | 0.313         | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Dimethylphenol[2,4-]           | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Di-n-butylphthalate            | 0.313         | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Dinitro-2-methylphenol[4,6-]   | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Dinitrophenol[2,4-]            | 5.21          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Dinitrotoluene[2,4-]           | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Dinitrotoluene[2,6-]           | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Di-n-octylphthalate            | 0.313         | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Dinoseb                        | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Dioxane[1,4-]                  | 12.9          | ug/L  | Y        |               | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Diphenylamine                  | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Fluoranthene                   | 0.313         | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Fluorene                       | 0.313         | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Hexachlorobenzene              | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Hexachlorobutadiene            | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Hexachlorocyclopentadiene      | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Hexachloroethane               | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Indeno[1,2,3-cd]pyrene         | 0.313         | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Isophorone                     | 3.65          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Methylnaphthalene[1-]          | 0.313         | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Methylnaphthalene[2-]          | 0.313         | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Methylphenol[2-]               | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Methylphenol[3-,4-]            | 3.85          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Naphthalene                    | 0.313         | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Nitroaniline[2-]               | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Nitroaniline[3-]               | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Nitroaniline[4-]               | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Nitrobenzene                   | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Nitrophenol[2-]                | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Nitrophenol[4-]                | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Nitrosodiethylamine[N-]        | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Nitrosodimethylamine[N-]       | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Nitroso-di-n-butylamine[N-]    | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Nitroso-di-n-propylamine[N-]   | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Nitrosopyrrolidine[N-]         | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Oxybis(1-chloropropane)[2,2'-] | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Pentachlorobenzene             | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Pentachlorophenol              | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Phenanthrene                   | 0.313         | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-163971  | MCOI-6      | 11-08-2018  | Phenol                         | 3.13          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |

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

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

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

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

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

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

**SAMPLE PURPOSE KEY**

REG means regular field sample

FD means field duplicate sample

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

|   |   |  |
|---|---|--|
| a | Sample Date   | 11/8/2018  |
| b | Sample Time   | 1252   |
| c | Individuals collecting sample.  | Stocker & Jaramillo (TPMC)   |
| d | Monitoring well identification.   | MCOI-6   |
| e | Physical description of monitoring well location.   | See Location Map, Attachment 15  |
| f | Ground-water surface elevation.<br>(ft below mean sea level (msl))                          | 6145.5   |
| g | Total depth of the well<br>(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<br>Oxidation/Reduction Potential (MV): 327.5<br>Temp (deg C): 15.5<br>pH (SU): 7.19<br>Turbidity (NTU): 0.58<br>Specific Conductance (µS/cm): 556 |
| k | Description of sample methods   | See Attached Chain-of-Custody  |
| l | Chain-of custody.   | Attached   |
| m | Location Map  | Attachment 15  |





## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164108

WORK ORDER:

|                                 | AS<br>PLANNED | AS COLLECTED |                      | AS<br>PLANNED        | AS COLLECTED  |
|---------------------------------|---------------|--------------|----------------------|----------------------|---------------|
| Date Collected<br>(MM/DD/YYYY): | 11/8/2018     | OK           | FIELD MATRIX:        | WG                   | OK            |
| TIME COLLECTED<br>(HH:MM):      | 1252          |              | MEDIA:               | OK                   |               |
| PRS ID:                         | OK            |              | SAMPLE TECH<br>CODE: | W/2:30<br>RSP<br>OSP |               |
| LOCATION ID:                    | MCOI-6        |              | FIELD PREP:          | UF                   |               |
| LOCATION TYPE:                  | OK            |              | FIELD QC TYPE:       | REG                  |               |
| TOP DEPTH:                      |               |              | SAMPLE USAGE:        | INV                  |               |
| BOTTOM DEPTH:                   |               |              | EXCAVATED:           |                      | YES / NO / NA |

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

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

## FIELD PARAMETERS:

|                                  |       |       |                         |      |          |                          |      |         |
|----------------------------------|-------|-------|-------------------------|------|----------|--------------------------|------|---------|
| Sample Time                      | 1252  | HH:MM | Casing Volume           | NA   | UNITLESS | Discharge Rate           | 1.30 | gal/min |
| Dissolved Oxygen                 | 7.98  | mg/L  | Flow (in gpm)           | 1.30 | GPM      | Groundwater<br>Elevation | NC   | ft      |
| Oxidation-Reduction<br>Potential | 327.5 | mV    | Period Purge<br>Volume  | NA   | gal      | pH                       | 7.19 | SU      |
| Purge Volume                     | 117   | gal   | Specific<br>Conductance | 556  | uS/cm    | Temperature              | 15.5 | deg C   |
| Total Volume<br>Pumped           | 165.1 | gal   | Turbidity               | 0.58 | NTU      |                          |      |         |

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

|   |                                |   |                              |
|---|--------------------------------|---|------------------------------|
| RELINQUISHED BY <i>Tanner Benham</i><br>(Printed Name)<br>(Signature) | Date/Time<br>11/8/2018<br>1600 | RECEIVED BY <i>S. Sherwood</i><br>(Printed Name)<br>(Signature) | Date/Time<br>11/8/18<br>1600 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)                      | Date/Time                      | RECEIVED BY<br>(Printed Name)<br>(Signature)                    | Date/Time                    |

Report Date: 11/05/2018

10

EPC-DO: 19-018

ATTACHMENT 10

LA-UR-19-20526  
14428

**SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164107

WORK ORDER:

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

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

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

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

COLLECTED BY (PRINT): A. Stacker &amp; D. Jaramillo

|  |                                |  |                              |
|--|--------------------------------|--|------------------------------|
| RELINQUISHED BY<br>(Printed Name)<br>(Signature) | Date/Time<br>11/8/2018<br>1600 | RECEIVED BY<br>(Printed Name)<br>(Signature) | Date/Time<br>11/8/18<br>1600 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature) | Date/Time                      | RECEIVED BY<br>(Printed Name)<br>(Signature) | Date/Time                    |

Report Date: 11/05/2018

EPC-DO: 19-018

ATTACHMENT 10

LA-UR-19-20526  
14429

**SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY****EVENT ID:** 12119**EVENT NAME:** Discharge Permit MY19 Q1**SAMPLE ID:** CAMO-19-164494**WORK ORDER:**

|                                 | AS<br>PLANNED | AS COLLECTED |                      | AS<br>PLANNED                 | AS COLLECTED  |
|---------------------------------|---------------|--------------|----------------------|-------------------------------|---------------|
| Date Collected<br>(MM/DD/YYYY): | 11/8/2018     | OK           | FIELD MATRIX:        | WG                            | OK            |
| TIME COLLECTED<br>(HH:MM):      | 1252          |              | MEDIA:               | CK<br>11/8/19 TB<br>RSP<br>DC |               |
| PRS ID:                         | OK            |              | SAMPLE TECH<br>CODE: |                               |               |
| LOCATION ID:                    | MCOI-6        |              | FIELD PREP:          | UF                            |               |
| LOCATION TYPE:                  | OK            |              | FIELD QC TYPE:       | FB                            |               |
| TOP DEPTH:                      |               |              | SAMPLE USAGE:        | QC                            |               |
| BOTTOM DEPTH:                   |               |              | EXCAVATED:           |                               | YES / NO / NA |

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

**SAMPLE COMMENTS:****LOCATION COMMENTS:****FIELD PARAMETERS:**

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

**COLLECTED BY (PRINT):** A. Stocker

|  |                                |  |                              |
|--|--------------------------------|--|------------------------------|
| RELINQUISHED BY<br>(Printed Name)<br>(Signature) | Date/Time<br>11/8/2018<br>1600 | RECEIVED BY<br>(Printed Name)<br>(Signature) | Date/Time<br>11/8/18<br>1600 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature) | Date/Time                      | RECEIVED BY<br>(Printed Name)<br>(Signature) | Date/Time                    |

# **ATTACHMENT 11**

R-1 annual ground water monitoring report

EPC-DO: 19-018

LA-UR-19-20526

Date: JAN 3 1 2019

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

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



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

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

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

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

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

| Field Sample ID | Location ID | Sample Date | Parameter Name                 | Report Result | Units | Detected | Lab Qualifier | Field Prep Code | Sample Purpose | Lab Method   | Method Category |
|-----------------|-------------|-------------|--------------------------------|---------------|-------|----------|---------------|-----------------|----------------|--------------|-----------------|
| CAMO-19-164110  | R-1         | 11/08/2018  | Nitrosopyrrolidine[N-]         | 3.19          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164110  | R-1         | 11/08/2018  | Oxybis(1-chloropropane)[2,2'-] | 3.19          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164110  | R-1         | 11/08/2018  | Pentachlorobenzene             | 3.19          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164110  | R-1         | 11/08/2018  | Pentachlorophenol              | 3.19          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164110  | R-1         | 11/08/2018  | Phenanthrene                   | 0.319         | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164110  | R-1         | 11/08/2018  | Phenol                         | 3.19          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164110  | R-1         | 11/08/2018  | Pyrene                         | 0.319         | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164110  | R-1         | 11/08/2018  | Tetrachlorobenzene[1,2,4,5]    | 3.19          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164110  | R-1         | 11/08/2018  | Total PAHs                     | 0.0           | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164110  | R-1         | 11/08/2018  | Trichlorophenol[2,4,5-]        | 3.19          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164110  | R-1         | 11/08/2018  | Trichlorophenol[2,4,6-]        | 3.19          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164110  | R-1         | 11/08/2018  | HMX                            | 0.087         | ug/L  | N        | U             | UF              | REG            | SW-846.8330B | LCMS/MS HE      |
| CAMO-19-164110  | R-1         | 11/08/2018  | RDX                            | 0.087         | ug/L  | N        | U             | UF              | REG            | SW-846.8330B | LCMS/MS HE      |
| CAMO-19-164110  | R-1         | 11/08/2018  | Trinitrotoluene[2,4,6-]        | 0.087         | ug/L  | N        | U             | UF              | REG            | SW-846.8330B | LCMS/MS HE      |

## SAMPLE PURPOSE KEY

REG means regular field sample

FD means field duplicate sample

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

|   |   |   |
|---|---|---|
| a | Sample Date   | 11/8/2018   |
| b | Sample Time   | 1454  |
| c | Individuals collecting sample.  | Stocker & Jaramillo (TPMC)  |
| d | Monitoring well identification.   | R-1   |
| e | Physical description of monitoring well location.   | See Location Map, Attachment 15   |
| f | Ground-water surface elevation.<br>(ft below mean sea level (msl))                          | 5872.41   |
| g | Total depth of the well<br>(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<br>Oxidation/Reduction Potential (MV): 300.2<br>Temp (deg C): 20.8<br>pH (SU): 7.75<br>Turbidity (NTU): 0.53<br>Specific Conductance ( $\mu$ S/cm): 139.3 |
| k | Description of sample methods   | See Attached Chain-of-Custody   |
| l | Chain-of custody.   | Attached  |
| m | Location Map  | Attachment 15   |



**SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164110

WORK ORDER:

|                                 | AS<br>PLANNED | AS COLLECTED |                      | AS<br>PLANNED | AS COLLECTED                                   |
|---------------------------------|---------------|--------------|----------------------|---------------|--|
| Date Collected<br>(MM/DD/YYYY): | 11/8/2019     | OK           | FIELD MATRIX:        | WG            | OK   |
| TIME COLLECTED<br>(HH:MM):      | 1454          |              | MEDIA:               | OK            |  |
| PRS ID:                         | OK            |              | SAMPLE TECH<br>CODE: | GSP           |  |
| LOCATION ID:                    | R-1           |              | FIELD PREP:          | UF            |  |
| LOCATION TYPE:                  | OK            |              | FIELD QC TYPE:       | REG           |  |
| TOP DEPTH:                      |               |              | SAMPLE USAGE:        | INV           |  |
| BOTTOM DEPTH:                   | ✓             | ✓            | EXCAVATED:           |               | YES / <input checked="" type="radio"/> NO / NA |

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

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

**FIELD PARAMETERS:**

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



**SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY****EVENT ID:** 12119**EVENT NAME:** Discharge Permit MY19 Q1**SAMPLE ID:** CAMO-19-164110**WORK ORDER:****COLLECTED BY (PRINT):** A. Stocker & D. Scamilo

|  |  |   |  |
|--|--|---|--|
| <b>RELINQUISHED BY</b><br>(Printed Name) <i>Terrell Borham</i><br>(Signature) <i>[Signature]</i> | <b>Date/Time</b><br><i>11/15/18</i><br><i>1600</i> | <b>RECEIVED BY</b><br>(Printed Name) <i>S. Sherwood</i><br>(Signature) <i>[Signature]</i> | <b>Date/Time</b><br><i>11/18/18</i><br><i>1600</i> |
| <b>RELINQUISHED BY</b><br>(Printed Name)<br>(Signature)  | <b>Date/Time</b>                                   | <b>RECEIVED BY</b><br>(Printed Name)<br>(Signature)                                       | <b>Date/Time</b>                                   |

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164109

WORK ORDER:

|                                 | AS<br>PLANNED | AS COLLECTED |                      | AS<br>PLANNED | AS COLLECTED  |
|---------------------------------|---------------|--------------|----------------------|---------------|---------------|
| Date Collected<br>(MM/DD/YYYY): | 11/8/2018     | OK           | FIELD MATRIX:        | WG            | OK            |
| TIME COLLECTED<br>(HH:MM):      | 1454          |              | MEDIA:               | OK            |               |
| PRS ID:                         | OK            |              | SAMPLE TECH<br>CODE: | GSP           |               |
| LOCATION ID:                    | R-1           |              | FIELD PREP:          | F             |               |
| LOCATION TYPE:                  | OK            |              | FIELD QC TYPE:       | REG           |               |
| TOP DEPTH:                      |               |              | SAMPLE USAGE:        | INV           |               |
| BOTTOM DEPTH:                   |               |              | EXCAVATED:           |               | YES / NO / NA |

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

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

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

COLLECTED BY (PRINT): A. Stecker &amp; D. Scramiolo

|  |                                |  |                              |
|--|--------------------------------|--|------------------------------|
| RELINQUISHED BY<br>(Printed Name)<br>(Signature) | Date/Time<br>11/8/2018<br>1600 | RECEIVED BY<br>(Printed Name)<br>(Signature) | Date/Time<br>11/8/18<br>1600 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature) | Date/Time                      | RECEIVED BY<br>(Printed Name)<br>(Signature) | Date/Time                    |

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164164

WORK ORDER:

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

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

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

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

COLLECTED BY (PRINT): A. Stader &amp; D. Jaramila

|  |                                |  |                              |
|--|--------------------------------|--|------------------------------|
| RELINQUISHED BY<br>(Printed Name)<br>(Signature) | Date/Time<br>11/8/2018<br>1600 | RECEIVED BY<br>(Printed Name)<br>(Signature) | Date/Time<br>11/8/18<br>1600 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature) | Date/Time                      | RECEIVED BY<br>(Printed Name)<br>(Signature) | Date/Time                    |

# **ATTACHMENT 12**

R-14 S1 annual ground water monitoring report

EPC-DO: 19-018

LA-UR-19-20526

Date: **JAN 31 2019**

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

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

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

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

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

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



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

| Field Sample ID | Location ID | Sample Date | Parameter Name                | Report Result | Units | Detected | Lab Qualifier | Field Prep Code | Sample Purpose | Lab Method   | Method Category |
|-----------------|-------------|-------------|-------------------------------|---------------|-------|----------|---------------|-----------------|----------------|--------------|-----------------|
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Nitrosodimethylamine[N-]      | 3.26          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Nitroso-di-n-butylamine[N-]   | 3.26          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Nitroso-di-n-propylamine[N-]  | 3.26          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Nitrosopyrrolidine[N-]        | 3.26          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Oxybis(1-chloropropane)[2,2'] | 3.26          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Pentachlorobenzene            | 3.26          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Pentachlorophenol             | 3.26          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Phenanthrene                  | 0.326         | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Phenol                        | 3.26          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Pyrene                        | 0.326         | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Pyridine                      | 3.26          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Tetrachlorobenzene[1,2,4,5]   | 3.26          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Tetrachlorophenol[2,3,4,6-]   | 3.26          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Trichlorobenzene[1,2,4-]      | 3.26          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Trichlorophenol[2,4,5-]       | 3.26          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Trichlorophenol[2,4,6-]       | 3.26          | ug/L  | N        | U             | UF              | REG            | SW-846.8270D | SVOC            |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Acetone                       | 1.50          | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Acetonitrile                  | 8.00          | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Acrolein                      | 1.50          | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Acrylonitrile                 | 1.50          | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Benzene                       | 0.300         | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Bromobenzene                  | 0.300         | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Bromochloromethane            | 0.300         | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Bromodichloromethane          | 0.300         | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Bromoform                     | 0.300         | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Bromomethane                  | 0.300         | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Butanol[1-]                   | 15.0          | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Butanone[2-]                  | 1.50          | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Butylbenzene[n-]              | 0.300         | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Butylbenzene[sec-]            | 0.300         | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Butylbenzene[tert-]           | 0.300         | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Carbon Disulfide              | 1.50          | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Carbon Tetrachloride          | 0.300         | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Chloro-1,3-butadiene[2-]      | 0.300         | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Chloro-1-propene[3-]          | 1.50          | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Chlorobenzene                 | 0.300         | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Chlorodibromomethane          | 0.300         | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Chloroethane                  | 0.300         | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Chloroform                    | 0.300         | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |
| CAMO-19-164051  | R-14 S1     | 11-09-2018  | Chloromethane                 | 0.300         | ug/L  | N        | U             | UF              | REG            | SW-846.8260B | VOC             |

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

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

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

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

**SAMPLE PURPOSE KEY**

REG means regular field sample

FD means field duplicate sample

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

|   |   |   |
|---|---|---|
| a | Sample Date   | 11/9/2018   |
| b | Sample Time   | 1015  |
| c | Individuals collecting sample.  | Tow & Jaramillo (TPMC)  |
| d | Monitoring well identification.   | R-14 Screen 1   |
| e | Physical description of monitoring well location.   | See Location Map, Attachment 15   |
| f | Ground-water surface elevation.<br>(ft below mean sea level (msl))                          | 5870.47   |
| g | Total depth of the well<br>(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<br>Oxidation/Reduction Potential (MV): 167.6<br>Temp (deg C): 22.8<br>pH (SU): 8.18<br>Turbidity (NTU): 0.67<br>Specific Conductance ( $\mu$ S/cm): 127.4 |
| k | Description of sample methods   | See Attached Chain-of-Custody   |
| l | Chain-of custody.   | Attached  |
| m | Location Map  | Attachment 15   |

14450

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164159

WORK ORDER:

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

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

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

## FIELD PARAMETERS:

|                                  |          |       |                         |       |          |                          |        |         |
|----------------------------------|----------|-------|-------------------------|-------|----------|--------------------------|--------|---------|
| Sample Time                      | 1015     | HH:MM | Casing Volume           | NA    | UNITLESS | Discharge Rate           | 7.14   | gal/min |
| Dissolved Oxygen                 | 5.80     | mg/L  | Flow (in gpm)           | 7.14  | GPM      | Groundwater<br>Elevation | 582.47 | ft      |
| Oxidation-Reduction<br>Potential | 187.6    | MV    | Period Purge<br>Volume  | NA    | gal      | pH                       | 8.18   | SU      |
| Purge Volume                     | 149.74   | gal   | Specific<br>Conductance | 127.4 | uS/cm    | Temperature              | 22.8   | deg C   |
| Total Volume<br>Pumped           | 26276.46 | gal   | Turbidity               | 0.67  | NTU      |                          |        |         |

COLLECTED BY (PRINT): K. Tow &amp; D. Jaramila

|   |                                |   |                                  |
|---|--------------------------------|---|----------------------------------|
| RELINQUISHED BY <i>Tanner Bonham</i><br>(Printed Name)<br>(Signature) | Date/Time<br>11/9/2018<br>1330 | RECEIVED BY <i>David M Sarracino</i><br>(Printed Name)<br>(Signature) | Date/Time<br>11/9/2018<br>1330 h |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)                      | Date/Time                      | RECEIVED BY<br>(Printed Name)<br>(Signature)                          | Date/Time                        |

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164168

WORK ORDER:

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

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

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

## FIELD PARAMETERS:

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

COLLECTED BY (PRINT): K. TOW &amp; D. Jaramila

|  |                                   |  |                                   |
|--|-----------------------------------|--|-----------------------------------|
| RELINQUISHED BY<br>(Printed Name)<br>(Signature) | Date/Time<br>11/9/2018<br>1531330 | RECEIVED BY<br>(Printed Name)<br>(Signature) | Date/Time<br>11/9/2018<br>1330 hr |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature) | Date/Time                         | RECEIVED BY<br>(Printed Name)<br>(Signature) | Date/Time                         |

Report Date: 11/05/2018

EPC-DO: 19-018

ATTACHMENT 12

LA-UR-19-20526  
14452



**SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY****EVENT ID:** 12119**EVENT NAME:** Discharge Permit MY19 Q1**SAMPLE ID:** CAMO-19-164165**WORK ORDER:**

|  | <u>AS<br/>PLANNED</u> | <u>AS COLLECTED</u> |                              | <u>AS<br/>PLANNED</u> | <u>AS COLLECTED</u> |
|--|-----------------------|---------------------|------------------------------|-----------------------|---------------------|
| <b>Date Collected</b><br>(MM/DD/YYYY): | 11/9/2018             | OK                  | <b>FIELD MATRIX:</b>         | WG                    | OK                  |
| <b>TIME COLLECTED</b><br>(HH:MM):      | 0807                  |                     | <b>MEDIA:</b>                | OK                    |                     |
| <b>PRS ID:</b>                         | OK                    |                     | <b>SAMPLE TECH<br/>CODE:</b> | DC                    |                     |
| <b>LOCATION ID:</b>                    | R-14 S1               |                     | <b>FIELD PREP:</b>           | UF                    |                     |
| <b>LOCATION TYPE:</b>                  | OK                    |                     | <b>FIELD QC TYPE:</b>        | PEB                   |                     |
| <b>TOP DEPTH:</b>                      |                       |                     | <b>SAMPLE USAGE:</b>         | QC                    |                     |
| <b>BOTTOM DEPTH:</b>                   |                       |                     | <b>EXCAVATED:</b>            |                       | YES / NO / NA       |

| PRIORITY | ORDER             | CONTAINER              | # | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|----------|-------------------|------------------------|---|--------------|---------------|----------------------|
| NA       | DP-8082           | 1 LITER GLASS          | 3 | ICE          | Y             | NA                   |
|          | DP-CIO4           | 0.25 LITER<br>POLY     | 1 | ICE          |               |                      |
|          | DP-F+SO4          | 0.5 LITER<br>POLY      | 1 | ICE          |               |                      |
|          | DP-<br>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<br>GLASS  | 2 | ICE          |               |                      |
|          | DP-TP-8270        | 1 LITER<br>AMBER GLASS | 2 | ICE          |               |                      |
|          | DP-TP-8330        | 1 LITER<br>AMBER GLASS | 3 | ICE          |               |                      |

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164165

WORK ORDER:

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

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

11-9-2018

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

|  |  |  |   |
|--|--|--|---|
| RELINQUISHED BY<br>(Printed Name) <i>Tanner Bonham</i><br>(Signature) <i>[Signature]</i> | Date/Time<br><i>11/9/18</i><br><i>1425</i> | RECEIVED BY <i>David M. Sarracino</i><br>(Printed Name) <i>[Signature]</i><br>(Signature) <i>[Signature]</i> | Date/Time<br><i>11/9/18</i><br><i>1425 hr</i> |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)   | Date/Time                                  | RECEIVED BY<br>(Printed Name)<br>(Signature)   | Date/Time                                     |

Report Date: 11/05/2018

12

EPC-DO: 19-018

ATTACHMENT 12

LA-UR-19-20526  
14454

# **ATTACHMENT 13**

R-46 annual ground water monitoring report

EPC-DO: 19-018

LA-UR-19-20526

Date: JAN 31 2019

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

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

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

| Field Sample ID | Location ID | Sample Date | Parameter Name         | Report Result | Units | Detected | Lab Qualifier | Field Prep Code | Sample Purpose | Lab Method   | Method Category |
|-----------------|-------------|-------------|------------------------|---------------|-------|----------|---------------|-----------------|----------------|--------------|-----------------|
| CAMO-19-164055  | R-46        | 11-13-2018  | Beryllium              | 1.00          | ug/L  | N        | U             | F               | FD             | SW-846:6010C | METALS          |
| CAMO-19-164055  | R-46        | 11-13-2018  | Boron                  | 15.0          | ug/L  | N        | U             | F               | FD             | SW-846:6010C | METALS          |
| CAMO-19-164055  | R-46        | 11-13-2018  | Cadmium                | 0.300         | ug/L  | N        | U             | F               | FD             | SW-846:6020  | METALS          |
| CAMO-19-164055  | R-46        | 11-13-2018  | Chromium               | 5.6           | ug/L  | Y        | J             | F               | FD             | SW-846:6020  | METALS          |
| CAMO-19-164055  | R-46        | 11-13-2018  | Cobalt                 | 1.00          | ug/L  | N        | U             | F               | FD             | SW-846:6010C | METALS          |
| CAMO-19-164055  | R-46        | 11-13-2018  | Copper                 | 3.00          | ug/L  | N        | U             | F               | FD             | SW-846:6010C | METALS          |
| CAMO-19-164056  | R-46        | 11-13-2018  | Cyanide (Total)        | 0.00167       | mg/L  | N        | U             | UF              | FD             | EPA:335.4    | METALS          |
| CAMO-19-164055  | R-46        | 11-13-2018  | Iron                   | 30.0          | ug/L  | N        | U             | F               | FD             | SW-846:6010C | METALS          |
| CAMO-19-164055  | R-46        | 11-13-2018  | Lead                   | 0.500         | ug/L  | N        | U             | F               | FD             | SW-846:6020  | METALS          |
| CAMO-19-164055  | R-46        | 11-13-2018  | Manganese              | 2.00          | ug/L  | N        | U             | F               | FD             | SW-846:6010C | METALS          |
| CAMO-19-164055  | R-46        | 11-13-2018  | Mercury                | 0.067         | ug/L  | N        | U             | F               | FD             | EPA:245.2    | METALS          |
| CAMO-19-164056  | R-46        | 11-13-2018  | Mercury                | 0.067         | ug/L  | N        | U             | UF              | FD             | EPA:245.2    | METALS          |
| CAMO-19-164055  | R-46        | 11-13-2018  | Molybdenum             | 1.05          | ug/L  | Y        | U             | F               | FD             | SW-846:6020  | METALS          |
| CAMO-19-164055  | R-46        | 11-13-2018  | Nickel                 | 0.600         | ug/L  | N        | U             | F               | FD             | SW-846:6020  | METALS          |
| CAMO-19-164055  | R-46        | 11-13-2018  | Selenium               | 2.00          | ug/L  | N        | U             | F               | FD             | SW-846:6020  | METALS          |
| CAMO-19-164055  | R-46        | 11-13-2018  | Silver                 | 0.300         | ug/L  | N        | U             | F               | FD             | SW-846:6020  | METALS          |
| CAMO-19-164055  | R-46        | 11-13-2018  | Thallium               | 0.600         | ug/L  | N        | U             | F               | FD             | SW-846:6020  | METALS          |
| CAMO-19-164055  | R-46        | 11-13-2018  | Uranium                | 0.454         | ug/L  | Y        | U             | F               | FD             | SW-846:6020  | METALS          |
| CAMO-19-164055  | R-46        | 11-13-2018  | Zinc                   | 4.97          | ug/L  | Y        | J             | F               | FD             | SW-846:6010C | METALS          |
| CAMO-19-164053  | R-46        | 11-13-2018  | Perchlorate            | 0.288         | ug/L  | Y        | U             | F               | REG            | SW-846:6850  | LCMS/MS CIO4    |
| CAMO-19-164055  | R-46        | 11-13-2018  | Perchlorate            | 0.352         | ug/L  | Y        | U             | F               | FD             | SW-846:6850  | LCMS/MS CIO4    |
| CAMO-19-164169  | R-46        | 11-13-2018  | Radium-226             | 0.904         | pCi/L | Y        | U             | F               | REG            | EPA:903.1    | RAD             |
| CAMO-19-164169  | R-46        | 11-13-2018  | Radium-228             | 0.642         | pCi/L | N        | U             | F               | REG            | EPA:904      | RAD             |
| CAMO-19-164170  | R-46        | 11-13-2018  | Radium-226             | 0.419         | pCi/L | Y        | U             | F               | FD             | EPA:903.1    | RAD             |
| CAMO-19-164170  | R-46        | 11-13-2018  | Radium-228             | -0.0249       | pCi/L | N        | U             | F               | FD             | EPA:904      | RAD             |
| CAMO-19-164160  | R-46        | 11-13-2018  | Aldrin                 | 0.00679       | ug/L  | N        | U             | UF              | REG            | SW-846:8081B | PESTPCB         |
| CAMO-19-164054  | R-46        | 11-13-2018  | Aroclor-1016           | 0.0347        | ug/L  | N        | U             | UF              | REG            | SW-846:8082  | PESTPCB         |
| CAMO-19-164054  | R-46        | 11-13-2018  | Aroclor-1221           | 0.0347        | ug/L  | N        | U             | UF              | REG            | SW-846:8082  | PESTPCB         |
| CAMO-19-164054  | R-46        | 11-13-2018  | Aroclor-1232           | 0.0347        | ug/L  | N        | U             | UF              | REG            | SW-846:8082  | PESTPCB         |
| CAMO-19-164054  | R-46        | 11-13-2018  | Aroclor-1242           | 0.0347        | ug/L  | N        | U             | UF              | REG            | SW-846:8082  | PESTPCB         |
| CAMO-19-164054  | R-46        | 11-13-2018  | Aroclor-1248           | 0.0347        | ug/L  | N        | U             | UF              | REG            | SW-846:8082  | PESTPCB         |
| CAMO-19-164054  | R-46        | 11-13-2018  | Aroclor-1254           | 0.0347        | ug/L  | N        | U             | UF              | REG            | SW-846:8082  | PESTPCB         |
| CAMO-19-164054  | R-46        | 11-13-2018  | Aroclor-1260           | 0.0347        | ug/L  | N        | U             | UF              | REG            | SW-846:8082  | PESTPCB         |
| CAMO-19-164054  | R-46        | 11-13-2018  | Aroclor-1262           | 0.0347        | ug/L  | N        | U             | UF              | REG            | SW-846:8082  | PESTPCB         |
| CAMO-19-164160  | R-46        | 11-13-2018  | BHC[alpha-]            | 0.00679       | ug/L  | N        | U             | UF              | REG            | SW-846:8081B | PESTPCB         |
| CAMO-19-164160  | R-46        | 11-13-2018  | BHC[beta-]             | 0.00679       | ug/L  | N        | U             | UF              | REG            | SW-846:8081B | PESTPCB         |
| CAMO-19-164160  | R-46        | 11-13-2018  | BHC[gamma-]            | 0.00679       | ug/L  | N        | U             | UF              | REG            | SW-846:8081B | PESTPCB         |
| CAMO-19-164160  | R-46        | 11-13-2018  | Chlordane(alpha/gamma) | 0.0781        | ug/L  | N        | U             | UF              | REG            | SW-846:8081B | PESTPCB         |
| CAMO-19-164160  | R-46        | 11-13-2018  | Chlordane[alpha-]      | 0.00679       | ug/L  | N        | U             | UF              | REG            | SW-846:8081B | PESTPCB         |

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

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

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

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



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

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

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

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

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

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

**SAMPLE PURPOSE KEY**

REG means regular field sample

FD means field duplicate sample

**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.<br>(ft below mean sea level (msl))                          | 5879.66   |
| g | Total depth of the well<br>(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<br>Oxidation/Reduction Potential (MV): 269.8<br>Temp (deg C): 21.1<br>pH (SU): 7.96<br>Turbidity (NTU): 0.36<br>Specific Conductance (µS/cm): 121.4 |
| k | Description of sample methods   | See Attached Chain-of-Custody   |
| l | Chain-of custody.   | Attached  |
| m | Location Map  | Attachment 15   |



**SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164160

WORK ORDER:

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

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

SAMPLE COMMENTS: Sampled about 40 ft. from running diesel generatorLOCATION COMMENTS: None**FIELD PARAMETERS:**

|                                  |              |       |                         |              |          |                          |                |         |
|----------------------------------|--------------|-------|-------------------------|--------------|----------|--------------------------|----------------|---------|
| Sample Time                      | <u>1251</u>  | HH:MM | Casing Volume           | <u>3</u>     | UNITLESS | Discharge Rate           | <u>5.00</u>    | gal/min |
| Dissolved Oxygen                 | <u>6.67</u>  | mg/L  | Flow (in gpm)           | <u>5.00</u>  | GPM      | Groundwater<br>Elevation | <u>5872.66</u> | ft      |
| Oxidation-Reduction<br>Potential | <u>269.8</u> | MV    | Period Purge<br>Volume  | <u>NA</u>    | gal      | pH                       | <u>7.96</u>    | SU      |
| Purge Volume                     | <u>175.0</u> | gal   | Specific<br>Conductance | <u>121.4</u> | uS/cm    | Temperature              | <u>26.1</u>    | deg C   |
| Total Volume<br>Pumped           | <u>299.0</u> | gal   | Turbidity               | <u>0.36</u>  | NTU      |                          |                |         |

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

|  |   |   |   |
|--|---|---|---|
| RELINQUISHED BY<br>(Printed Name) <u>Allison Stanfield</u><br>(Signature) <u>[Signature]</u> | Date/Time<br><u>11/13/18</u><br><u>1345</u> | RECEIVED BY <u>[Signature]</u><br>(Printed Name) <u>[Signature]</u> | Date/Time<br><u>11/13/18</u><br><u>1345</u> |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)   | Date/Time                                   | RECEIVED BY<br>(Printed Name)<br>(Signature)                        | Date/Time                                   |

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164169

WORK ORDER:

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

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

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

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

COLLECTED BY (PRINT): A. Vigils K. Tow

|  |                               |  |                               |
|--|-------------------------------|--|-------------------------------|
| RELINQUISHED BY<br>(Printed Name) Allison Stanfield<br>(Signature) | Date/Time<br>11/13/18<br>1345 | RECEIVED BY<br>(Printed Name) M. V. L. K.<br>(Signature) | Date/Time<br>11/13/18<br>1345 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)                   | Date/Time                     | RECEIVED BY<br>(Printed Name)<br>(Signature)             | Date/Time                     |



## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164166

WORK ORDER:

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

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

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

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

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

|  |                               |  |                               |
|--|-------------------------------|--|-------------------------------|
| RELINQUISHED BY<br>(Printed Name) Allisyn Stanfield<br>(Signature) [Signature] | Date/Time<br>11/13/18<br>1345 | RECEIVED BY [Signature]<br>(Printed Name)<br>(Signature) | Date/Time<br>11/13/18<br>1345 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)                               | Date/Time                     | RECEIVED BY<br>(Printed Name)<br>(Signature)             | Date/Time                     |

**SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164170

WORK ORDER:

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

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

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

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

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

|  |                               |  |                               |
|--|-------------------------------|--|-------------------------------|
| RELINQUISHED BY<br>(Printed Name) <i>Allison Stanfield</i><br>(Signature) <i>[Signature]</i> | Date/Time<br>11/13/18<br>1345 | RECEIVED BY<br>(Printed Name) <i>[Signature]</i><br>(Signature) <i>[Signature]</i> | Date/Time<br>11/13/18<br>1345 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)   | Date/Time                     | RECEIVED BY<br>(Printed Name)<br>(Signature)                                       | Date/Time                     |

# **ATTACHMENT 14**

R-60 annual ground water monitoring report

EPC-DO: 19-018

LA-UR-19-20526

Date: JAN 31 2019

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

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

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

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

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

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

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

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



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

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

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

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

**SAMPLE PURPOSE KEY**

REG means regular field sample

FD means field duplicate sample

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

|   |   |   |
|---|---|---|
| a | Sample Date   | 11/13/2018  |
| b | Sample Time   | 1108  |
| c | Individuals collecting sample.  | Vigil & Tow (TPMC)  |
| d | Monitoring well identification.   | R-60  |
| e | Physical description of monitoring well location.   | See Location Map, Attachment 15   |
| f | Ground-water surface elevation.<br>(ft below mean sea level (msl))                          | 5905.58   |
| g | Total depth of the well<br>(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<br>Oxidation/Reduction Potential (MV): 237.0<br>Temp (deg C): 22.6<br>pH (SU): 8.23<br>Turbidity (NTU): 2.09<br>Specific Conductance (μS/cm): 126.4 |
| k | Description of sample methods   | See Attached Chain-of-Custody   |
| l | Chain-of custody.   | Attached  |
| m | Location Map  | Attachment 15   |



## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164161

WORK ORDER:

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

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

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

LOCATION COMMENTS: None

## FIELD PARAMETERS:

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

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

|  |                                |  |                                |
|--|--------------------------------|--|--------------------------------|
| RELINQUISHED BY<br>(Printed Name) Allison Stanfield<br>(Signature) | Date/Time<br>11/13/18<br>13:45 | RECEIVED BY<br>(Printed Name) S. Sherwood<br>(Signature) S. Sherwood | Date/Time<br>11/13/18<br>13:45 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)                   | Date/Time                      | RECEIVED BY<br>(Printed Name)<br>(Signature)                         | Date/Time                      |

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 12119

EVENT NAME: Discharge Permit MY19 Q1

SAMPLE ID: CAMO-19-164171

WORK ORDER:

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

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

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

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

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

|  |                                |  |                                |
|--|--------------------------------|--|--------------------------------|
| RELINQUISHED BY<br>(Printed Name) Allisyn Stanfield<br>(Signature) | Date/Time<br>11/13/18<br>13:45 | RECEIVED BY<br>(Printed Name) Sherwood<br>(Signature) Sherwood | Date/Time<br>11/13/18<br>13:45 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)                   | Date/Time                      | RECEIVED BY<br>(Printed Name)<br>(Signature)                   | Date/Time                      |



Inspection Date: February 4, 2019

DP #: 1132

Facility Name: Radioactive Liquid Waste  
Treatment Facility

**Facility Contact Information – Scheduling Inspection**

☒ Scheduled Inspection - provide contact information

☐ Unannounced Inspection

Person Contacted: Bob Beers

Phone Number: 505-667-7969

**Facility Description**

Waste Type: Dom - WW High Strength

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

**Inspection Information**

Start Time: 9:00 AM

End Time: 12:00 PM

NMED Inspector(s): Andrew Romero, Melanie Sandoval

Verify that NMED identification was presented: ☒ Yes ☐ No

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

Reason for Inspection: permit compliance assessment

*If "other", describe reason for inspection:*

**Discussion, Observations and Information Obtained**

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

**Photographic Documentation**





Photos Taken? ☐ Yes - see attached ☒ No

**Sample Information**

Samples Collected? ☐ Yes ☒ No

Samples Collected by: N/A

Sample Id #s and locations:

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

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

**Monitoring Well Camera Inspection**

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

Initials of Report Preparer: AR



***Environmental Protection & Compliance Division  
Environmental Compliance Programs (EPC-CP)***

PO Box 1663, K490  
Los Alamos, New Mexico 87545  
(505) 667-0666

***National Nuclear Security Administration  
Los Alamos Field Office***

3747 West Jemez Road, A316  
Los Alamos, New Mexico, 87544  
(505) 665-7314 /Fax (505) 667-5948

*Symbol:* EPC-DO: 19-052

*LA-UR:* 19-21332

*Locates Action No.:* U1801172

*Date:* **FEB 26 2019**

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

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

Dear Ms. Hunter:

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

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

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

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

On February 11, 2019, DOE/Triad informed NMED that one vault alarm remained out of service and would not be repaired by February 15, 2019 (personal communication, Mr. Robert Beers, DOE/Triad, and Mr. Andrew Romero, NMED). NMED requested that DOE/Triad document the status of the vault alarms in writing. This letter updates the status of the two alarms, PLC11\_SM749 and PLC11\_SM776.

Repair Completed

PLC11\_SM749 had probable breaks in underground communication wiring. A new wireless communication device was installed, tested, and confirmed to be functioning on December 15, 2018.

Repair in Progress

PLC11\_SM776 has probable breaks in underground communication wiring, and is to be upgraded with a wireless communication device. Installation and testing was to have been completed by February 15, 2019. However, there have been delays in receiving the device and, as a result, installation and testing will not be complete until March 31, 2019.

Interim Actions

Until communication is re-established with alarm PLC11\_SM776, the RLWTF will continue to perform weekly visual inspections of this vault. If liquid is discovered during a weekly inspection, the liquid will be sampled to determine if the water is due to vault infiltration, or due to a leak in the primary pipe.

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

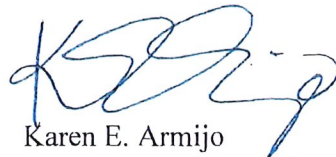
Please contact Karen E. Armijo by telephone at (505) 665-7314 or by email at [Karen.Armijo@nnsa.doe.gov](mailto:Karen.Armijo@nnsa.doe.gov), or Robert S. Beers by telephone at (505) 667-7969 or by email at [bbeers@lanl.gov](mailto:bbeers@lanl.gov) if you have questions regarding this status report.

Sincerely,



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

Sincerely,



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

ET/KEA/MTS/RSB:jdm

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

Copy: Shelly Lemon, NMED/SWQB, [Shelly.Lemon@state.nm.us](mailto:Shelly.Lemon@state.nm.us), (E-File)  
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Andrew Romero, NMED/GWQB, [AndrewC.Romero@state.nm.us](mailto:AndrewC.Romero@state.nm.us), (E-File)  
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Robert S. Beers, EPC-CP, [bbeers@lanl.gov](mailto:bbeers@lanl.gov), (E-File)  
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# **ATTACHMENT 1**

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

EPC-DO: 19-052

LA-UR-19-21332

Date: FEB 26 2019



**COPY**

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

***National Nuclear Security Administration  
Los Alamos Field Office, A316***  
3747 West Jemez Road  
Los Alamos, New Mexico, 87545  
(505) 667-5105/Fax (505) 667-5948

Date: **OCT 11 2018**  
Symbol: EPC-DO-18-365  
LA-UR: 18-29518  
Locates Action No.: U1801172

**GROUND WATER****OCT 15 2018****BUREAU**

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

Dear Ms. Hunter:

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

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

Ms. Michelle Hunter  
EPC-DO-18-365

- 2 -

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

| Tag Name        | Location  | Alarm Type               | Malfunction Type      |
|-----------------|-----------|--------------------------|-----------------------|
| PLC11 SM749     | TA-03-029 | RLWCS <sup>1</sup> vault | Communication Failure |
| PLC11 SM776     | TA-03-029 | RLWCS vault              | Communication Failure |
| PLC14 SM758     | TA-03-130 | RLWCS vault              | Communication Failure |
| PLC2 INF 16 A11 | TA-50-001 | Containment sump         | Communication Failure |
| PLC2 INF 16 A41 | TA-50-001 | Containment sump         | Communication Failure |
| PLC2 INF 16 A51 | TA-50-001 | Containment sump         | Communication Failure |
| PLC2 SMP 34B A1 | TA-50-001 | Containment sump         | Communication Failure |

<sup>1</sup>Radioactive Liquid Waste Collection System

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

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

#### **Vault Alarms**

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

#### **Sump Alarms**

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

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

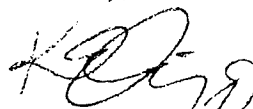
Please contact Karen E. Armijo by telephone at (505) 665-7314 or by email at [Karen.Armijo@nnsa.doe.gov](mailto:Karen.Armijo@nnsa.doe.gov), or Robert S. Beers by telephone at (505) 667-7969 or by email at [bbeers@lanl.gov](mailto:bbeers@lanl.gov) if you have questions regarding this report.

Sincerely,



Taunia S. Van Valkenburg  
Group Leader

Sincerely,



Karen E. Armijo  
Permitting and Compliance Program Manager



Ms. Michelle Hunter  
EPC-DO-18-365

- 3 -

ARG:KEA:MTS:RSB/jdm

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Denise C. Gelston, TA-55-RLW, (E-File)  
Alvin M. Aragon, TA-55-RLW, (E-File)  
John C. Del Signore, TA-55-RLW, (E-File)  
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locatesteam@lanl.gov, (E-File)  
epc-correspondence@lanl.gov, (E-File)

## **ATTACHMENT 2**

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

EPC-DO: 19-052

LA-UR-19-21332

Date: FEB 26 2019

**COPY**

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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 04 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 04 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.

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

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

**Alarms Repaired**

- PLC14\_SM758: An electrical relay was discovered to be defective, was replaced, and was tested to confirm operability. Communication has been re-established.
- PLC2\_INF\_16\_A5: The communication module for this alarm, a part of the Programmable Logic Controller, was determined to be defective, was replaced, and was tested to confirm operability. Communication has been re-established.
- PLC2\_SMP\_34B\_A1: Wiring between the alarm and the Programmable Logic Controller was corroded. Wiring was replaced, and the alarm was tested to confirm operability. Communication has been re-established.

**Alarms Mistakenly Identified as Malfunctioning**

- PLC2\_INF\_16\_A11 and PLC2\_INF\_16\_A41 were both determined to be pump ON-OFF controls, not secondary alarms. They had been mistakenly identified during a recent modification to the RLWTF building alarm system.

**Repair in Progress**

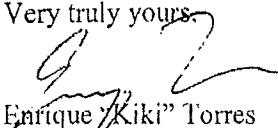
- PLC11\_SM749 and PLC11\_SM776 have probable breaks in underground communication wiring. These will be upgraded with wireless communication devices. For alarm PLC11\_SM749, installation and testing is scheduled to be completed by December 15, 2018. For alarm PLC11\_SM776, installation and testing is scheduled to be completed February 15, 2019.

**Interim Actions**

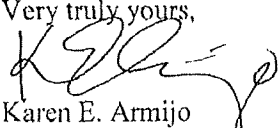
Until communication is re-established with alarms PLC11\_SM749 and PLC11\_SM776, the RLWTF will continue to perform weekly visual inspections of these vaults. If liquid is discovered during a weekly inspection, the liquid will be sampled to determine if the water is due to vault infiltration, or due to a leak in the primary pipe.

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

Very truly yours,

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

Very truly yours,

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

ET/KEA/MTS/RSB:jdm

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

Copy: Shelly Lemon, NMED/SWQB, [Shelly.Lemon@state.nm.us](mailto:Shelly.Lemon@state.nm.us), (E-File)  
John E. Kieling, NMED/HWB, [john.kieling@state.nm.us](mailto:john.kieling@state.nm.us), (E-File)  
Gerald Knutson, NMED/GWQB, [Gerald.Knutson@state.nm.us](mailto:Gerald.Knutson@state.nm.us), (E-File)  
Andrew Romero, NMED/GWQB, [AndrewC.Romero@state.nm.us](mailto:AndrewC.Romero@state.nm.us), (E-File)  
Karen E. Armijo, NA-LA, [Karen.Armijo@nnsa.doe.gov](mailto:Karen.Armijo@nnsa.doe.gov), (E-File)  
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[epc-correspondence@lanl.gov](mailto:epc-correspondence@lanl.gov), (E-File)

**Beers, Bob**

---

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

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



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**Environmental Compliance Programs (EPC-CP)**  
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*Symbol:* EPC-DO-19-069  
*LA-UR:* 19-21981  
*Locates Action No.:* U1801172  
*Date:* **MAR 20 2019**

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

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

Dear Ms. Hunter:

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

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



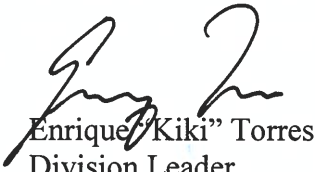
MAR 20 2019

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

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

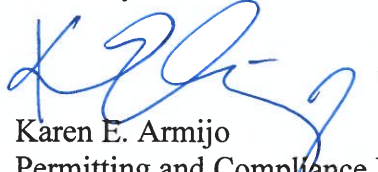
Sincerely,

Sincerely,



Enrique "Kiki" Torres

Division Leader  
Environmental Protection & Compliance  
Triad National Security, LLC



Karen E. Armijo

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

ET/KEA/MTS/RSB:jdm

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

Copy: Shelly Lemon, NMED/SWQB, [Shelly.Lemon@state.nm.us](mailto:Shelly.Lemon@state.nm.us), (E-File)  
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Robert S. Beers, EPC-CP, [bbeers@lanl.gov](mailto:bbeers@lanl.gov), (E-File)  
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[epc-correspondence@lanl.gov](mailto:epc-correspondence@lanl.gov), (E-File)

# **ATTACHMENT 1**

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

**EPC-DO: 19-069**

**LA-UR-19-21981**

**Date:**                     MAR 20 2019

**COPY****GROUND WATER**  
**NOV 19 2018**  
**BUREAU**

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

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

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

Dear Ms. Hunter:

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

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

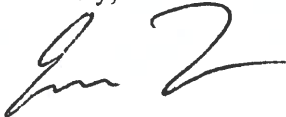
Planning and design are underway for installation of the missing leak detection systems. The design effort will take approximately 90 days. Once the design has been completed, a schedule for installing the additional detection systems will be prepared.

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

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

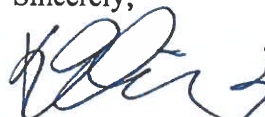
Please contact Karen E. Armijo by telephone at (505) 665-7314 or by email at [Karen.Armijo@nnsa.doe.gov](mailto:Karen.Armijo@nnsa.doe.gov), or Robert S. Beers by telephone at (505) 667-7969 or by email at [bbeers@lanl.gov](mailto:bbeers@lanl.gov) if you have questions regarding this submittal.

Sincerely,



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

Sincerely,



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

TVV/KEA/MTS/RSB:jdm

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

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Ms. Michelle Hunter  
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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 19 2018

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

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

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

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

## **Vessels and Secondary Containment**

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

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

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

## **Survey Summary**

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

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

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

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

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

Table 2: RLWTF Vessels and Secondary Containment

| Treatment Unit  |                               |  | Vessel              |              | Secondary Containment |           |              |                 |
|-----------------|-------------------------------|--|---------------------|--------------|-----------------------|-----------|--------------|-----------------|
|                 | Vessel                        | Location   | Capacity<br>(gals.) | Category     | Material              | Structure | Material     | Leak Detection  |
| Main Treatment: | M1 Collection system          | Piping (~ 4 miles)<br>Vaults (63)  | ---                 | In-ground    | Polyethylene          | Pipe      | Polyethylene | 63 alarms       |
|                 | M2 Influent storage           | WORM tanks (2)<br>Xfer piping<br>Xfer pump room                            | ---                 | In-ground    | Concrete              | Floor     | Concrete     | 63 alarms       |
|                 | M3 Emergency influent storage | WORM tanks (4)   | 50,000              | Aboveground  | Fiberglass            | Floor     | Concrete     | PLC250_SMP3     |
|                 | M4 Reaction Tanks             | TK71, TK72   | ---                 | In-ground    | Polyethylene          | Pipe      | Polyethylene | 250_Inf_250_Eff |
|                 | M5 Microfilter                | Filter   | ---                 | Aboveground  | Steel                 | Floor     | Concrete     | PLC250_SMP1     |
|                 | M6 Pressure filters           | Sludge tank<br>Cleaning tanks (2)<br>Filters (3)                           | 50,000              | Aboveground  | Fiberglass            | Floor     | Concrete     | PLC250_SMP3     |
|                 | M7 Perchlorate ion exchange   | IX vessels (8)<br>TK09   | 10,000              | Aboveground  | Steel                 | Floor     | Concrete     | RUF_71A_A1      |
|                 | M8 Primary reverse osmosis    | R72 RO unit<br>R72 CIP tank<br>M8 RO unit<br>M8 CIP tank<br>N.Frac, S.Frac | 40                  | Aboveground  | Steel                 | Floor     | Concrete     | RUF_71A_A1      |
|                 | M1 Effluent storage           |  | 500                 | Aboveground  | Polyethylene          | Floor     | Concrete     | RUF_71A_A1      |
|                 |                               |  | 60                  | Aboveground  | Fiberglass            | Floor     | Concrete     | F               |
|                 |                               | 300  | Aboveground         | Polyethylene | Floor                 | Concrete  | F            |                 |
|                 |                               | 50-01-34B  | 20,000              | Aboveground  | Steel                 | Floor     | Concrete     | SMP_34B_A1      |
| Transuranic:    | T1 TRU Collection system      | Piping (~1 mille)<br>Vaults (1)  | ---                 | In-ground    | PVDF, PP              | Pipe      | PVDF, PP     | CTL_WM57_A1     |
|                 | T2 TRU Influent storage       | Acid tank<br>Caustic tank  | ---                 | In-ground    | Concrete              | Floor     | Concrete     | CTL_WM57_A1     |
|                 | T3 TRU Treatment              | TK1<br>TK2   | 3,900               | Aboveground  | Steel                 | Floor     | Concrete     | CTL_WM66_A4     |
|                 | T4 TRU Sludge                 |  | 900                 | Aboveground  | Steel                 | Floor     | Concrete     | F               |
|                 | T5 TRU Effluent               | TK-7A<br>TK3   | 800                 | Aboveground  | Fiberglass            | Floor     | Concrete     | F               |
|                 |                               | 50-01-60A  | 900                 | Aboveground  | Steel                 | Floor     | Concrete     | F               |
|                 |                               | 50-01-60   | 1,000               | Aboveground  | Fiberglass            | Floor     | Concrete     | F               |

Notes: See Page 6

Table 2: RLWTF Vessels and Secondary Containment (concluded)

| Treatment Unit                                       | Vessel                | Location  | Capacity<br>(gals.) | Vessel      |              |           | Secondary Containment |                |  |
|--|-----------------------|-----------|---------------------|-------------|--------------|-----------|-----------------------|----------------|--|
|  |                       |           |                     | Category    | Material     | Structure | Material              | Leak Detection |  |
| Secondary Treatment:<br>S1 Secondary reverse osmosis | RO vessel<br>TK25     | 50-01-24  | 10                  | Aboveground | Fiberglass   | Floor     | Concrete              | F              |  |
|  | TK73                  | 50-01-24  | 300                 | Aboveground | Polyethylene | Floor     | Concrete              | F              |  |
|  |                       | 50-01-70  | 3,700               | Aboveground | Steel        | Floor     | Concrete              | RUF 71A_A1     |  |
| S2 Rotary vacuum filter                              | Vacuum filter<br>TK08 | 50-01-116 | 900                 | Aboveground | S.Steel      | Floor     | Concrete              | SMP_16_A2      |  |
|  |                       | 50-01-61  | 8,000               | Aboveground | Steel        | Floor     | Concrete              | F              |  |
| S3 Bottoms storage                                   | TK-NE, SE, SW, NW     | 50-248    | 20,000              | Aboveground | Steel        | Floor     | Concrete              | SMP_TKF_A2     |  |
|  | 3K tank               | 50-248    | 3,000               | Aboveground | Steel        | Floor     | Concrete              | SMP_TKF_A2     |  |
|  | 17K tank              | 50-02     | 17,000              | Aboveground | Steel        | Floor     | Concrete              | SMP_WM2_A2     |  |

**Notes:**

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

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

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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 36 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