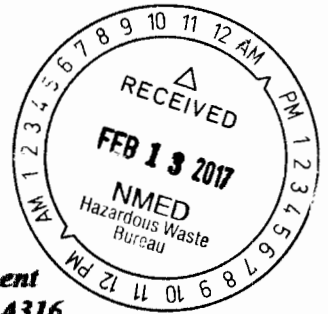


05

ENTERED



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Date: FEB 13 2017
Symbol: EPC-DO: 17-048
LA-UR: 17-20229
Locates Action No.: U1501760

Ms. Michelle Hunter, Chief
Ground Water Quality Bureau
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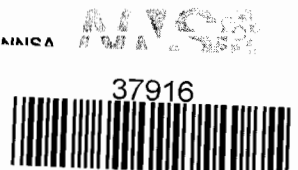
Subject: Work Plan #3 Discharge Report, Treatment and Land Application of Groundwater from Mortandad and Sandia Canyons, DP-1793

Dear Ms. Hunter:

The U.S. Department of Energy and Los Alamos National Security, LLC (DOE/LANS) are in receipt of your May 24, 2016 letter (Enclosure 1) granting approval of Work Plan #3 (Enclosure 2) under Discharge Permit DP-1793, for the continued land application of treated groundwater at Technical Area (TA)-05. These activities are regulated under the permit and address the extraction, treatment, and land application of chromium contaminated groundwater from Mortandad and Sandia Canyons. Condition No. 8 of Discharge Permit DP-1793 and the above-referenced May 24, 2016 approval letter require that DOE/LANS submit a discharge report to the New Mexico Environment Department (NMED) within 60 days of the final cessation of discharge. The following information is required in the discharge report:

1. *The total volume of groundwater discharged;*
2. *The estimated average application rate for the period of discharge;*
3. *Analytical results from samples collected under the water quality sampling plan;*
4. *Analytical reports for the samples collected under the water quality sampling plan;*
5. *Analytical data from monitoring for tracers deployed under the March 4, 2016 Notice of Intent (NOI); and*
6. *A map identifying the locations of discharge.*

Each of the above requirements are addressed in this letter and the enclosures.



Requirement No. 1: *The total volume of groundwater discharged.*

Table 1 below provides the total volume of groundwater discharge in 2016 under Work Plan #3.

Table 1. Volume of Treated groundwater discharged under Work Plan #3 in 2016

Source	Discharge Start Date	Discharge End Date	# of Days of Active Discharge	Total Volume (gal.)	Average Volume (gal.)	Maximum Daily Volume (gal.)
Legacy Water ¹	6/9/2016	6/27/2016	12	327,600	27,300	53,200
2016 Ground Water	6/28/2016	12/15/2016	95	15,954,114	167,938	339,498
Total Volume of Discharge				16,281,714		
Average Volume of Discharge					152,166	
Maximum Daily Volume of Discharge						339,498

Notes

¹ Legacy Water was included in Activity 1 of Work Plan #3 and consists of groundwater produced from pumping at extraction well CrEX-1 completed in CY2015 under the NMED approved DP-1793 Work Plan #2 which was in storage at the end of CY2015.

Requirement No. 2: *An estimated average application rate for the period of discharge.*

The average land application rate over the 107 days of active discharge was approximately 152,166 gallons per day (gpd). The maximum daily discharge was 339,498 gpd. In addition, there were not any storm events which resulted in continuous flow through the Mortandad Canyon watercourse for greater than 48 hours in the proximity of the treatment areas. Therefore, changes to the monthly groundwater-level measurements and sampling were not required as identified in Modification #2 of your May 24, 2016 approval letter.

Requirement No. 3: *Analytical results from samples collected under the water quality sampling plan.*

Analytical results from samples collected under Work Plan #3 are summarized in Enclosure 3. During 2016 samples were obtained from treatment systems (CTU): CTUA at CrEX-1, CTUB central location at R-28, and CTUC at CrEX-3. Perchlorate sampling was completed and is reported here in accordance with Modification #1 identified in your May 24, 2016 approval letter. No results for nitrate-nitrogen (NO₃-N), chromium (Cr), or perchlorate exceeded the land application limits of 9 mg/L, 45 µg/L, and 12.4 µg/L, respectively.

During the week of July 25 only one treated effluent sample was collected for CTUA. Based on the operational HACH® System sample results collected during the week for this system, the maximum Cr and NO₃-N concentrations for this unit were 0.00 µg/L and 2.7 mg/L, respectively. Since the HACH® System does not include perchlorate analysis, a review of the July 20, July 27, and August 1 perchlorate analytical results was conducted. The results were 0.132 µg/L, 0.113 µg/L, and 0.118 µg/L, respectively. These values are below the maximum value observed for treatment system CTUA in 2016 of 0.182 µg/L.

During the week of September 26 only one treated effluent sample was obtained for CTUC. Based on the operational HACH® System sample results collected during the week for this system, the maximum Cr and NO₃-N concentrations for this unit were 0.00 µg/L and 5.05 mg/L,

respectively. Since the HACH® System does not include perchlorate analysis, a review of the September 26 and October 3 perchlorate analytical results was conducted. The results were 0.144 µg/L and 0.131 µg/L, respectively. These values are below the maximum value observed for treatment system CTUC in 2016 of 0.232 µg/L.

Requirement No. 4: *Analytical reports for the samples collected under the water quality sampling plan.*

Enclosure 4 (CD) provides copies of the complete analytical reports from GEL Laboratories LLC.

Requirement No. 5: *Analytical data from monitoring for tracers deployed under the March 4, 2016 Notice of Intent (NOI).*

During 2016 a tracer study began to evaluate the solute transport characteristics of the aquifer and to support the future assessment of potential remedial alternatives for the Cr(VI)-contaminated regional aquifer under Mortandad Canyon. This study was completed in accordance with NMED's April 15, 2016 approval of DOE/LANS' March 4, 2016 NOI to Conduct a Tracer Study at Los Alamos National Laboratory (EPC-DO-16-047). Tracers were deployed at CrPZ-2a, CrPZ-2b, and R-28. In accordance with the NOI, tracers were monitored for their appearance in CrEX-1 and CrEX-3. Due to their location relative to the tracer deployment locations, monitoring for tracers in the quarterly sampled monitoring wells in the vicinity of the tracer deployment will begin in 2017. The only well where tracers appeared in the vicinity of the deployment locations was CrEX-3. At CrEX-3 two tracers have been detected. In CrEX-1 all tracers were below detection limits. **Enclosure 5** provides a summary table for all analytical data above detection limits at CrEX-1 and CrEX-3 in accordance with DP-1793 Work Plan #3. The analytical data for tracers at the deployment locations was unavailable at the time this discharge report was prepared.

Requirement No. 6: *A map identifying the locations of discharge.*

Enclosure 6 provides a map showing the four approved land application zones in Mortandad Canyon. All four land application zones—1, 2, 3, and 4—received discharges of treated groundwater under Work Plan #3.

Please contact William J. Foley by telephone at (505) 665-8423 or by email at bfoley@lanl.gov if you have questions regarding this information.

Sincerely,



John C. Bretzke
Division Leader
Environmental Protection & Compliance
Los Alamos National Security, LLC

Sincerely,



Cheryl L. Rodriguez
Program Manager, FPD-II
Environmental Management
Los Alamos Field Office

JCB/CLR/MTS/WJF:am

Enclosures:

- (1) NMED letter dated May 24, 2016, approving Work Plan #3
- (2) LANL submittal letter dated March 22, 2016 for Work Plan #3 (EPC-DO-16-063)
- (3) Work Plan #3 analytical results summary table
- (4) CD containing analytical reports from GEL Laboratories LLC (upon request)
- (5) Tracer study results summary table
- (6) Map showing land application zones receiving treated groundwater under Work Plan #3

Copy: Shelly Lemon, NMED/SWQB, Santa Fe, NM, (E-File)
John E. Kieling, NMED/HWB, Santa Fe, NM, (E-File)
Stephen M. Yanicak, NMED/DOE/OB, (E-File)
Douglas E. Hintze, EM-LA, (E-File)
David S. Rhodes, EM-LA, (E-File)
Paul B. Underwood, EM-LA, (E-File)
Annette E. Russell, EM-LA, (E-File)
Kirsten M. Laskey, EM-LA, (E-File)
Craig S. Leasure, PADOPS, (E-File)
William R. Mairson, PADOPS, (E-File)
Michael T. Brandt, ADESH, (E-File)
Raeanna Sharp-Geiger, ADESH, (E-File)
Randall Mark Erickson, ADEM, (E-File)
Enrique Torres, ADEM, (E-File)
Bruce Robinson, ADEM-PO, (E-File)
Stephani F. Swickley, ADEM-PO, (E-File)
Danny Katzman, ADEM-PO, (E-File)
Gerald F. Fordham, ER-ES, (E-File)
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Date: **FEB 13 2017**
Symbol: EPC-DO: 17-048
LA-UR: 17-20229
Locates Action No.: U1501760

GROUND WATER

FEB 13 2017

BUREAU

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

Subject: Work Plan #3 Discharge Report, Treatment and Land Application of Groundwater from Mortandad and Sandia Canyons, DP-1793

Dear Ms. Hunter:

The U.S. Department of Energy and Los Alamos National Security, LLC (DOE/LANS) are in receipt of your May 24, 2016 letter (Enclosure 1) granting approval of Work Plan #3 (Enclosure 2) under Discharge Permit DP-1793, for the continued land application of treated groundwater at Technical Area (TA)-05. These activities are regulated under the permit and address the extraction, treatment, and land application of chromium contaminated groundwater from Mortandad and Sandia Canyons. Condition No. 8 of Discharge Permit DP-1793 and the above-referenced May 24, 2016 approval letter require that DOE/LANS submit a discharge report to the New Mexico Environment Department (NMED) within 60 days of the final cessation of discharge. The following information is required in the discharge report:

1. *The total volume of groundwater discharged;*
2. *The estimated average application rate for the period of discharge;*
3. *Analytical results from samples collected under the water quality sampling plan;*
4. *Analytical reports for the samples collected under the water quality sampling plan;*
5. *Analytical data from monitoring for tracers deployed under the March 4, 2016 Notice of Intent (NOI); and*
6. *A map identifying the locations of discharge.*

Each of the above requirements are addressed in this letter and the enclosures.

ENCLOSURE 1

NMED letter dated May 24, 2016, approving Work Plan #3

EPC-DO: 17-048

LA-UR-17-20229

U1501760

Date: **FEB 13 2017**



SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
Lieutenant Governor

ENCLOSURE 1
NEW MEXICO
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RYAN FLYNN
Cabinet Secretary

BUTCH TONGATE
Deputy Secretary

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

May 24, 2016

John P. McCann
Acting Division Leader
Environmental Protection & Compliance Division
Los Alamos National Security, LLC
PO Box 1663, K490
Los Alamos, New Mexico 87545

David S. Rhodes
Supervisor, Soil & Groundwater Remediation
Environmental Management
Los Alamos Field Office
U.S. Department of Energy
3747 West Jemez Road
Los Alamos, New Mexico 87544

RE: Approval with Modification of Workplan #3 for Treatment and Land Application of Groundwater at TA-05, Los Alamos National Laboratory, Discharge Permit 1793

Dear Messrs. McCann and Rhodes,

On March 23, 2016, the New Mexico Environment Department (NMED) Ground Water Quality Bureau (GWQB) received a workplan from DOE/LANS (the Permittees) for the continued land application of treated groundwater at TA-05. The workplan is required by Condition 3 of Discharge Permit 1793 (DP-1793) for activities regulated under the permit and addresses the extraction, treatment, and land application of chromium contaminated groundwater from Mortandad and Sandia Canyons during calendar year 2016. Calendar year 2015 discharges of a similar nature were authorized under Workplan #2, which was approved by NMED on October 8, 2015.

The workplan (WP#3) identifies three activities that produce potentially contaminated groundwater requiring treatment and discharge: (1) pumping at extraction well CrEX-1; (2) development, testing, and pumping at extraction well CrEX-3 and injection wells CrIN-1 through CrIN-5; and (3) purging of chromium plume monitoring wells and pumping of piezometers. These activities are conducted as specified in the *Interim Measures Work Plan for Chromium Plume Control*, May 26, 2015, and the *Work Plan for Chromium Plume Center Characterization*, July 28, 2015. NMED Hazardous Waste Bureau approved these plans for implementation in a letter dated October 15, 2015.

Specific monitoring of the extraction, treatment, and distribution systems will be completed to ensure proper procedures are maintained. Operational monitoring of the treatment system will be conducted to ensure proper process control, and regular compliance sampling will be reported in accordance with DP-1793, Conditions 8 and 9.

A copy of the proposed WP#3 was posted on LANL's Electronic Public Reading Room on March 29, 2016. In accordance with DP-1793, Condition 3, proposed WP#3 was subject to public comment for a period of 30 days. Comments received have been considered in the preparation of this response.

Groundwater discharges associated with WP#3 shall be performed in accordance with the workplan and are subject to all conditions of DP-1793. WP#3 is approved as submitted, with the following modifications:

1. The Permittees shall revise Enclosure 1, Table 7 to include sampling for perchlorate, and shall respond consistently to the contingencies outlined in Section 8 for all anthropogenic constituents. Perchlorate is identified at 20.6.2.7.WW NMAC as having a risk-based action level (Table A-1 of the *Risk Assessment Guidance for Site Investigations and Remediation*, July 2015) of 13.8 micrograms per liter ($\mu\text{g/l}$). For consistency, the treatment standard for perchlorate shall be less than 90% of that standard, 12.4 $\mu\text{g/l}$.
2. Should a storm event cause continuous flow through the Mortandad Canyon watercourse for greater than 48 hours in the proximity of the treatment areas, the Permittees shall schedule the monthly groundwater-level measurements and associated sampling as described in WP#3, Enclosure 1, Section 3, as soon as is safely and operationally possible, and no more than 15 days from the cessation of flow.
3. Six months prior to the end of the term of the discharge permit (July 27, 2020) and at the termination of discharge and final closure under the requirements of DP-1793, the Permittees shall measure total chromium in soils from a representative location in each land application zone. Analyses of these soil samples shall be performed by an off-site, independent, NELAP-accredited analytical laboratory. The Permittees shall submit an associated workplan for NMED approval at least 60 days prior to the date of the required soil sampling.

Within 60 days of cessation of the discharge authorized under this workplan, the Permittees shall submit a Discharge Report in accordance with DP-1793, Condition 8. If during the current term of DP-1793, all treatment system compliance sampling measures are below the method detection limit for chromium, *i.e.*, non-detect, the sampling and analysis requirements above shall not be effective.

Approval of WP#3 does not relieve the Permittees of the responsibility to comply with any other applicable federal, state, and/or local laws and regulations. This approval also does not relieve the Permittees of liability should operations associated with this workplan result in actual pollution of ground or surface waters.

If you have any questions, please contact Steve Pullen at (505) 827-2962. Thank you for your cooperation.

Sincerely,



Michelle Hunter, Chief
Ground Water Quality Bureau

MH:SP

cc (e-version):

James Hogan, NMED/SWQB
John Kieling, NMED/HWB
Steven Yanicak, NMED/DOEOB
Steven Huddleson, NMED/GWQB
Greg Huey, NMED/GWQB
Bob Beers, EPC-CP
Cheryl Rodriguez, EM-LA
Stephani Swickley, ADEM-PO
Danny Katzman, ADEM-PO
Gerald Fordham, ER-ES

ENCLOSURE 2

LANL submittal letter dated March 22, 2016
for Work Plan #3 (EPC-DO-16-063)

EPC-DO: 17-048

LA-UR-17-20229

U1501760

Date: **FEB 13 2017**



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Date: MAR 22 2016
Symbol: EPC-DO-16-063
LA-UR: 16-21509
Locates Action No.: U1501760

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: Multiple Activities Work Plan for the Treatment and Land Application of Groundwater from Mortandad and Sandia Canyons, DP-1793 WP#3

On July 27, 2015, the New Mexico Environment Department (NMED) issued a Discharge Permit (DP-1793) to the U.S. Department of Energy and Los Alamos National Security, LLC (DOE/LANS) for the land application of treated groundwater from covered activities. Pursuant to Condition No. 3 of the above-referenced discharge permit, DOE/LANS are required to submit detailed, project-specific work plans for approval by NMED before any activities are undertaken.

Chromium (Cr) concentrations exceed the New Mexico Water Quality Control Commission (NMWQCC) Regulation 3103 groundwater standard of 50 µg/L in regional aquifer groundwater beneath Mortandad and Sandia Canyons within Los Alamos National Laboratory. The enclosed work plan is for the proposed discharge of treated groundwater from three Chromium Project activities: (1) pumping at extraction well CrEX-1 for hydraulic control of the plume, (2) development, aquifer testing, and on-going pumping to evaluate the optimum chromium mass removal pumping strategy at a new extraction well (CrEX-3, spring 2016) and injection capacity at new injection wells CrIN-1 through CrIN-5, and (3) routine monitoring well purging during sampling and five-day pumping at recently installed piezometers to confirm measured chromium concentrations.

Ms. Michelle Hunter
EPC-DO-16-063

- 2 -

The activities listed above will be conducted as specified in the NMED-approved *Interim Measures Work Plan for the Evaluation of Chromium Mass Removal* and *Work Plan for Chromium Plume Center Characterization*. Produced groundwater will be treated and discharged in accordance with the enclosed work plan and supporting information.

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

Sincerely,



John P. McCann
Acting Division Leader
Environmental Protection & Compliance Division
Los Alamos National Security, LLC

Sincerely,



David S. Rhodes
Supervisor, Soil & Groundwater Remediation
Environmental Management
Los Alamos Field Office
U.S. Department of Energy

JPM:DSR:MTS:RSB/lm

Enclosures:

- 1) Multiple Activities Work Plan for the Treatment and Land Application of Groundwater from Mortandad and Sandia Canyons, DP-1793, WP #3
- 2) Interim Measures Work Plan for Chromium Plume Control and Work Plan for Chromium Plume Center Characterization
- 3) Topographical Map of the Project Site
- 4) Table 3.4-1 (Chromium Investigation Monitoring Group) from the Monitoring Year 2016 Interim Facility-Wide Groundwater Monitoring Plan
- 5) As-Built Specifications for Well and Piezometers
- 6) Water-Quality Data from CrEX-1, R-42, R-45, and R-50
- 7) Schematic of the IX Treatment System and Technical Specifications of the IX Vessels and Resin
- 8) 2016 Chromium Groundwater Project Land Application Layout
- 9) Sample Land-Application Zone Signage

Cy: James Hogan, NMED/SWQB, Santa Fe, NM, (E-File)
John E. Kieling, NMED/HWB, Santa Fe, NM, (E-File)
Steven M. Yanicak, NMED/DOE/OB, (E-File)
Jody Pugh, NA-LA, (E-File)
Cheryl L. Rodriguez, EM-LA, (E-File)
Brian T. Hennessey, EM-LA, (E-File)

Ms. Michelle Hunter
EPC-DO-16-063

- 3 -

Cy (continued):

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Jordan Arnsward, NA-LA, (E-File)
Craig S. Leasure, PADOPS, (E-File)
William Mairson, PADOPS, (E-File)
Michael T. Brandt, ADESH, (E-File)
Raeanna Sharp-Geiger, ADESH, (E-File)
Randall Mark Erickson, ADEM, (E-File)
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Bruce Robinson, ADEM-PO, (E-File)
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Alan S. MacGregor, ER-DO, (E-File)
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Los Alamos Field Office, A316**
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(505) 606-0397/Fax (505) 284-7522

Date: **MAR 22 2016**

Symbol: EPC-DO-16-063

LA-UR: 16-21509

Locates Action No.: U1501760

GROUND WATER

MAR 23 2016

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: Multiple Activities Work Plan for the Treatment and Land Application of Groundwater from Mortandad and Sandia Canyons, DP-1793 WP#3

On July 27, 2015, the New Mexico Environment Department (NMED) issued a Discharge Permit (DP-1793) to the U.S. Department of Energy and Los Alamos National Security, LLC (DOE/LANS) for the land application of treated groundwater from covered activities. Pursuant to Condition No. 3 of the above-referenced discharge permit, DOE/LANS are required to submit detailed, project-specific work plans for approval by NMED before any activities are undertaken.

Chromium (Cr) concentrations exceed the New Mexico Water Quality Control Commission (NMWQCC) Regulation 3103 groundwater standard of 50 µg/L in regional aquifer groundwater beneath Mortandad and Sandia Canyons within Los Alamos National Laboratory. The enclosed work plan is for the proposed discharge of treated groundwater from three Chromium Project activities: (1) pumping at extraction well CrEX-1 for hydraulic control of the plume, (2) development, aquifer testing, and on-going pumping to evaluate the optimum chromium mass removal pumping strategy at a new extraction well (CrEX-3, spring 2016) and injection capacity at new injection wells CrIN-1 through CrIN-5, and (3) routine monitoring well purging during sampling and five-day pumping at recently installed piezometers to confirm measured chromium concentrations.

ENCLOSURE 3

Work Plan #3 analytical results summary table

EPC-DO: 17-048

LA-UR-17-20229

U1501760

Date: FEB 13 2017

Enclosure 3

Table E3-1
2016 Treatment Unit Effluent Data Summary For CTUA_CrEX-1

Sample	Collection Date	Field Prep	Method	Analyte	Detect Flag	Result	Units	Lab Qualifier Code	Validation Qualifier Code	Validation Reason Code	Lab	MDL	PQL	Dilution Factor
CTU6A-16-122930	06/28/2016	F	SW-846:6020	Chromium	N	2	ug/L	U	U	U_LAB	GELC	2	10	1
CTU6A-16-122930	06/28/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.84	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-122930	06/28/2016	F	SW-846:6850	Perchlorate	Y	0.107	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-122931	06/30/2016	F	SW-846:6020	Chromium	N	2	ug/L	U	U	U_LAB	GELC	2	10	1
CTU6A-16-122931	06/30/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	3.3	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-122931	06/30/2016	F	SW-846:6850	Perchlorate	Y	0.15	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-122929	07/06/2016	F	SW-846:6020	Chromium	N	2	ug/L	U	U	U_LAB	GELC	2	10	1
CTU6A-16-122929	07/06/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.58	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-122929	07/06/2016	F	SW-846:6850	Perchlorate	Y	0.119	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-122925	07/07/2016	F	SW-846:6020	Chromium	N	2	ug/L	U	U	U_LAB	GELC	2	10	1
CTU6A-16-122925	07/07/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.69	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-122925	07/07/2016	F	SW-846:6850	Perchlorate	Y	0.117	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-122928	07/12/2016	F	SW-846:6020	Chromium	Y	3.01	ug/L	J	J	J_LAB	GELC	2	10	1
CTU6A-16-122928	07/12/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.59	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-122928	07/12/2016	F	SW-846:6850	Perchlorate	Y	0.115	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-122926	07/14/2016	F	SW-846:6020	Chromium	Y	5.83	ug/L	J	J	J_LAB	GELC	2	10	1
CTU6A-16-122926	07/14/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.49	mg/L		J	I4a	GELC	0.085	0.25	5
CTU6A-16-122926	07/14/2016	F	SW-846:6850	Perchlorate	Y	0.126	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-122924	07/18/2016	F	SW-846:6020	Chromium	Y	3.48	ug/L	J	J	J_LAB	GELC	2	10	1
CTU6A-16-122924	07/18/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.81	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-122924	07/18/2016	F	SW-846:6850	Perchlorate	Y	0.129	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-124223	07/20/2016	F	SW-846:6020	Chromium	Y	5.22	ug/L	J	J	J_LAB	GELC	2	10	1
CTU6A-16-124223	07/20/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.53	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-124223	07/20/2016	F	SW-846:6850	Perchlorate	Y	0.132	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-124220	07/27/2016	F	SW-846:6020	Chromium	N	2	ug/L	U	U	U_LAB	GELC	2	10	1
CTU6A-16-124220	07/27/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.94	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-124220	07/27/2016	F	SW-846:6850	Perchlorate	Y	0.113	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-122927	08/01/2016	F	SW-846:6020	Chromium	N	2	ug/L	U	U	U_LAB	GELC	2	10	1
CTU6A-16-122927	08/01/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.41	mg/L		NQ	NQ	GELC	0.17	0.5	10
CTU6A-16-122927	08/01/2016	F	SW-846:6850	Perchlorate	Y	0.118	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-124226	08/03/2016	F	SW-846:6020	Chromium	N	2	ug/L	U	U	U_LAB	GELC	2	10	1
CTU6A-16-124226	08/03/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.54	mg/L		NQ	NQ	GELC	0.17	0.5	10
CTU6A-16-124226	08/03/2016	F	SW-846:6850	Perchlorate	Y	0.129	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-124217	08/05/2016	F	SW-846:6020	Chromium	N	2	ug/L	U	U	U_LAB	GELC	2	10	1
CTU6A-16-124217	08/05/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.58	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-124217	08/05/2016	F	SW-846:6850	Perchlorate	Y	0.12	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-124222	08/08/2016	F	SW-846:6020	Chromium	N	2	ug/L	U	U	U_LAB	GELC	2	10	1
CTU6A-16-124222	08/08/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.55	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-124222	08/08/2016	F	SW-846:6850	Perchlorate	Y	0.122	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-124228	08/12/2016	F	SW-846:6020	Chromium	N	2	ug/L	U	U	U_LAB	GELC	2	10	1
CTU6A-16-124228	08/12/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.86	mg/L		NQ	NQ	GELC	0.17	0.5	10
CTU6A-16-124228	08/12/2016	F	SW-846:6850	Perchlorate	Y	0.121	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-124227	08/15/2016	F	SW-846:6020	Chromium	N	2	ug/L	U	U	U_LAB	GELC	2	10	1
CTU6A-16-124227	08/15/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.53	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-124227	08/15/2016	F	SW-846:6850	Perchlorate	Y	0.127	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-124219	08/18/2016	F	SW-846:6020	Chromium	N	2	ug/L	U	U	U_LAB	GELC	2	10	1

Enclosure 3

Table E3-1
2016 Treatment Unit Effluent Data Summary For CTUA_CrEX-1

Sample	Collection Date	Field Prep	Method	Analyte	Detect Flag	Result	Units	Lab Qualifier Code	Validation Qualifier Code	Validation Reason Code	Lab	MDL	PQL	Dilution Factor
CTU6A-16-124219	08/18/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.6	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-124219	08/18/2016	F	SW-846:6850	Perchlorate	Y	0.12	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-124221	08/22/2016	F	SW-846:6020	Chromium	N	2	ug/L	U	U	U_LAB	GELC	2	10	1
CTU6A-16-124221	08/22/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.53	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-124221	08/22/2016	F	SW-846:6850	Perchlorate	Y	0.123	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-124225	08/26/2016	F	SW-846:6020	Chromium	N	2	ug/L	U	U	U_LAB	GELC	2	10	1
CTU6A-16-124225	08/26/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	3.11	mg/L		J	i10b	GELC	0.085	0.25	5
CTU6A-16-124225	08/26/2016	F	SW-846:6850	Perchlorate	Y	0.111	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-124218	08/29/2016	F	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU6A-16-124218	08/29/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	4.19	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-124218	08/29/2016	F	SW-846:6850	Perchlorate	N	0.05	ug/L	U	U	U_LAB	GELC	0.05	0.2	1
CTU6A-16-124774	09/02/2016	F	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU6A-16-124774	09/02/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	6.3	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-124774	09/02/2016	F	SW-846:6850	Perchlorate	N	0.05	ug/L	U	U	U_LAB	GELC	0.05	0.2	1
CTU6A-16-124781	09/06/2016	F	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU6A-16-124781	09/06/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.67	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-124781	09/06/2016	F	SW-846:6850	Perchlorate	N	0.05	ug/L	U	U	U_LAB	GELC	0.05	0.2	1
CTU6A-16-124780	09/09/2016	F	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU6A-16-124780	09/09/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	1.65	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-124780	09/09/2016	F	SW-846:6850	Perchlorate	N	0.05	ug/L	U	U	U_LAB	GELC	0.05	0.2	1
CTU6A-16-124775	09/12/2016	F	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU6A-16-124775	09/12/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	1.34	mg/L		NQ	NQ	GELC	0.017	0.05	1
CTU6A-16-124775	09/12/2016	F	SW-846:6850	Perchlorate	N	0.05	ug/L	U	U	U_LAB	GELC	0.05	0.2	1
CTU6A-16-124777	09/16/2016	F	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU6A-16-124777	09/16/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	1.37	mg/L		NQ	NQ	GELC	0.017	0.05	1
CTU6A-16-124777	09/16/2016	F	SW-846:6850	Perchlorate	N	0.05	ug/L	U	U	U_LAB	GELC	0.05	0.2	1
CTU6A-16-124779	09/19/2016	F	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU6A-16-124779	09/19/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	3.79	mg/L		NQ	NQ	GELC	0.17	0.5	10
CTU6A-16-124779	09/19/2016	F	SW-846:6850	Perchlorate	Y	0.09	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-124778	09/23/2016	F	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU6A-16-124778	09/23/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	3.25	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-124778	09/23/2016	F	SW-846:6850	Perchlorate	Y	0.0882	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-124776	09/26/2016	F	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU6A-16-124776	09/26/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.92	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-124776	09/26/2016	F	SW-846:6850	Perchlorate	Y	0.124	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-126735	09/30/2016	F	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU6A-16-126735	09/30/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.67	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-126735	09/30/2016	F	SW-846:6850	Perchlorate	Y	0.147	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-126736	10/03/2016	F	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU6A-16-126736	10/03/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.92	mg/L		NQ	NQ	GELC	0.17	0.5	10
CTU6A-16-126736	10/03/2016	F	SW-846:6850	Perchlorate	Y	0.15	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-126737	10/07/2016	F	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU6A-16-126737	10/07/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.59	mg/L		NQ	NQ	GELC	0.17	0.5	10
CTU6A-16-126737	10/07/2016	F	SW-846:6850	Perchlorate	Y	0.157	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-126738	10/11/2016	F	SW-846:6020	Chromium	Y	3.19	ug/L	J	J	J_LAB	GELC	3	10	1
CTU6A-16-126738	10/11/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.66	mg/L		NQ	NQ	GELC	0.085	0.25	5

Enclosure 3

Table E3-1
2016 Treatment Unit Effluent Data Summary For CTUA_CrEX-1

Sample	Collection Date	Field Prep	Method	Analyte	Detect Flag	Result	Units	Lab Qualifier Code	Validation Qualifier Code	Validation Reason Code	Lab	MDL	PQL	Dilution Factor
CTU6A-16-126738	10/11/2016	F	SW-846:6850	Perchlorate	Y	0.16	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-126744	10/14/2016	F	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU6A-16-126744	10/14/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	1.24	mg/L		NQ	NQ	GELC	0.017	0.05	1
CTU6A-16-126744	10/14/2016	F	SW-846:6850	Perchlorate	Y	0.158	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-126743	10/17/2016	UF	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU6A-16-126743	10/17/2016	UF	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	1.5	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-126743	10/17/2016	UF	SW-846:6850	Perchlorate	Y	0.14	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-126739	10/19/2016	UF	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU6A-16-126739	10/19/2016	UF	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.91	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-126739	10/19/2016	UF	SW-846:6850	Perchlorate	Y	0.177	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6A-16-126741	10/20/2016	UF	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU6A-16-126741	10/20/2016	UF	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.93	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6A-16-126741	10/20/2016	UF	SW-846:6850	Perchlorate	Y	0.182	ug/L	J	J	J_LAB	GELC	0.05	0.2	1

Notes:

F - filtered.

UF - unfiltered.

N - in the detect flag column means the analyte was undetected.

Y - in the detect flag column means the analyte was detected.

U - in the lab qualifier column means analyte is classified as not detected.

U - in the validation qualifier column means analyte is classified as not detected.

J - in the lab qualifier comment means the analyte is classified as estimated.

J - in the validation qualifier comment means the analyte is classified as estimated.

NQ - in the validation qualifier column means no qualifier.

NQ - in the validation reason column means no qualifier.

U_LAB in the validation reason column means the analyte is classified as not detected.

J_LAB in the validation reason column means the analyte is classified as estimated.

I4a in the validation reason column means the analyte result is estimated and biased high because the analyte was identified in the method blank but was >5x the concentration of related analyte in the method blank

I10b in the validation reason column means the sample and/or the duplicate sample results RPD is not within the acceptance limites. External laboratory limits are located within the associated data package.

Enclosure 3

Table E3-2
2016 Treatment Unit Effluent Data Summary For CTUB_R-28

Sample	Collection Date	Field Prep	Method	Analyte	Detect Flag	Result	Units	Lab Qualifier Code	Validation Qualifier Code	Validation Reason Code	Lab	MDL	PQL	Dilution Factor
CTU6B-16-122939	06/14/2016	F	SW-846:6020	Chromium	N	2	ug/L	U	U	U_LAB	GELC	2	10	1
CTU6B-16-122939	06/14/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	3.01	mg/L		NQ	NQ	GELC	0.17	0.5	10
CTU6B-16-122939	06/14/2016	F	SW-846:6850	Perchlorate	Y	0.183	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6B-16-122934	06/16/2016	F	SW-846:6020	Chromium	N	2	ug/L	U	U	U_LAB	GELC	2	10	1
CTU6B-16-122934	06/16/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	3.08	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6B-16-122934	06/16/2016	F	SW-846:6850	Perchlorate	Y	0.171	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6B-16-122937	06/21/2016	F	SW-846:6020	Chromium	Y	2.17	ug/L	J	J	J_LAB	GELC	2	10	1
CTU6B-16-122937	06/21/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	3.09	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6B-16-122937	06/21/2016	F	SW-846:6850	Perchlorate	Y	0.219	ug/L		NQ	NQ	GELC	0.05	0.2	1
CTU6B-16-122932	06/23/2016	F	SW-846:6020	Chromium	Y	4.73	ug/L	J	J	J_LAB	GELC	2	10	1
CTU6B-16-122932	06/23/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.39	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6B-16-122932	06/23/2016	F	SW-846:6850	Perchlorate	Y	0.185	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6B-16-122936	06/30/2016	F	SW-846:6020	Chromium	N	2	ug/L	U	U	U_LAB	GELC	2	10	1
CTU6B-16-122936	06/30/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.94	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6B-16-122936	06/30/2016	F	SW-846:6850	Perchlorate	Y	0.181	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6B-16-122935	07/05/2016	F	SW-846:6020	Chromium	Y	6.31	ug/L	J	J	J_LAB	GELC	2	10	1
CTU6B-16-122935	07/05/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.13	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6B-16-122935	07/05/2016	F	SW-846:6850	Perchlorate	Y	0.174	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6B-16-122938	07/07/2016	F	SW-846:6020	Chromium	Y	2.79	ug/L	J	J	J_LAB	GELC	2	10	1
CTU6B-16-122938	07/07/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.43	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6B-16-122938	07/07/2016	F	SW-846:6850	Perchlorate	Y	0.181	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6B-16-122933	07/12/2016	F	SW-846:6020	Chromium	Y	3.44	ug/L	J	J	J_LAB	GELC	2	10	1
CTU6B-16-122933	07/12/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.54	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6B-16-122933	07/12/2016	F	SW-846:6850	Perchlorate	Y	0.216	ug/L		NQ	NQ	GELC	0.05	0.2	1
CTU6B-16-124211	07/14/2016	F	SW-846:6020	Chromium	Y	6.18	ug/L	J	J	J_LAB	GELC	2	10	1
CTU6B-16-124211	07/14/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.08	mg/L		J	I4a	GELC	0.085	0.25	5
CTU6B-16-124211	07/14/2016	F	SW-846:6850	Perchlorate	Y	0.201	ug/L		NQ	NQ	GELC	0.05	0.2	1
CTU6B-16-124213	07/19/2016	F	SW-846:6020	Chromium	Y	6.26	ug/L	J	J	J_LAB	GELC	2	10	1
CTU6B-16-124213	07/19/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	1.95	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6B-16-124213	07/19/2016	F	SW-846:6850	Perchlorate	Y	0.192	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6B-16-124214	07/22/2016	F	SW-846:6020	Chromium	N	6.41	ug/L	J	U	I4	GELC	2	10	1
CTU6B-16-124214	07/22/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	1.49	mg/L		NQ	NQ	GELC	0.017	0.05	1
CTU6B-16-124214	07/22/2016	F	SW-846:6850	Perchlorate	Y	0.156	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6B-16-124215	07/26/2016	F	SW-846:6020	Chromium	N	2	ug/L	U	U	U_LAB	GELC	2	10	1
CTU6B-16-124215	07/26/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.43	mg/L		J	i10b	GELC	0.085	0.25	5
CTU6B-16-124215	07/26/2016	F	SW-846:6850	Perchlorate	Y	0.152	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6B-16-124216	07/28/2016	F	SW-846:6020	Chromium	N	2	ug/L	U	U	U_LAB	GELC	2	10	1
CTU6B-16-124216	07/28/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	2.02	mg/L		NQ	NQ	GELC	0.17	0.5	10
CTU6B-16-124216	07/28/2016	F	SW-846:6850	Perchlorate	Y	0.173	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6B-16-124212	08/04/2016	F	SW-846:6020	Chromium	Y	8.41	ug/L	J	J	J_LAB	GELC	2	10	1
CTU6B-16-124212	08/04/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	1.41	mg/L		NQ	NQ	GELC	0.017	0.05	1
CTU6B-16-124212	08/04/2016	F	SW-846:6850	Perchlorate	Y	0.137	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6B-16-124734	08/09/2016	F	SW-846:6020	Chromium	N	10.6	ug/L		U	I4	GELC	2	10	1
CTU6B-16-124734	08/09/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	1.4	mg/L		NQ	NQ	GELC	0.017	0.05	1
CTU6B-16-124734	08/09/2016	F	SW-846:6850	Perchlorate	Y	0.138	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6B-16-124742	10/26/2016	UF	SW-846:6020	Chromium	Y	12.3	ug/L		NQ	NQ	GELC	3	10	1

Enclosure 3

Table E3-2
2016 Treatment Unit Effluent Data Summary For CTUB_R-28

Sample	Collection Date	Field Prep	Method	Analyte	Detect Flag	Result	Units	Lab Qualifier Code	Validation Qualifier Code	Validation Reason Code	Lab	MDL	PQL	Dilution Factor
CTU6B-16-124742	10/26/2016	UF	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	1.03	mg/L		NQ	NQ	GELC	0.017	0.05	1
CTU6B-16-124742	10/26/2016	UF	SW-846:6850	Perchlorate	Y	0.0834	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6B-16-124741	11/01/2016	UF	SW-846:6020	Chromium	Y	10.4	ug/L		NQ	NQ	GELC	3	10	1
CTU6B-16-124741	11/01/2016	UF	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	1.08	mg/L		NQ	NQ	GELC	0.017	0.05	1
CTU6B-16-124741	11/01/2016	UF	SW-846:6850	Perchlorate	Y	0.103	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6B-16-124743	11/03/2016	UF	SW-846:6020	Chromium	Y	11	ug/L		NQ	NQ	GELC	3	10	1
CTU6B-16-124743	11/03/2016	UF	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	1.07	mg/L		NQ	NQ	GELC	0.017	0.05	1
CTU6B-16-124743	11/03/2016	UF	SW-846:6850	Perchlorate	Y	0.0773	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6B-16-124737	11/15/2016	F	SW-846:6020	Chromium	Y	10.6	ug/L		J	I10d	GELC	3	10	1
CTU6B-16-124737	11/15/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	1.06	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU6B-16-124737	11/15/2016	F	SW-846:6850	Perchlorate	Y	0.0738	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU6B-16-124736	12/15/2016	UF	SW-846:6020	Chromium	Y	10.6	ug/L		NQ	NQ	GELC	3	10	1
CTU6B-16-124736	12/15/2016	UF	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	0.955	mg/L		NQ	NQ	GELC	0.017	0.05	1
CTU6B-16-124736	12/15/2016	UF	SW-846:6850	Perchlorate	Y	0.0605	ug/L	J	J	J_LAB	GELC	0.05	0.2	1

Notes:

F - filtered.

UF - unfiltered.

N - in the detect flag column means the analyte was undetected.

Y - in the detect flag column means the analyte was detected.

U - in the lab qualifier column means analyte is classified as not detected.

U - in the validation qualifier column means analyte is classified as not detected.

J - in the lab qualifier comment means the analyte is classified as estimated.

J - in the validation qualifier comment means the analyte is classified as estimated.

NQ - in the validation qualifier column means no qualifier.

NQ - in the validation reason column means no qualifier.

U_LAB in the validation reason column means the analyte is classified as not detected.

J_LAB in the validation reason column means the analyte is classified as estimated.

I4 in the validation reason column means the analyte result is $\leq 5x$ the concentration of related analyte in the method blank.

I4a in the validation reason column means the analyte result is estimated and biased high because the analyte was identified in the method blank but was $>5x$ the concentration of related analyte in the method blank

I10b in the validation reason column means the sample and/or the duplicate sample results RPD is not within the acceptance limites. External laboratory limits are located within the associated data package.

Enclosure 3

Table E3-3
2016 Treatment Unit Effluent Data Summary For CTUC_CrEX-3

Sample	Collection Date	Field Prep	Method	Analyte	Detect Flag	Result	Units	Lab Qualifier Code	Validation Qualifier Code	Validation Reason Code	Lab	MDL	PQL	Dilution Factor
CTU4C-16-122945	08/12/2016	F	SW-846:6020	Chromium	N	2	ug/L	U	U	U_LAB	GELC	2	10	1
CTU4C-16-122945	08/12/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	N	0.017	mg/L	U	U	U_LAB	GELC	0.017	0.05	1
CTU4C-16-122945	08/12/2016	F	SW-846:6850	Perchlorate	N	0.05	ug/L	U	U	U_LAB	GELC	0.05	0.2	1
CTU4C-16-122947	09/12/2016	F	SW-846:6020	Chromium	Y	6.72	ug/L	J	J	J_LAB	GELC	3	10	1
CTU4C-16-122947	09/12/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	N	0.017	mg/L	U	U	U_LAB	GELC	0.017	0.05	1
CTU4C-16-122947	09/12/2016	F	SW-846:6850	Perchlorate	N	0.05	ug/L	U	U	U_LAB	GELC	0.05	0.2	1
CTU4C-16-122946	09/16/2016	F	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU4C-16-122946	09/16/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	6.35	mg/L		NQ	NQ	GELC	0.17	0.5	10
CTU4C-16-122946	09/16/2016	F	SW-846:6850	Perchlorate	Y	0.0818	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU4C-16-122944	09/19/2016	F	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU4C-16-122944	09/19/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	5.29	mg/L		NQ	NQ	GELC	0.17	0.5	10
CTU4C-16-122944	09/19/2016	F	SW-846:6850	Perchlorate	Y	0.121	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU4C-16-122942	09/23/2016	F	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU4C-16-122942	09/23/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	4.9	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU4C-16-122942	09/23/2016	F	SW-846:6850	Perchlorate	Y	0.118	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU4C-16-122940	09/26/2016	F	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU4C-16-122940	09/26/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	4.97	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU4C-16-122940	09/26/2016	F	SW-846:6850	Perchlorate	Y	0.144	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU4C-16-122943	10/03/2016	F	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU4C-16-122943	10/03/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	4.91	mg/L		NQ	NQ	GELC	0.17	0.5	10
CTU4C-16-122943	10/03/2016	F	SW-846:6850	Perchlorate	Y	0.131	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU4C-16-126745	10/07/2016	F	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU4C-16-126745	10/07/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	4.9	mg/L		NQ	NQ	GELC	0.17	0.5	10
CTU4C-16-126745	10/07/2016	F	SW-846:6850	Perchlorate	Y	0.133	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU4C-16-126746	10/11/2016	F	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU4C-16-126746	10/11/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	4.76	mg/L		NQ	NQ	GELC	0.17	0.5	10
CTU4C-16-126746	10/11/2016	F	SW-846:6850	Perchlorate	Y	0.144	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU4C-16-126747	10/14/2016	F	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU4C-16-126747	10/14/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	4.77	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU4C-16-126747	10/14/2016	F	SW-846:6850	Perchlorate	Y	0.134	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU4C-16-126749	10/17/2016	UF	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU4C-16-126749	10/17/2016	UF	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	4.04	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU4C-16-126749	10/17/2016	UF	SW-846:6850	Perchlorate	Y	0.132	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU4C-16-126752	10/21/2016	UF	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU4C-16-126752	10/21/2016	UF	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	4.1	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU4C-16-126752	10/21/2016	UF	SW-846:6850	Perchlorate	Y	0.118	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU4C-16-126754	10/24/2016	UF	SW-846:6020	Chromium	N	3	ug/L	U	U	U_LAB	GELC	3	10	1
CTU4C-16-126754	10/24/2016	UF	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	4.8	mg/L		NQ	NQ	GELC	0.17	0.5	10
CTU4C-16-126754	10/24/2016	UF	SW-846:6850	Perchlorate	Y	0.146	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU4C-16-126753	10/28/2016	UF	SW-846:6020	Chromium	N	5.23	ug/L	J	U	I4	GELC	3	10	1
CTU4C-16-126753	10/28/2016	UF	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	4.85	mg/L		NQ	NQ	GELC	0.17	0.5	10
CTU4C-16-126753	10/28/2016	UF	SW-846:6850	Perchlorate	Y	0.147	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU4C-16-126750	10/31/2016	UF	SW-846:6020	Chromium	Y	4.82	ug/L	J	J	J_LAB	GELC	3	10	1
CTU4C-16-126750	10/31/2016	UF	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	5.25	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU4C-16-126750	10/31/2016	UF	SW-846:6850	Perchlorate	Y	0.174	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU4C-16-126751	11/02/2016	UF	SW-846:6020	Chromium	Y	8.9	ug/L	J	J	J_LAB	GELC	3	10	1

Enclosure 3

Table E3-3
2016 Treatment Unit Effluent Data Summary For CTUC_CrEX-3

Sample	Collection Date	Field Prep	Method	Analyte	Detect Flag	Result	Units	Lab Qualifier Code	Validation Qualifier Code	Validation Reason Code	Lab	MDL	PQL	Dilution Factor
CTU4C-16-126751	11/02/2016	UF	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	4.56	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU4C-16-126751	11/02/2016	UF	SW-846:6850	Perchlorate	Y	0.19	ug/L	J	J	J_LAB	GELC	0.05	0.2	1
CTU4C-17-127490	11/07/2016	F	SW-846:6020	Chromium	Y	29.8	ug/L		NQ	NQ	GELC	3	10	1
CTU4C-17-127490	11/07/2016	F	EPA:353.2	Nitrate-Nitrite as Nitrogen	Y	4.8	mg/L		NQ	NQ	GELC	0.085	0.25	5
CTU4C-17-127490	11/07/2016	F	SW-846:6850	Perchlorate	Y	0.232	ug/L		NQ	NQ	GELC	0.05	0.2	1

Notes:

F - filtered.

UF - unfiltered.

N - in the detect flag column means the analyte was undetected.

Y - in the detect flag column means the analyte was detected.

U - in the lab qualifier column means analyte is classified as not detected.

U - in the validation qualifier column means analyte is classified as not detected.

J - in the lab qualifier comment means the analyte is classified as estimated.

J - in the validation qualifier comment means the analyte is classified as estimated.

NQ - in the validation qualifier column means no qualifier.

NQ - in the validation reason column means no qualifier.

U_LAB in the validation reason column means the analyte is classified as not detected.

J_LAB in the validation reason column means the analyte is classified as estimated.

ENCLOSURE 4

**CD containing analytical reports from
GEL Laboratories LLC
(upon request)**

EPC-DO: 17-048

LA-UR-17-20229

U1501760

Date: **FEB 13 2017**

ABSTRACT: ENCLOSURE 4 CDs (1)

Enclosure 4 contains one CD containing the analytical results from GEL Laboratories LLC. Analytical analysis completed as part of DP-1793 Work Plan #3 in support of the land application of treated groundwater. Results provided are from the treated effluent from treatment units CTUA, CTUB, and CTUC associated with the chromium groundwater treatment system within Technical Area (TA)-05.

ENCLOSURE 5

Tracer study results summary table

EPC-DO: 17-048

LA-UR-17-20229

U1501760

Date: **FEB 13 2017**

Table E5-1
2016 Tracer Study Results Summary Table

Well Name	Sample ID	Sample Date	Tracers Detected ^{1,2}	
			2,7 NDS ^{3,5} from CrPZ-2a (mg/L)	ReO ₄ ^{4,5} from CrPZ-2a (mg/L)
CrEX-3	CrEX3-16-123277	6/24/2016	0	
	CrEX3-16-123287	6/24/2016		0.0000
	CrEX3-16-123279	9/12/2016		0.00003
	CrEX3-16-123289	9/12/2016	0.0000	
	CrEX3-16-123280	9/13/2016		0.0014
	CrEX3-16-123290	9/13/2016	0.0350	
	CrEX3-16-123281	9/14/2016		0.0024
	CrEX3-16-123291	9/14/2016	0.0591	
	CrEX3-16-123282	9/15/2016		0.0058
	CrEX3-16-123292	9/15/2016	0.2878	
	CrEX3-16-123283	9/16/2016		0.0136
	CrEX3-16-123293	9/16/2016	0.3111	
	CrEX3-16-123284	9/17/2016		0.0212
	CrEX3-16-123294	9/17/2016	0.4073	
	CrEX3-16-123285	9/18/2016		0.0312
	CrEX3-16-123295	9/18/2016	0.6541	
	CrEX3-16-123286	9/19/2016		0.0380
	CrEX3-16-123296	9/19/2016	0.7799	
	CrEX3-16-124088	9/20/2016	0.8006	
	CrEX3-16-124127	9/20/2016		0.0408
	CrEX3-16-124089	9/21/2016	2.0582	
	CrEX3-16-124128	9/21/2016		0.0614
	CrEX3-16-124090	9/22/2016	1.2807	
	CrEX3-16-124129	9/22/2016		0.0457
	CrEX3-16-124091	9/23/2016	1.1037	
	CrEX3-16-124130	9/23/2016		0.0520
	CrEX3-16-124092	9/24/2016	1.2353	
	CrEX3-16-124131	9/24/2016		0.0556
	CrEX3-16-124094	9/25/2016	1.2678	
	CrEX3-16-124133	9/25/2016		0.0594
	CrEX3-16-124095	9/26/2016	1.2110	
	CrEX3-16-124134	9/26/2016		0.0621
	CrEX3-16-124096	9/27/2016	1.3374	
	CrEX3-16-124135	9/27/2016		0.0628
	CrEX3-16-124097	9/28/2016	1.3194	
	CrEX3-16-124136	9/28/2016		0.0653
	CrEX3-16-124098	9/29/2016	1.4097	
	CrEX3-16-124137	9/29/2016		0.0692
	CrEX3-16-124100	9/30/2016	1.5099	
	CrEX3-16-124139	9/30/2016		0.0718

Table E5-1
2016 Tracer Study Results Summary Table

Well Name	Sample ID	Sample Date	Tracers Detected ^{1,2}	
			2,7 NDS ^{3,5} from CrPZ-2a (mg/L)	ReO ₄ ^{4,5} from CrPZ-2a (mg/L)
	CrEX3-16-124101	10/1/2016	1.3540	
	CrEX3-16-124140	10/1/2016		0.0680
	CrEX3-16-124102	10/2/2016	1.2667	
	CrEX3-16-124141	10/2/2016		0.0638
	CrEX3-16-124103	10/3/2016	1.3823	
	CrEX3-16-124142	10/3/2016		0.0696
	CrEX3-16-124104	10/4/2016	1.2370	
	CrEX3-16-124143	10/4/2016		0.0643
	CrEX3-16-124105	10/5/2016	1.1230	
	CrEX3-16-124144	10/5/2016		0.0657
	CrEX3-16-124106	10/6/2016	1.1050	
	CrEX3-16-124145	10/6/2016		0.0618
	CrEX3-16-124107	10/7/2016	1.1383	
	CrEX3-16-124146	10/7/2016		0.0659
	CrEX3-17-126926	10/8/2016	0.9838	
	CrEX3-17-126956	10/8/2016		0.0595
	CrEX3-17-126927	10/9/2016	0.9911	
	CrEX3-17-126957	10/9/2016		0.0593
	CrEX3-17-126928	10/10/2016	0.9664	
	CrEX3-17-126958	10/10/2016		0.0606
	CrEX3-17-126929	10/11/2016	0.8893	
	CrEX3-17-126959	10/11/2016		0.0555
	CrEX3-17-126930	10/12/2016	1.0366	
	CrEX3-17-126960	10/12/2016		0.0669
	CrEX3-17-126937	10/13/2016	1.0323	
	CrEX3-17-126967	10/13/2016		0.0560
	CrEX3-17-126938	10/13/2016	1.0310	
	CrEX3-17-126968	10/13/2016		0.0556
	CrEX3-17-126939	10/13/2016	0.9811	
	CrEX3-17-126969	10/13/2016		0.0591
	CrEX3-17-126940	10/13/2016	1.0243	
	CrEX3-17-126970	10/13/2016		0.0534
	CrEX3-17-126941	10/13/2016	1.0008	
	CrEX3-17-126971	10/13/2016		0.0567
	CrEX3-17-126942	10/13/2016	0.9996	
	CrEX3-17-126972	10/13/2016		0.0530
	CrEX3-17-126943	10/14/2016	0.9736	
	CrEX3-17-126973	10/14/2016		0.0531
	CrEX3-17-126944	10/17/2016	1.6670	
	CrEX3-17-126974	10/17/2016		0.1148

Table E5-1
2016 Tracer Study Results Summary Table

Well Name	Sample ID	Sample Date	Tracers Detected ^{1,2}	
			2,7 NDS ^{3,5} from CrPZ-2a (mg/L)	ReO ₄ ^{4,5} from CrPZ-2a (mg/L)
	CrEX3-17-126945	10/17/2016	1.2751	
	CrEX3-17-126975	10/17/2016		0.1075
	CrEX3-17-126946	10/18/2016	1.2292	
	CrEX3-17-126947	10/18/2016	0.9716	
	CrEX3-17-126977	10/18/2016		0.0571
	CrEX3-17-126948	10/18/2016	0.9448	
	CrEX3-17-126978	10/18/2016		0.0541
	CrEX3-17-126949	10/18/2016	0.9444	
	CrEX3-17-126979	10/18/2016		0.0540
	CrEX3-17-126950	10/18/2016	0.9941	
	CrEX3-17-126980	10/18/2016		0.0587
	CrEX3-17-126951	10/18/2016	0.9410	
	CrEX3-17-126981	10/18/2016		0.0565
	CrEX3-17-126952	10/18/2016	0.9334	
	CrEX3-17-126982	10/18/2016		0.0559
	CrEX3-17-126953	10/18/2016	0.9508	
	CrEX3-17-126983	10/18/2016		0.0553
	CrEX3-17-126954	10/19/2016	0.9287	
	CrEX3-17-126984	10/19/2016		0.0658
	CrEX3-17-126955	10/20/2016	0.2677	
	CrEX3-17-126985	10/20/2016		0.0587
	CrEX3-17-127050	10/21/2016	0.8555	
	CrEX3-17-127110	10/21/2016		0.0586
	CrEX3-17-127051	10/22/2016	0.0848	
	CrEX3-17-127111	10/22/2016		0.0604
	CrEX3-17-127055	10/23/2016	0.6813	
	CrEX3-17-127115	10/23/2016		0.0502
	CrEX3-17-127052	10/23/2016	0.7884	
	CrEX3-17-127112	10/23/2016		0.0408
	CrEX3-17-127053	10/24/2016	0.7660	
	CrEX3-17-127113	10/24/2016		0.0530
	CrEX3-17-127054	10/25/2016	0.7186	
	CrEX3-17-127114	10/25/2016		0.0572
	CrEX3-17-127055	10/26/2016	0.6813	
	CrEX3-17-127115	10/26/2016		0.0502
	CrEX3-17-127056	10/27/2016	0.6462	
	CrEX3-17-127116	10/27/2016		0.0468
	CrEX3-17-127057	10/28/2016	0.6313	
	CrEX3-17-127117	10/28/2016		0.0482
	CrEX3-17-127058	10/29/2016	0.6615	

Table E5-1
2016 Tracer Study Results Summary Table

Well Name	Sample ID	Sample Date	Tracers Detected ^{1,2}	
			2,7 NDS ^{3,5} from CrPZ-2a (mg/L)	ReO ₄ ^{4,5} from CrPZ-2a (mg/L)
	CrEX3-17-127118	10/29/2016		0.0442
	CrEX3-17-127059	10/30/2016	0.4898	
	CrEX3-17-127119	10/30/2016		0.0429
	CrEX3-17-127060	10/31/2016	0.5096	
	CrEX3-17-127120	10/31/2016		0.0395
	CrEX3-17-127061	11/1/2016	0.4563	
	CrEX3-17-127121	11/1/2016		0.0428
	CrEX3-17-127062	11/2/2016	0.3936	
	CrEX3-17-127122	11/2/2016		0.0345
	CrEX3-17-127063	11/3/2016	0.3258	
	CrEX3-17-127123	11/3/2016		0.0345
	CrEX3-17-127064	11/4/2016	0.2302	
	CrEX3-17-127124	11/4/2016		0.0325
	CrEX3-17-127065	11/5/2016	0.2563	
	CrEX3-17-127125	11/5/2016		0.0319
	CrEX3-17-127066	11/6/2016	0.2362	
	CrEX3-17-127126	11/6/2016		0.0306
	CrEX3-17-127067	11/7/2016	0.2038	
	CrEX3-17-127068	12/14/2016	*	
	CrEX3-17-127128	12/14/2016		0.0170

Notes:

* Analytic results not available.

¹CrEX-3 is the only well in the vicinity of tracer deployment for which tracers deployed during 2016 were detected. In addition, additional tracers deployed in CrPZ-2b (two) and R-28 (two) have not been detected in any well.

²Analytical results for tracer deployment locations not available at the time of report preparation.

³2,7 NDS - Sodium 2,7 Naphthalene Disulfonate

⁴ReO₄ - NaReO₄

⁵25 kg of 2,7 NDS and 2 kg of ReO₄ deployed into CrPZ-2a on June 15-18. Tracer dissolved in 10,000 gal of potable water. An additional 10,000 gal of untraced potable "chase" water deployed June 18-20 starting immediately after tracer deployment.

ENCLOSURE 6

**Map showing land application zones receiving
treated groundwater under Work Plan #3**

EPC-DO: 17-048

LA-UR-17-20229

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Date: **FEB 13 2017**

