



ESHID-602164

***Environmental Protection & Compliance Division
Environmental Compliance Programs (EPC-CP)***
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Date: **FEB 13 2017**
Symbol: EPC-DO: 17-049
LA-UR: 17-20288
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

**Subject: Work Plan #4 Discharge Report, Land Application of Treated Groundwater from
Technical Areas 9 and 16, 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 27, 2016 letter (Enclosure 1) granting approval of Work Plan #4 (Enclosure 2) under Discharge Permit DP-1793, for the discharge of treated groundwater from aquifer tests to investigate the occurrence of and potential remedial alternatives for high explosives (HE) contamination in deep-perched groundwater associated with the former Outfall 260 at Technical Area (TA)-16. Condition No. 8 of Discharge Permit DP-1793 and the above-referenced May 27, 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; and*
5. *A map identifying the locations of discharge*

Each of the above requirements is 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 #4.

Table 1. Volume of Treated groundwater discharged under Work Plan #4 in 2016

Well	Discharge Start Date	Discharge End Date	# of Days of Active Discharge	Total Volume (gal.)	Average Volume (gal.)	Maximum Daily Volume (gal.)
CdV-9-1i	6/22/2016	7/28/2016	7	82,744	11,821	22,506
CdV-16-1i	8/23/2016	10/14/2016	3	16,876	5,625	10,000
CdV-16-4ip	9/15/2016	11/7/2016	12	247,159	20,597	51,209
CdV-9-1i - development water	11/21/2016	12/21/2016	5	61,000	12,200	20,000
Total Volume of Discharge				407,779		
Average Volume of Discharge					15,103	
Maximum Daily Volume of Discharge						51,209

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

The average land application rate over the 27 days of active discharge was approximately 15,103 gallons per day (gpd), as shown on Table 1. Table 1 also provides the average land application rate for each well. The maximum daily discharge was 51,209 gpd, as shown on Table 1. Table 1 also provides the maximum land application rate for each well.

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

In accordance with the Work Plan #4 Sampling Plan treated water was sampled and analyzed for RDX by the on-site analytical laboratory. In addition, during the aquifer test period duplicate confirmation samples were obtained and submitted for analysis by an off-site analytical laboratory, GEL Laboratories LLC. During the period of treating and land applying water from development of well CdV-9-1i samples were analyzed for RDX by the on-site analytical laboratory without duplicate samples obtained.

The confirmation analytical results from samples collected and analyzed at the off-site analytical laboratory under Work Plan #4 are summarized in Enclosure 3. This enclosure also contains the effluent analytical results summary obtained from the on-site analytical laboratory during the period of treatment/land application of development water from well CdV-9-1(i).

No results for RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine) exceeded the land application limit of 6.3 µg/L. Sampling plan terminology in future work plans will be refined/clarified to ensure weekly analysis by an off-site analytical laboratory occurs when land application occurs.

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: *A map identifying the locations of discharge.*

Enclosure 5 provides a map showing the nine approved land application zones in TA-9 and TA-16. Five of the nine zones —1, 2, 3, 4, and 9—received discharges of treated groundwater under Work Plan #4. The remaining #zones —5, 6, 7, and 8—were not used. This map has been revised from the original map shown in the work plan to remove all areas exceeding the 5% slope limit in accordance with Modification #1 identified in your May 27, 2016 approval letter.

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 27, 2016, approving Work Plan #4
(2) LANL submittal letter dated March 22, 2016 for Work Plan #4 (EPC-DO-16-064)
(3) 2016 Treatment Unit Effluent Data Summary for DP-1793 Work Plan #4
(4) CD containing analytical reports from GEL Laboratories LLC (upon request)
(5) Map showing land application zones receiving treated groundwater under Work Plan #4

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)
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Stephani F. Swickley, ADEM-PO, (E-File)
Danny Katzman, ADEM-PO, (E-File)
Gerald F. Fordham, ER-ES, (E-File)
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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 #4 Discharge Report, Land Application of Treated Groundwater from Technical Areas 9 and 16, 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 27, 2016 letter (Enclosure 1) granting approval of Work Plan #4 (Enclosure 2) under Discharge Permit DP-1793, for the discharge of treated groundwater from aquifer tests to investigate the occurrence of and potential remedial alternatives for high explosives (HE) contamination in deep-perched groundwater associated with the former Outfall 260 at Technical Area (TA)-16. Condition No. 8 of Discharge Permit DP-1793 and the above-referenced May 27, 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; and*
5. *A map identifying the locations of discharge*

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

ENCLOSURE 1

NMED letter dated May 27, 2016, approving Work Plan #4

EPC-DO: 17-049

LA-UR-17-20288

U1501760

Date: **FEB 13 2017**



SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
Lieutenant Governor

ENCLOSURE 1
NEW MEXICO
ENVIRONMENT DEPARTMENT

Harold Runnels Building
1190 South St. Francis Drive (87505)
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RYAN FLYNN
Cabinet Secretary

BUTCH TONGATE
Deputy Secretary

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

May 27, 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 #4 for Treatment and Land Application of Groundwater – TAs 09 and 16, Los Alamos National Laboratory, Discharge Permit DP-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 land application of treated groundwater at Technical Areas (TA) 09 and 16. 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 high explosives (HE) contaminated groundwater at the referenced TAs.

The workplan (WP #4) proposes the discharge of treated groundwater from three aquifer tests designed to investigate the occurrence and potential remedial alternative for HE contamination in the deep-perched groundwater aquifer associated with the former 260 Outfall at TA-16. In addition to the discharge of aquifer test waters, WP #4 proposes to discharge treated groundwaters generated during well development of Well CdV-9-1(i). These activities will be conducted as specified in the *Work Plan of Intermediate Groundwater System Characterization at Consolidated unit 16-021(c)-99*. NMED's Hazardous Waste Bureau approved this plan in a letter dated October 13, 2015.

The primary contaminant of concern associated with the subject groundwater, and the only contaminant expected to be above regulatory or permit standards, is hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX). Also present in the investigation area groundwater are low concentrations of multiple HE compounds and organic compounds, all measured to be significantly below associated maximum contaminant levels.

All groundwater subject to this workplan will be treated with granulated activated carbon (GAC) prior to being discharged to specific land application areas as permitted under DP-1793. Monitoring shall ensure that treated groundwater contaminate concentrations do not exceed 90% of the 20.6.2.3103 NMAC numeric standards or do not exceed 90% of the numeric standards established for tap water in Table A-1 of NMED's *Risk Assessment Guidance for Site Investigation and Remediation* for 20.6.2.7.WW NMAC toxic pollutants, e.g., RDX.

The subject groundwater wells are located in the Canon de Valle watershed within T119N/R06E/S29, S30, S31, S32 and T119N/R05E/S36. The depth to the regional aquifer beneath the proposed land application sites is approximately 1200 feet below ground surface. The direction of groundwater flow beneath the site is generally to the southeast.

A copy of the proposed WP#4 was posted on LANL's Electronic Public Reading Room on March 29, 2016. In accordance with DP-1793 Condition 3, proposed WP#4 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 #4 shall be performed in accordance with the Workplan and are subject to all conditions of DP-1793. Workplan #4 is approved as submitted with the following modifications:

1. The Permittees shall revise the land application zone map (Enclosure 3) removing all areas exceeding the 5% slope limit.
2. 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 the concentration of RDX and all other contaminants of concern 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 RDX, the sampling and analysis requirements above shall not be effective.


Approval of WP#4 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.

May 27, 2016

Page 3 of 3

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 Kielling, NMED/HWB
Steven Yanicak, NMED/DOEOB
Steven Huddleson, NMED/GWQB
Greg Huey, NMED/GWQB
Bob Beers, LANS, EM-LA
Cheryl Rodriquez, 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 #4 (EPC-DO-16-064)

EPC-DO: 17-049

LA-UR-17-20288

U1501760

Date: **FEB 13 2017**



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Date: **MAR 22 2016**
Symbol: **EPC-DO-16-064**
LA-UR: **16-21518**
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: Work Plan for Treatment and Land Application of Groundwater from
Technical Areas 09 and 16, DP-1793, WP#4**

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 a detailed, project-specific work plan for approval by NMED before any activities are undertaken.

The enclosed work plan is for the proposed discharge of treated groundwater from aquifer tests conducted to investigate the occurrence of and potential remedial alternatives for high explosives (HE) contamination in deep-perched groundwater associated with the former Outfall at Technical Area (TA)-16. The primary contaminant in groundwater within the study area is RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine), a high explosives (HE) compound widely used in military and industrial applications. Low concentrations of other HE compounds and volatile organic compounds (VOCs) are also present in groundwater in the investigation area.

Ms. Michelle Hunter
EPC-DO-16-064

- 2 -

DOE/LANS propose to conduct three 30-day aquifer tests at monitoring wells CdV-9-1(i), CdV-16-4ip, and CdV-16-1(i). The first test is expected to begin in June 2016 with approximately 30 days of recovery time between each test. The aquifer tests were designed to evaluate the degree of hydraulic connectivity within the perched-groundwater system and to improve the general understanding of transport pathways for RDX and other contaminants to the perched groundwater zones. Additionally, water generated during well development of CdV-9-1(i) will be treated and discharged under this work plan.

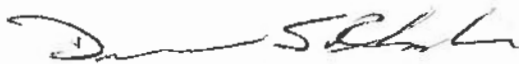
Please contact Robert S. Beers by telephone at (505) 667-7969 or by email at bbeers@lanl.gov if you have questions regarding this work plan.

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) Work Plan for Treatment and Land Application of Groundwater from Technical Areas 09 and 16, DP-1793, WP#4
- 2) Figures
- 3) Topographic Map of Project Site
- 4) As-Built Specifications for TA-16 Wells
- 5) Analytical Data
- 6) GAC Well Treatment System Details

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)
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Jordan Arnsward, NA-LA, (E-File)
Craig S. Leasure, PADOPS, (E-File)
William R. Mairson, PADOPS, (E-File)

Ms. Michelle Hunter
EPC-DO-16-064

- 3 -

Cy (continued):

Michael T. Brandt, ADESH, (E-File)
Raeanna Sharp-Geiger, ADESH, (E-File)
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Enrique Torres, ADEM, (E-File)
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Date: MAR 22 2016
 Symbol: EPC-DO-16-064
 LA-UR: 16-21518
 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: Work Plan for Treatment and Land Application of Groundwater from Technical Areas 09 and 16, DP-1793, WP#4

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 a detailed, project-specific work plan for approval by NMED before any activities are undertaken.

The enclosed work plan is for the proposed discharge of treated groundwater from aquifer tests conducted to investigate the occurrence of and potential remedial alternatives for high explosives (HE) contamination in deep-perched groundwater associated with the former Outfall at Technical Area (TA)-16. The primary contaminant in groundwater within the study area is RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine), a high explosives (HE) compound widely used in military and industrial applications. Low concentrations of other HE compounds and volatile organic compounds (VOCs) are also present in groundwater in the investigation area.

ENCLOSURE 3

**2016 Treatment Unit Effluent Data Summary
for DP-1793 Work Plan #4**

EPC-DO: 17-049

LA-UR-17-20288

U1501760

Date: FEB 13 2017

Enclosure 3

Table E3-1
2016 Treatment Unit Effluent Data Summary for DP-1793 Work Plan #4

Sample	Collection Date	Field Prep	Method	Analyte	Detect Flag	Result	Units	Lab Qualifier Code	Validation Qualifier Code	Validation Reason Code	Lab ¹	MDL	PQL
VS-HE-4-16-121482	05/19/16	UF	SW-846:8321A_MOD	RDX	N	0.5	ug/L	U	U	U_LAB	GELC	0.16	0.5
VS-HE-4-16-121479	06/08/16	UF	SW-846:8321A_MOD	RDX	N	0.258	ug/L	U	U	U_LAB	GELC	0.0825	0.258
VS-HE-4-16-121476	06/15/16	UF	SW-846:8321A_MOD	RDX	N	0.266	ug/L	U	U	U_LAB	GELC	0.0851	0.266
VS-HE-4-16-123138	06/22/16	UF	SW-846:8321A_MOD	RDX	N	0.26	ug/L	U	U	U_LAB	GELC	0.0833	0.26
VS-HE-4-16-123139	06/29/16	UF	SW-846:8321A_MOD	RDX	N	0.26	ug/L	U	U	U_LAB	GELC	0.0833	0.26
VS-HE-4-16-123140	07/06/16	UF	SW-846:8321A_MOD	RDX	N	0.256	ug/L	U	U	U_LAB	GELC	0.0821	0.256
VS-HE-4-16-123145	07/12/16	UF	SW-846:8321A_MOD	RDX	N	0.26	ug/L	U	U	U_LAB	GELC	0.0833	0.26
VS-HE2-03-16-124405	08/03/16	UF	SW-846:8321A_MOD	RDX	N	0.26	ug/L	U	U	U_LAB	GELC	0.0833	0.26
VS-HE2-03-16-124404	08/10/16	UF	SW-846:8321A_MOD	RDX	N	0.263	ug/L	U	UJ	HE9	GELC	0.0842	0.263
VS-HE2-03-16-124798	08/17/16	UF	SW-846:8321A_MOD	RDX	N	0.26	ug/L	U	UJ	HE9	GELC	0.0833	0.26
VS-HE2-03-16-124800	08/24/16	UF	SW-846:8321A_MOD	RDX	N	0.263	ug/L	U	U	U_LAB	GELC	0.0842	0.263
VS-HE2-03-16-124799	08/30/16	UF	SW-846:8321A_MOD	RDX	N	0.263	ug/L	U	UJ	HE9	GELC	0.0842	0.263
VS-HE2-03-16-124406	09/02/16	UF	SW-846:8321A_MOD	RDX	N	0.275	ug/L	UQ	U	U_LAB	GELC	0.0879	0.275
VS-HE-4-16-125287	09/06/16	UF	SW-846:8321A_MOD	RDX	N	0.0833	ug/L	U	U	U_LAB	GELC	0.0833	0.26
VS-HE2-03-16-126031	09/09/16	UF	SW-846:8321A_MOD	RDX	N	0.269	ug/L	U	U	U_LAB	GELC	0.086	0.269
VS-HE-4-16-125294	09/14/16	UF	SW-846:8321A_MOD	RDX	N	0.0884	ug/L	U	U	U_LAB	GELC	0.0884	0.276
VS-HE-4-16-126272	09/21/16	UF	SW-846:8321A_MOD	RDX	N	0.087	ug/L	U	U	U_LAB	GELC	0.087	0.272
VS-HE-4-16-125290	09/28/16	UF	SW-846:8321A_MOD	RDX	N	0.0851	ug/L	U	U	U_LAB	GELC	0.0851	0.266
VS-HE-4-16-126277	10/05/16	UF	SW-846:8321A_MOD	RDX	N	0.086	ug/L	U	UJ	HE9	GELC	0.086	0.269
VS-HE-4-16-126275	10/11/16	UF	SW-846:8321A_MOD	RDX	N	0.0833	ug/L	U	U	U_LAB	GELC	0.0833	0.26
VS-HE2-02-17-127030	10/26/16	UF	SW-846:8321A_MOD	RDX	N	0.0842	ug/L	U	U	U_LAB	GELC	0.0842	0.263
VS-HE2-03-17-127042	10/26/16	UF	SW-846:8321A_MOD	RDX	N	0.0842	ug/L	U	U	U_LAB	GELC	0.0842	0.263
VS-HE2-02-17-127027	11/02/16	UF	SW-846:8321A_MOD	RDX	N	0.0842	ug/L	U	U	U_LAB	GELC	0.0842	0.263
VS-HE2-03-17-127039	11/02/16	UF	SW-846:8321A_MOD	RDX	N	0.0909	ug/L	U	U	U_LAB	GELC	0.0909	0.284
VS-HE-4-17-128828	11/30/16	UF	SW-846:8330	RDX	N	2.0	ug/L	U	U	U_LAB	EES6	2.0	NR
VS-HE-4-17-128832	12/07/16	UF	SW-846:8330	RDX	N	2.0	ug/L	U	U	U_LAB	EES6	2.0	NR
VS-HE-4-17-128829	12/08/16	UF	SW-846:8330	RDX	N	2.0	ug/L	U	U	U_LAB	EES6	2.0	NR
VS-HE-4-17-128830	12/14/16	UF	SW-846:8330	RDX	N	2.0	ug/L	U	U	U_LAB	EES6	2.0	NR

Notes:

¹ Data from on-site analyses provided for land application of treated water originating from CdV-9-1(i) development water only. Only off-site laboratory confirmation confirmation results presented for water generated as part of aquifer test. Additional on-site analyses completed during these tests which are not presented.

UF - unfiltered.

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

U means the analyte is classified as not 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.

Q - in the lab qualifier comment means one or more quality control criteria was not met.

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

HE9 - means the hold time was >1 and <=2 times the applicable holding time requirements.

NR - in the PQL column means a value was not reported.

ENCLOSURE 4

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

EPC-DO: 17-049

LA-UR-17-20288

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 #4 in support of the land application of treated groundwater. Results provided are from the treated effluent from two treatment units associated with the RDX aquifer test project within Technical Area (TA)-09 and TA-16.

ENCLOSURE 5

Map showing land application zones receiving
treated groundwater under Work Plan #4

EPC-DO: 17-049

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Date: FEB 13 2017

