



FEB 24 2016

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

**Environmental Management**  
**Los Alamos Field Office, A316**  
3747 West Jemez Road  
Los Alamos, New Mexico, 87545  
(505) 665-5325

Date: FEB 22 2016  
Symbol: EPC-DO-16-041  
LA-UR: 16-20743  
Locates Action No.: U1501760

Ms. Michelle Hunter, Chief  
Ground Water Quality Bureau  
New Mexico Environment Department  
Harold Runnels Building, Room N2250  
1190 St. Francis Drive  
P.O. Box 26110  
Santa Fe, NM 87502

Dear Ms. Hunter:

**Subject: Discharge Permit DP-1793 Annual Monitoring Report for 2015**

This letter and enclosures from the U.S. Department of Energy and Los Alamos National Security, LLC (DOE/LANS) are the Annual Monitoring Report for Discharge Permit DP-1793 for 2015. Discharge Permit DP-1793 was issued by the New Mexico Environment Department (NMED) on July 27, 2015, for the land application of groundwater associated with aquifer and pumping tests, well development and rehabilitation, groundwater tracer studies, and groundwater remediation activities. Before a discharge from an individual project or activity begins, DOE/LANS are required to submit a comprehensive work plan to NMED for its review and approval. In calendar year 2015, DOE/LANS submitted the following work plans.

1. **Work Plan #1**, August 12, 2015, *Work Plan for the Treatment and Land Application of Groundwater from Wells in Mortandad and Sandia Canyon* (ENV-DO-15-0221). A copy of the cover letter is provided in Enclosure 1. Work Plan #1 was rejected by the NMED on August 18, 2015, on the grounds that it failed to meet the requirements of Discharge Permit DP-1793. A copy of the rejection letter is also provided in Enclosure 1. No discharge was



conducted under Work Plan #1.

2. **Work Plan #2**, September 3, 2015, *Multiple Activities Work Plan for the Treatment and Land Application of Groundwater from Mortandad and Sandia Canyons, DP1793, WP#2* (ENV-DO-15-0245). A copy of the cover letter is provided in Enclosure 1. Work Plan #2 was approved by NMED, with conditions, on October 8, 2015. Subsequently, on October 29, 2015, the approval letter was reissued with modified conditions. Copies of both the October 8 and October 29, 2015, approval letters are provided in Enclosure 1.

Work Plan #2 was implemented by DOE/LANS for a period of 20 days from October 20, 2015, to November 23, 2015. As required by Discharge Permit DP-1793, a discharge report was submitted to NMED on January 20, 2016 (ENV-DO-16-006). A complete copy of the Work Plan #2 Discharge Report is provided in Enclosure 2.

Condition No. 9 of Discharge Permit DP-1793, included verbatim below, requires DOE/LANS to submit an annual report.

**Condition No. 9**

*The permittee shall submit annual monitoring report to NMED by the 1<sup>st</sup> of March each year summarizing all discharges conducted under this permit during the prior calendar year. Included will be quantity, source, and date of each individual discharge, water quality tables listing analytical results from samples collected under the water quality sampling plan, a map(s) depicting discharge locations, and copies of laboratory analytical reports.*

*Annual monitoring reports shall be performed during the following period:*

- *January 1st through December 31<sup>st</sup> report due by March 1<sup>st</sup>.*

In 2015, all discharges conducted under Discharge Permit DP-1793 were made pursuant to the above-referenced Work Plan #2 (Enclosure 2). Accordingly, all the information required in the 2015 Annual Report per Condition No. 9 of Discharge Permit DP-1793, as cited above, is contained within the Work Plan #2 Discharge Permit Report (Enclosure 2).

Please contact 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 report.

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

Enclosures:

- (1) 2015 work plans and NMED response letters, DP-1793
- (2) Work Plan #2 Discharge Report, DP-1793

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)  
Jordan Arnsward, NA-LA, (E-File)  
Cheryl L. Rodriguez, EM-LA, (E-File)  
Brian T. Hennessey, EM-LA, (E-File)  
Kirsten M. Laskey, EM-LA, (E-File)  
Craig S. Leasure, PADOPS, (E-File)  
Amy E. De Palma, 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-PDO, (E-File)  
John P. McCann, EPC-DO, (E-File)  
Stephani F. Swickley, ADEM-PDO, (E-File)  
Danny Katzman, ADEM-PDO, (E-File)  
Alan S. MacGregor, ER-ES, (E-File)  
Gerald F. Fordham, ES-EPD, (E-File)  
Michael T. Saladen, EPC-CP, (E-File)  
Robert S. Beers, EPC-CP, (E-File)  
Saundra Martinez, OIO-DO, (E-File)  
[lasomailbox@nnsa.doe.gov](mailto:lasomailbox@nnsa.doe.gov), (E-File)  
[locateteam@lanl.gov](mailto:locateteam@lanl.gov), U1501760 (E-File)  
[env-correspondence@lanl.gov](mailto:env-correspondence@lanl.gov), (E-File)  
[emla.docs@em.doe.gov](mailto:emla.docs@em.doe.gov), (E-File)

# **ENCLOSURE 1**

**2015 work plans and NMED response letters, DP-1793**

**EPC-DO-16-041**

**LA-UR-16-20743**

**U1501760**

**Date:** **FEB 22 2016**



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



**Environmental Management**  
**Los Alamos Field Office, A316**  
3747 West Jemez Road  
Los Alamos, New Mexico, 87545  
(505) 665-5658/Fax (505) 606-2132

**Date:** AUG 12 2015  
**Symbol:** ENV-DO-15-0221  
**LA-UR:** 15-23554

**Locates Action No.:** N/A

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

Dear Ms. Hunter:

**Subject: Work Plan for the Treatment and Land Application of Groundwater From Wells in Mortandad and Sandia Canyons, DP-1793**

In July 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.

DOE/LANS propose to pump wells and piezometers in Mortandad and Sandia Canyons as part of the chromium plume monitoring, and also for a Chromium Plume Control Interim Measure and Chromium Plume-Center Characterization to evaluate (1) the potential to mitigate chromium migration within the aquifer through hydraulic control, and (2) the characteristics of both the aquifer and the pumping induced capture zone. Produced groundwater will be treated and discharged in accordance with the enclosed work plan and supporting information:

- ✓ Enclosure 1: Work Plan for the Treatment and Land Application of Groundwater From Wells in Mortandad and Sandia Canyons
- ✓ Enclosure 2: Topographical map showing required features and approved land application areas
- ✓ Enclosure 3: Fact Sheet for Well CrEX-1
- ✓ Enclosure 4: Water quality data from Well CrEX-1
- ✓ Enclosure 5: Ion Exchange (IX) Treatment System Schematic and IX Technical Specifications
- ✓ Enclosure 6: Map of project components: wells, treatment, piping, storage, and irrigation areas

Ms. Michelle Hunter  
ENV-DO-15-0221

- 2 -

Aquifer testing at CrEX-1 is scheduled to begin in September 2015, contingent on NMED approval of the enclosed work plan (Enclosure 1) and receipt of extension approval from the New Mexico Office of the State Engineer for the Pollution Control well permit for well CrEX-1. CrEX-3 will be constructed in Fiscal Year (FY) 2016. New monitoring wells and piezometers will be installed and developed in FY2015/2016. Technical staff from DOE/LANS are available at your convenience to brief you on the details of the project and answer questions.

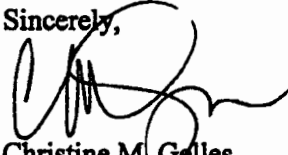
Please contact Robert S. Beers by telephone at (505) 667-7969 or by email at [bbeers@lanl.gov](mailto:bbeers@lanl.gov) if you have questions regarding this work plan.

Sincerely,



Alison M. Dorries  
Division Leader  
Environmental Protection Division  
Los Alamos National Security LLC

Sincerely,



Christine M. Gelles  
Acting Manager  
Environmental Management  
Los Alamos Field Office  
U.S. Department of Energy

AMD:CMG:MTS:RSB/lm

Enclosures:

- (1) Work Plan for the Treatment and Land Application of Groundwater from Wells in Mortandad and Sandia Canyons
- (2) Topographical map showing required features and approved land application areas
- (3) Fact Sheet for Well CrEX-1
- (4) Water quality data from Well CrEX-1
- (5) Ion Exchange (IX) Treatment System Schematic and IX Technical Specifications
- (6) Map of project components: wells, treatment, piping, storage, and irrigation areas

Cy: James Hogan, 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)  
Cheryl L. Rodriguez, EM-LA, (E-File)  
Gene E. Turner, NA-LA, (E-File)  
Kirsten Laskey, NA-LA, (E-File)  
Jordan Arnsward, LASO-NS-PI, (E-File)  
Craig S. Leasure, PADOPS, (E-File)  
Amy E. De Palma, PADOPS, (E-File)  
Michael T. Brandt, ADESH, (E-File)  
Raeanna Sharp-Geiger, ADESH, (E-File)  
Alison M. Dorries, ENV-DO, (E-File)  
Randall M. Erickson, ADEP, (E-File)

Ms. Michelle Hunter  
ENV-DO-15-0221

- 3 -

Cy (continued):

Raymond Martinez, Pueblo of San Ildefonso, (E-File)  
Enrique Torres, ADEP, (E-File)  
Bruce Robinson, ER, (E-File)  
Stephanie F. Swickley, ER, (E-File)  
Danny Katzman, ER, (E-File)  
Alan S. Macgregor, ER, (E-File)  
Michael T. Saladen, ENV-CP, (E-File)  
Robert S. Beers, ENV-CP, (E-File)  
[lasomailbox@nnsa.doe.gov](mailto:lasomailbox@nnsa.doe.gov), (E-File)  
[emla.docs@em.doe.gov](mailto:emla.docs@em.doe.gov), (E-File)  
[locateteam@lanl.gov](mailto:locateteam@lanl.gov), (E-File)  
[epccat@lanl.gov](mailto:epccat@lanl.gov), (E-File)  
[env-correspondence@lanl.gov](mailto:env-correspondence@lanl.gov), (E-File)



SUSANA MARTINEZ  
Governor

JOHN A. SANCHEZ  
Lieutenant Governor

NEW MEXICO  
ENVIRONMENT DEPARTMENT

*Harold Runnels Building*  
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)



RYAN FLYNN  
Cabinet Secretary

BUTCH TONGATE  
Deputy Secretary

**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

August 18, 2015

Allison Dorries, Division Leader  
Environmental Protection Division  
Los Alamos National Security, LLC (LANS)  
3747 West Jemez Road  
Los Alamos, New Mexico 87545

Christine M. Gelles  
Acting Manager  
Environmental Management  
Los Alamos Field Office  
U.S. Department of Energy  
P.O. Box 1663, K490  
Los Alamos, New Mexico 87545



**RE: Discharge Permit DP-1793, Rejection of Workplan for Treatment and Land Application of Groundwater - Los Alamos National Laboratory**

Dear Ms. Dorries and Ms. Gelles:

On July 27, 2015 the New Mexico Environment Department (NMED) issued Discharge Permit DP-1793 to Los Alamos National Laboratory for the land application of treated groundwater derived from aquifer testing, well development, tracer studies and other activities associated with groundwater remediation activities at the laboratory. On August 13, 2015 the NMED Ground Water Quality Bureau (GWQB) received a workplan as required by Condition 3 of DP-1793, for activities regulated under this Discharge Permit.

The workplan proposes treatment and land application of groundwater derived from wells and piezometers, include aquifer testing, purging and sampling of groundwater, aquifer tracer studies and well back flushing of proposed injection wells, with the discharges to be conducted over a five year period (term of the Discharge Permit).



Allison Dorries and Christine Gelles  
August 18, 2015  
Page 2 of 3

The workplan, as submitted, fails to meet the requirements of Condition 3, which states:

*Prior to initiating discharge from an individual project, pumping test, aquifer test or tracer study, the permittee shall submit a workplan to NMED for approval...*

The August 12, 2015 workplan provides only general information on the proposed discharges, including generalized locations of discharge, estimated annual volume of discharge from fourteen (14) one-time well and piezometer actions for the period of 2015 and 2016 and discharges from twenty-two (22) ongoing well and piezometer activities over the term of the permit (5 years).

Discharge Permit DP-1793 clearly requires that each individual activity (aquifer testing, tracer study, well purging and sampling, etc.) must be described in a workplan that provides specific information related to that discharge including:

- a detailed description of the proposed activity, including a statement of purpose;
- a description of water conservation and reuse options considered;
- a topographic map showing the proposed land application sites and the location of all monitoring wells, Site Monitoring Areas (SMA), Solid Waste Management Units (SWMU), National Pollution Discharge Elimination System (NPDES) outfalls, groundwater discharge permits, Areas of Concern (AOC) identified in the 2005 NMED Order on Consent, drinking water wells, surface impoundments and surface drainage features in the vicinity;
- existing data showing the depth to and general groundwater quality at the proposed discharge location including concentrations of contaminants exceeding regulatory standards;
- estimated groundwater flow direction;
- a detailed description of the on-site treatment system to remove contaminants of concern from the effluent;
- a schematic of treatment system and treatment unit specifications;
- a detailed descriptions of the storage/containment systems associated with the treatment;
- Safety Data Sheets for tracer constituents;
- a maximum estimated daily discharge volume;
- total estimated volume of the proposed discharge;
- a proposed sampling plan to demonstrate treatment efficiency and compliance with regulatory standards; proposed method(s) of land application, application rates and area of application; and
- a project schedule including the date the discharge is to commence and anticipated duration.

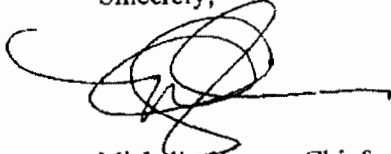
The work plan submitted is hereby rejected. Los Alamos National Laboratory must submit a revised workplan fulfilling the requirements of Condition #3 of DP-1793 and post on the electronic public reading room (EPRR, Condition #12) within 7 days. The Department will

Allison Dorries and Christine Gelles  
August 18, 2015  
Page 3 of 3

accept public comments for a period of 30 days following posting to the EPRR prior to approving the workplan.

If you have any questions, please contact Steven Huddleson at (505) 827-2936. Thank you for your cooperation.

Sincerely,

A handwritten signature in black ink, appearing to be "Michelle Hunter", with a large, stylized loop at the end.

Michelle Hunter, Chief  
Ground Water Quality Bureau

MH:SMH

CC: James Hogan, NMED/SWQB (E-file)  
John F. Kielling, NMED/HWB (E-file)  
Stephen Yanicak, NMED/DOE/OB (E-file)  
Gene Turner, NA-LA (E-file)  
Bob Beers, EM-LA (E-file)  
Joni Arends, CCNS (E-file)



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

**Environmental Management**  
**Los Alamos Field Office, A316**  
3747 West Jemez Road  
Los Alamos, New Mexico, 87545  
(505) 665-5658/Fax (505) 606-2132

**Date:** SEP 03 2015  
**Symbol:** ENV-DO-15-0245  
**LA-UR:** 15-26789

**Locates Action No.:** N/A

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

Dear Ms. Hunter:

**Subject: Multiple Activities Work Plan for the Treatment and Land Application of Groundwater from Mortandad and Sandia Canyons, DP-1793 WP#2**

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 the requirements of Discharge Permit DP-1793, on August 13, 2015, DOE/LANS submitted a work plan for the treatment and land application of groundwater produced from Chromium Project activities (ENV-DO-14-0221). On August 18, 2015, NMED informed DOE/LANS [written communication, Ms. Hunter (NMED) to Ms. Dorries (LANS) and Ms. Gelles (DOE)] that the workplan, as submitted, failed to meet the requirements of Condition No. 3 of the above-referenced Discharge Permit and was therefore rejected. Subsequently, on August 21, 2015, NMED and DOE/LANS staff met to discuss modifications to the August 13<sup>th</sup> work plan that would be incorporated into a new submittal. The enclosed Work Plan incorporates NMED's recommendations.

This Multiple Activities Work Plan (Work Plan) is for the proposed discharge of treated regional aquifer groundwater from three activities conducted under the Chromium Project:

- ✓ pumping at extraction well CrEX-1,
- ✓ new monitoring well and piezometer development and aquifer testing, and
- ✓ routine monitoring well purging during sampling.

Ms. Michelle Hunter  
ENV-DO-15-0245

- 2 -

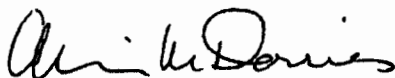
The activities listed above are conducted for chromium plume monitoring as specified in the 2013 Interim Measures Work Plan for the Evaluation of Chromium Mass Removal; NMED's February 19, 2014 Approval with Modifications letter for Phase II Investigation Report for Sandia Canyon; and NMED-approved annual Interim Facility-Wide Groundwater Monitoring Plans. Produced groundwater will be treated and discharged in accordance with the enclosed Work Plan and supporting information:

- ✓ Enclosure 1: Multiple Activities Work Plan for the Treatment and Land Application of Groundwater From Mortandad and Sandia Canyons
- ✓ Enclosure 2: Interim Measures Work Plan for the Evaluation of Chromium Mass Removal
- ✓ Enclosure 3: Topographical map showing required features and approved land application areas
- ✓ Enclosure 4: Table 3.4-1, Interim Monitoring Plan for Chromium Investigation Monitoring Group
- ✓ Enclosure 5: Well and Piezometer Fact Sheets
- ✓ Enclosure 6: Water quality data from Well CrEX-1
- ✓ Enclosure 7: Ion Exchange (IX) Treatment System Schematic and IX Technical Specifications
- ✓ Enclosure 8: Map of project components: wells, treatment, piping, storage, and irrigation areas
- ✓ Enclosure 9: Land application sites signage

Pumping at extraction well CrEX-1 is scheduled to begin in October 2015, contingent on NMED approval of the enclosed Work Plan (Enclosure 1), and continue until December 31, 2015, or until field conditions prohibit land application, whichever comes first. Technical staff from DOE/LANS are available at your convenience to brief you on the details of the project and answer questions.

Please contact 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 work plan.

Sincerely,



Alison M. Dorries  
Division Leader  
Environmental Protection Division  
Los Alamos National Security, LLC

Sincerely,



Christine M. Gelles  
Acting Manager  
Environmental Management  
Los Alamos Field Office  
U.S. Department of Energy

AMD:CMG:MTS:RSB/lm

Enclosures:

1. Enclosure 1: Multiple Activities Work Plan for the Treatment and Land Application of Groundwater from Mortandad and Sandia Canyons
2. Enclosure 2: Interim Measures Work Plan for the Evaluation of Chromium Mass Removal
3. Enclosure 3: Topographical map showing required features and approved land application areas
4. Enclosure 4: Table 3.4-1, Interim Monitoring Plan for Chromium Investigation Monitoring Group
5. Enclosure 5: Well and Piezometer Fact Sheets

Ms. Michelle Hunter  
ENV-DO-15-0245

- 3 -

6. Enclosure 6: Water quality data from Well CrEX-1
7. Enclosure 7: Ion Exchange (IX) Treatment System Schematic and IX Technical Specifications
8. Enclosure 8: Map of project components: wells, treatment, piping, storage, and irrigation areas
9. Enclosure 9: Land application sites signage

Cy: James Hogan, 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)  
Cheryl L. Rodriguez, EM-SG, (E-File)  
Gene E. Turner, LASO-NS-LP, (E-File)  
Kirsten Laskey, LASO-SUP, (E-File)  
Jordan Arnswald, LASO-NS-PI, (E-File)  
Craig S. Leasure, PADOPS, (E-File)  
Amy E. De Palma, PADOPS, (E-File)  
Michael T. Brandt, ADESH, (E-File)  
Raeanna Sharp-Geiger, ADESH, (E-File)  
Alison M. Dorries, ENV-DO, (E-File)  
Randall M. Erickson, ADEP, (E-File)  
Raymond Martinez, Pueblo of San Ildefonso, (E-File)  
Enrique Torres, ADEP, (E-File)  
Bruce Robinson, ER, (E-File)  
Stephanie F. Swickley, ER, (E-File)  
Danny Katzman, ER, (E-File)  
Alan S. Macgregor, ER, (E-File)  
Michael T. Saladen, ENV-CP, (E-File)  
Robert S. Beers, ENV-CP, (E-File)  
[lasomailbox@nnsa.doe.gov](mailto:lasomailbox@nnsa.doe.gov), (E-File)  
[emla.docs@em.doe.gov](mailto:emla.docs@em.doe.gov), (E-File)  
[locatesteam@lanl.gov](mailto:locatesteam@lanl.gov), (E-File)  
[epccat@lanl.gov](mailto:epccat@lanl.gov), (E-File)  
[env-correspondence@lanl.gov](mailto:env-correspondence@lanl.gov), (E-File)



**SUSANA MARTINEZ**  
Governor

**JOHN A. SANCHEZ**  
Lieutenant Governor

**NEW MEXICO  
ENVIRONMENT DEPARTMENT**

*Harold Runnels Building*  
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)



**RYAN FLYNN**  
Cabinet Secretary

**BUTCH TONGATE**  
Deputy Secretary

**CERTIFIED MAIL – RETURN RECEIPT REQUESTED**

October 8, 2015

Allison Dorries, Division Leader  
Environmental Protection Division  
Los Alamos National Security, LLC (LANS)  
3747 West Jemez Road  
Los Alamos, New Mexico 87545

Douglas E. Hintze, Manager  
Environmental Management  
Los Alamos Field Office  
U.S. Department of Energy  
P.O. Box 1663, K490  
Los Alamos, New Mexico 87545

**RE: Discharge Permit DP-1793, Approval of Workplan #2 for Treatment and Land Application of Groundwater - Los Alamos National Laboratory**

Dear Ms. Dorries and Mr. Hintze:

On September 3, 2015 the New Mexico Environment Department (NMED) Ground Water Quality Bureau (GWQB) received a workplan for land application of treated groundwater from Mortandad and Sandia Canyons, as required by Condition #3 of DP-1793, for activities regulated under this Discharge Permit.

The workplan proposes treatment and land application of groundwater derived from pumping at an extraction well (CrEX-1), new monitor well and piezometer development, and routine purging and sampling of groundwater. The proposed discharge will be completed prior to December 31, 2015, or at such time as conditions specified within the permit can no longer be met.

The workplan, as submitted, is approved with the following modifications:

- Spray application of treated groundwater will be suspended a minimum of 100 feet from boundaries of Solid Waste Management Units (SWMU), NPDES Outfalls, Areas of Concern (AOC) identified in the 2005 NMED Order on Consent, drinking water wells,

Allison Dorries and Douglas E. Hintze

October 8, 2015

Page 2 of 3

surface impoundments and surface drainage areas, or other areas that are not appropriate as identified in Condition #4 of the permit.

- Analysis of groundwater and treated groundwater shall be for dissolved chromium rather than total chromium as specified in the workplan; and
- Monitoring Wells MCO-12, MCA-9 and MCO-9 will be added to the list of monitoring wells to be sampled under the Facility-Wide Groundwater Monitoring Program as listed in Enclosure 4.

Within 60 days of cessation of the discharge, DOE/LANS will submit a Discharge Report documenting the total volume of water discharged, estimated average application rate, analytical reports for the samples collected under the water quality sampling plan, a map identifying the locations of discharge, and photographs including documentation of signs denoting the beginning and end of each land-application unit.

If you have any questions, please contact Steven Huddleson at (505) 827-2936. Thank you for your cooperation.

Sincerely,



Michelle Hunter, Chief  
Ground Water Quality Bureau

MH:SMH

CC: James Hogan, NMED/SWQB (E-file)  
John E. Kieling, NMED/HWB (E-file)  
Stephen Yanicak, NMED/DOE/OB (E-file)  
Gene Turner, NA-LA (E-file)  
Bob Beers, EM-LA (E-file)



**SUSANA MARTINEZ**  
Governor

**JOHN A. SANCHEZ**  
Lieutenant Governor

**NEW MEXICO  
ENVIRONMENT DEPARTMENT**

*Harold Runnels Building*  
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)



**RYAN FLYNN**  
Cabinet Secretary

**BUTCH TONGATE**  
Deputy Secretary

**CERTIFIED MAIL – RETURN RECEIPT REQUESTED**

October 29, 2015

Allison Dorries, Division Leader  
Environmental Protection Division  
Los Alamos National Security, LLC (LANS)  
3747 West Jemez Road  
Los Alamos, New Mexico 87545

Douglas E. Hintze, Manager  
Environmental Management  
Los Alamos Field Office  
U.S. Department of Energy  
P.O. Box 1663, K490  
Los Alamos, New Mexico 87545

**RE: Discharge Permit DP-1793, Modification of Approval Conditions related to  
Workplan #2, DP-1793**

Dear Ms. Dorries and Mr. Hintze:

On September 3, 2015, the New Mexico Environment Department (NMED) Ground Water Quality Bureau (GWQB) received a workplan for land application of treated groundwater from Mortandad and Sandia Canyons, as required by Condition #3 of DP-1793, for activities regulated under this Discharge Permit.

The workplan, as submitted, was approved on October 14, 2015 with the following modification:

- Spray application of treated groundwater will be suspended a minimum of 100 feet from boundaries of Solid Waste Management Units (SWMU), NPDES Outfalls, Areas of Concern (AOC) identified in the 2005 NMED Order on Consent, drinking water wells, surface impoundments and surface drainage areas, or other areas that are not appropriate as identified in Condition #4 of the permit.

Following a site inspection performed by GWQB staff to observe the spray application process, this condition is hereby modified:

- Spray application of treated groundwater will be suspended a minimum of 20 feet from boundaries of Solid Waste Management Units (SWMU), NPDES Outfalls, Areas of



Allison Dorries and Douglas E. Hintze

October 29, 2015

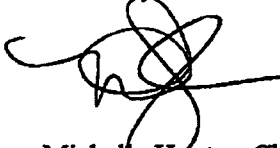
Page 2 of 2

Concern (AOC) identified in the 2005 NMED Order on Consent, drinking water wells, surface impoundments and surface drainage areas, or other areas that are not appropriate as identified in Condition #4 of the permit.

DOE/LANS has demonstrated sufficient control over the spray application process to ensure that the revised distance of 20 feet is an adequately protective buffer to prevent over spray into the SWMU, NPDES Outfalls, AOCs, drinking water wells, surface impoundments and other areas that are not appropriate. Other conditions stipulated in the workplan approval letter from NMED to DOE/LANS dated October 14, 2015 remain in place.

If you have any questions, please contact Steven Huddleson at (505) 827-2936. Thank you for your cooperation.

Sincerely,



Michelle Hunter, Chief  
Ground Water Quality Bureau

MH:SMH

CC: James Hogan, NMED/SWQB (E-file)  
John E. Kielling, NMED/HWB (E-file)  
Stephen Yanicak, NMED/DOE/OB (E-file)  
Gene Turner, NA-LA (E-file)  
Bob Beers, EM-LA (E-file)

## **ENCLOSURE 2**

**Work Plan #2 Discharge Report, DP-1793**

**EPC-DO-16-041**

**LA-UR-16-20743**

**U1501760**

**Date: FEB 22 2016**



***Environmental Protection Division  
Environmental Compliance Programs (ENV-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) 667-5794/Fax (505) 667-5948

*Date:* JAN 20 2016  
*Symbol:* ENV-DO-16-006  
*LA-UR:* 15-29664  
*Locates Action No.:* U1501760

Ms. Michelle Hunter, Chief  
Ground Water Quality Bureau  
New Mexico Environment Department  
Harold Runnels Building, Room N2250  
1190 St. Francis Drive  
P.O. Box 26110  
Santa Fe, NM 87502

Dear Ms. Hunter:

**Subject: Work Plan #2 Discharge Report, Land Application of Treated Groundwater from Aquifer Testing at Pilot Pumping Well CrEX-1, DP-1793**

The U.S. Department of Energy and Los Alamos National Security, LLC (DOE/LANS) are in receipt of your October 8 and October 29, 2015, letters (**Enclosure 1**) granting approval of Work Plan #2—under Discharge Permit DP-1793—for the discharge of treated groundwater from aquifer testing at pilot pumping well CrEX-1. Condition No.8 of Discharge Permit DP-1793 and the above-referenced October 8, 2015, 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. A map identifying the locations of discharge; and*

Ms. Michelle Hunter  
ENV-DO-16-006

- 2 -

**6. Photographs including documentation of signs denoting the beginning and end of each land application unit.**

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 2015 under Work Plan #2.

**Table 1. Volume of treated groundwater discharged under Work Plan #2 in 2015.**

<b>Well</b>	<b>Discharge Start Date</b>	<b>Discharge End Date</b>	<b># of Days of Active Discharge</b>	<b>Total Volume (gal.)</b>
Legacy water**	10/20/2015	10/29/2015	4	233,487
CrEX-1	11/2/2015	11/23/2015	16	1,549,505
<b>Total Volume of Discharge</b>				<b>1,782,992</b>

\*\*Legacy water is treated groundwater from Chromium Project wells for the following activities: development, aquifer testing, and well purging during sampling.

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

The average land application rate over the 20 days of active discharge was approximately 89,150 gallons per day.

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

Analytical results from samples collected under Work Plan #2 are summarized in Enclosure 2. No results for nitrate-nitrogen (NO<sub>3</sub>-N) or chromium (Cr) exceeded the land application limits of 9 mg/L and 45 µg/L, respectively.

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

Enclosure 3 (CD) provides copies of the complete analytical reports from GEL Laboratories LLC.

**Requirement No. 5: A map identifying the locations of discharge.**

Enclosure 4 provides a map showing the seven approved land application zones in Mortandad Canyon. Three of the seven zones—1, 5 and 7—received discharges of treated groundwater under Work Plan #2. The remaining four zones—2, 3, 4 and 6—were not used.

**Requirement No. 6: Photographs including documentation of signs denoting the beginning and end of each land application unit.**

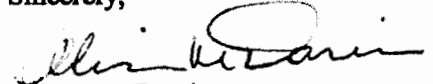
Enclosure 5 provides photographs of the signage at land application zones 1 and 5, the two truck application zones used under Work Plan #2. No signs were posted at Zone 7, the other zone receiving treated groundwater, because application was by fixed irrigation sprinklers.

Ms. Michelle Hunter  
ENV-DO-16-006

- 3 -

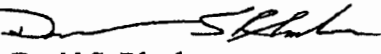
Please contact Robert S. Beers by telephone at (505) 667-7969 or by email at [bbeers@lanl.gov](mailto:bbeers@lanl.gov) if you have questions regarding this information.

Sincerely,



Alison M. Dorries  
Division Leader  
Environmental Protection 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:RSB/lm

Enclosures:

- (1) NMED letters dated October 8 and October 29, 2015, approving Work Plan #2
- (2) Work Plan #2 analytical results summary table
- (3) CD containing analytical reports from GEL Laboratories LLC (Upon request)
- (4) Map showing land application zones receiving treated groundwater under Work Plan #2
- (5) Photographs of land application zone signs

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)  
Jordan Arnsward, LASO-NS-PI, (E-File)  
Cheryl L. Rodriguez, EM-LA, (E-File)  
Brian T. Hennessey, EM-LA, (E-File)  
Kirsten M. Laskey, EM-LA, (E-File)  
Craig S. Leasure, PADOPS, (E-File)  
Amy E. De Palma, PADOPS, (E-File)  
Michael T. Brandt, ADESH, (E-File)  
Raeanna Sharp-Geiger, ADESH, (E-File)  
Randall Mark Erickson, ADEP, (E-File)  
Enrique Torres, ADEP, (E-File)  
Bruce Robinson, ADEP-PDO, (E-File)  
Alison M. Dorries, ENV-DO, (E-File)  
Stephani F. Swickley, ADEP-PDO, (E-File)  
Danny Katzman, ADEP-PDO, (E-File)  
Alan S. MacGregor, ER-ES, (E-File)  
Gerald F. Fordham, ES-EPD, (E-File)  
Michael T. Saladen, ENV-CP, (E-File)  
Robert S. Beers, ENV-CP, (E-File)  
Saundra Martinez, OIO-DO, (E-File)  
[lasomailbox@nnsa.doe.gov](mailto:lasomailbox@nnsa.doe.gov), (E-File)  
[locatesteam@lanl.gov](mailto:locatesteam@lanl.gov), U1501760 (E-File)  
[env-correspondence@lanl.gov](mailto:env-correspondence@lanl.gov), (E-File)  
[emla.docs@em.doe.gov](mailto:emla.docs@em.doe.gov), (E-File)

## **ENCLOSURE 1**

**NMED letters dated October 8 and October 29, 2015,  
approving Work Plan #2**

**ENV-DO-16-006**

**LA-UR-15-29664**

**U1501760**

**Date: JAN 20 2016**

EPC-DO-16-041  
ENV-DO-16-008



SUSANA MARTINEZ  
Governor

JOHN A. SANCHEZ  
Lieutenant Governor

ENCLOSURE 2  
ENCLOSURE 1  
**NEW MEXICO**  
**ENVIRONMENT DEPARTMENT**

*Harold Runnels Building*  
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)

LA-UR-16-20743  
LA-UR-15-29664



RYAN FLYNN  
Cabinet Secretary

BUTCH TONGATE  
Deputy Secretary

**CERTIFIED MAIL – RETURN RECEIPT REQUESTED**

October 8, 2015

Allison Dorries, Division Leader  
Environmental Protection Division  
Los Alamos National Security, LLC (LANS)  
3747 West Jemez Road  
Los Alamos, New Mexico 87545

Douglas E. Hintze, Manager  
Environmental Management  
Los Alamos Field Office  
U.S. Department of Energy  
P.O. Box 1663, K490  
Los Alamos, New Mexico 87545

**RE: Discharge Permit DP-1793, Approval of Workplan #2 for Treatment and Land Application of Groundwater - Los Alamos National Laboratory**

Dear Ms. Dorries and Mr. Hintze:

On September 3, 2015 the New Mexico Environment Department (NMED) Ground Water Quality Bureau (GWQB) received a workplan for land application of treated groundwater from Mortandad and Sandia Canyons, as required by Condition #3 of DP-1793, for activities regulated under this Discharge Permit.

The workplan proposes treatment and land application of groundwater derived from pumping at an extraction well (CrEX-1), new monitor well and piezometer development, and routine purging and sampling of groundwater. The proposed discharge will be completed prior to December 31, 2015, or at such time as conditions specified within the permit can no longer be met.

The workplan, as submitted, is approved with the following modifications:

- Spray application of treated groundwater will be suspended a minimum of 100 feet from boundaries of Solid Waste Management Units (SWMU), NPDES Outfalls, Areas of Concern (AOC) identified in the 2005 NMED Order on Consent, drinking water wells,

00000000

ENV DO-16-006  
Alison Dornes and Douglas E. Hintze

ENCLOSURE 1

LA-UR-15-29664

October 8, 2015

Page 2 of 3

surface impoundments and surface drainage areas, or other areas that are not appropriate as identified in Condition #4 of the permit.

- Analysis of groundwater and treated groundwater shall be for dissolved chromium rather than total chromium as specified in the workplan; and
- Monitoring Wells MCO-12, MCA-9 and MCO-9 will be added to the list of monitoring wells to be sampled under the Facility-Wide Groundwater Monitoring Program as listed in Enclosure 4.

Within 60 days of cessation of the discharge, DOE/LANS will submit a Discharge Report documenting the total volume of water discharged, estimated average application rate, analytical reports for the samples collected under the water quality sampling plan, a map identifying the locations of discharge, and photographs including documentation of signs denoting the beginning and end of each land-application unit.

If you have any questions, please contact Steven Huddleson at (505) 827-2936. Thank you for your cooperation.

Sincerely,



Michelle Hunter, Chief  
Ground Water Quality Bureau

MH:SMH

CC: James Hogan, NMED/SWQB (E-file)  
John E. Kielling, NMED/HWB (E-file)  
Stephen Yanicak, NMED/DOE/OB (E-file)  
Gene Turner, NA-LA (E-file)  
Bob Beers, EM-LA (E-file)

CA000010





**SUSANA MARTINEZ**  
Governor

**JOHN A. SANCHEZ**  
Lieutenant Governor

**NEW MEXICO  
ENVIRONMENT DEPARTMENT**

*Harold Runnels Building*

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)



**RYAN FLYNN**  
Cabinet Secretary

**BUTCH TONGATE**  
Deputy Secretary

**CERTIFIED MAIL – RETURN RECEIPT REQUESTED**

October 29, 2015

Allison Dorries, Division Leader  
Environmental Protection Division  
Los Alamos National Security, LLC (LANS)  
3747 West Jemez Road  
Los Alamos, New Mexico 87545

Douglas E. Hintze, Manager  
Environmental Management  
Los Alamos Field Office  
U.S. Department of Energy  
P.O. Box 1663, K490  
Los Alamos, New Mexico 87545

**RE: Discharge Permit DP-1793, Modification of Approval Conditions related to Workplan #2, DP-1793**

Dear Ms. Dorries and Mr. Hintze:

On September 3, 2015, the New Mexico Environment Department (NMED) Ground Water Quality Bureau (GWQB) received a workplan for land application of treated groundwater from Mortandad and Sandia Canyons, as required by Condition #3 of DP-1793, for activities regulated under this Discharge Permit.

The workplan, as submitted, was approved on October 14, 2015 with the following modification:

- Spray application of treated groundwater will be suspended a minimum of 100 feet from boundaries of Solid Waste Management Units (SWMU), NPDES Outfalls, Areas of Concern (AOC) identified in the 2005 NMED Order on Consent, drinking water wells, surface impoundments and surface drainage areas, or other areas that are not appropriate as identified in Condition #4 of the permit.

Following a site inspection performed by GWQB staff to observe the spray application process, this condition is hereby modified:

- Spray application of treated groundwater will be suspended a minimum of 20 feet from boundaries of Solid Waste Management Units (SWMU), NPDES Outfalls, Areas of

Allison Dorries and Douglas E. Hintze  
October 29, 2015  
Page 2 of 2

Concern (AOC) identified in the 2005 NMED Order on Consent, drinking water wells, surface impoundments and surface drainage areas, or other areas that are not appropriate as identified in Condition #4 of the permit.

DOE/LANS has demonstrated sufficient control over the spray application process to ensure that the revised distance of 20 feet is an adequately protective buffer to prevent over spray into the SWMU, NPDES Outfalls, AOCs, drinking water wells, surface impoundments and other areas that are not appropriate. Other conditions stipulated in the workplan approval letter from NMED to DOE/LANS dated October 14, 2015 remain in place.

If you have any questions, please contact Steven Huddleson at (505) 827-2936. Thank you for your cooperation.

Sincerely,



Michelle Hunter, Chief  
Ground Water Quality Bureau

MH:SMH

CC: James Hogan, NMED/SWQB (E-file)  
John E. Kieling, NMED/HWB (E-file)  
Stephen Yanicak, NMED/DOE/OB (E-file)  
Gene Turner, NA-LA (E-file)  
Bob Beers, EM-LA (E-file)

## **ENCLOSURE 2**

**Work Plan #2 analytical results summary table**

**ENV-DO-16-006**

**LA-UR-15-29664**

**U1501760**

**Date: JAN 20 2016**

EPC-DO-16-041

ENCLOSURE 2

LA-UR-16-20743

ENV-DO-16-006

ENCLOSURE 2

LA-UR-15-29664

Sample	Collection Date	Fid Prep	Method	Analyte	Detect Flag	Result	Units	Lab Qualifier Code	Validation Qualifier Code	Validation Reason Code	Lab	MDL	PQL
VSCTU6-16-106550	11/02/15	F	SW-846:6020	Cr	N	2	ug/L	U	U	U_LAB	GELC	2	10
VSCTU6-16-106550	11/02/15	F	EPA:353.2	NO3+NO2-N	Y	1.94	mg/L		NQ	NQ	GELC	0.085	0.25
VSCTU6-16-106542	11/05/15	F	SW-846:6020	Cr	N	2	ug/L	U	U	U_LAB	GELC	2	10
VSCTU6-16-106542	11/05/15	F	EPA:353.2	NO3+NO2-N	Y	2	mg/L		NQ	NQ	GELC	0.085	0.25
VSCTU6-16-106549	11/09/15	F	SW-846:6020	Cr	N	2	ug/L	U	U	U_LAB	GELC	2	10
VSCTU6-16-106549	11/09/15	F	EPA:353.2	NO3+NO2-N	Y	3.89	mg/L		NQ	NQ	GELC	0.085	0.25
VSCTU6-16-106546	11/12/15	F	SW-846:6020	Cr	N	2	ug/L	U	U	U_LAB	GELC	2	10
VSCTU6-16-106546	11/12/15	F	EPA:353.2	NO3+NO2-N	Y	2.8	mg/L		NQ	NQ	GELC	0.085	0.25
VSCTU6-16-106545	11/16/15	F	SW-846:6020	Cr	N	2	ug/L	U	U	U_LAB	GELC	2	10
VSCTU6-16-106545	11/16/15	F	EPA:353.2	NO3+NO2-N	Y	2.51	mg/L		NQ	NQ	GELC	0.085	0.25
VSCTU6-16-106548	11/18/15	F	SW-846:6020	Cr	N	2	ug/L	U	U	U_LAB	GELC	2	10
VSCTU6-16-106548	11/18/15	F	EPA:353.2	NO3+NO2-N	Y	2.56	mg/L		NQ	NQ	GELC	0.17	0.5

**Notes:**

F means the sample was filtered

Y means the analyte was not detected

N means the analyte was detected.

U means that the analyte is classified as not detected.

NQ means that no validation qualifier flag is associated with this result, and the analyte is classified as detected.

U\_LAB means the analytical laboratory qualified the analyte as not detected.

## **ENCLOSURE 3**

**CD containing analytical reports from  
GEL Laboratories LLC**

**ENV-DO-16-006**

**LA-UR-15-29664**

**U1501760**

**Date:** JAN 20 2016

## **ENCLOSURE 4**

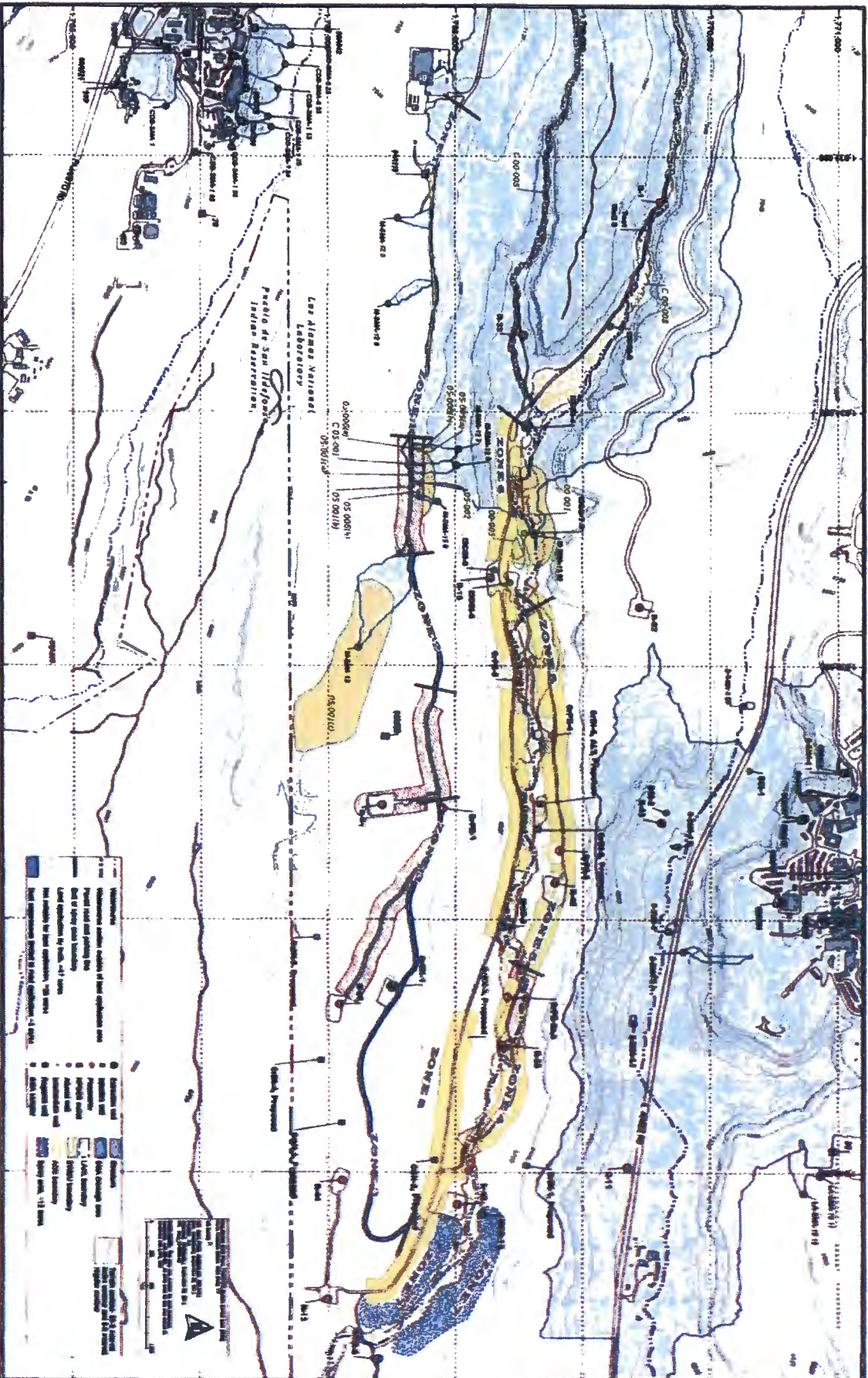
**Map showing land application zones receiving  
treated groundwater under Work Plan #2**

**ENV-DO-16-006**

**LA-UR-15-29664**

**U1501760**

**Date:** JAN 20 2016



## **ENCLOSURE 5**

**Photographs of land application zones signs**

**ENV-DO-16-006**

**LA-UR-15-29664**

**U1501760**

**Date:** JAN 20 2016



ENV-DO-16-006

ENCLOSURE 5

LA-UR-15-29664

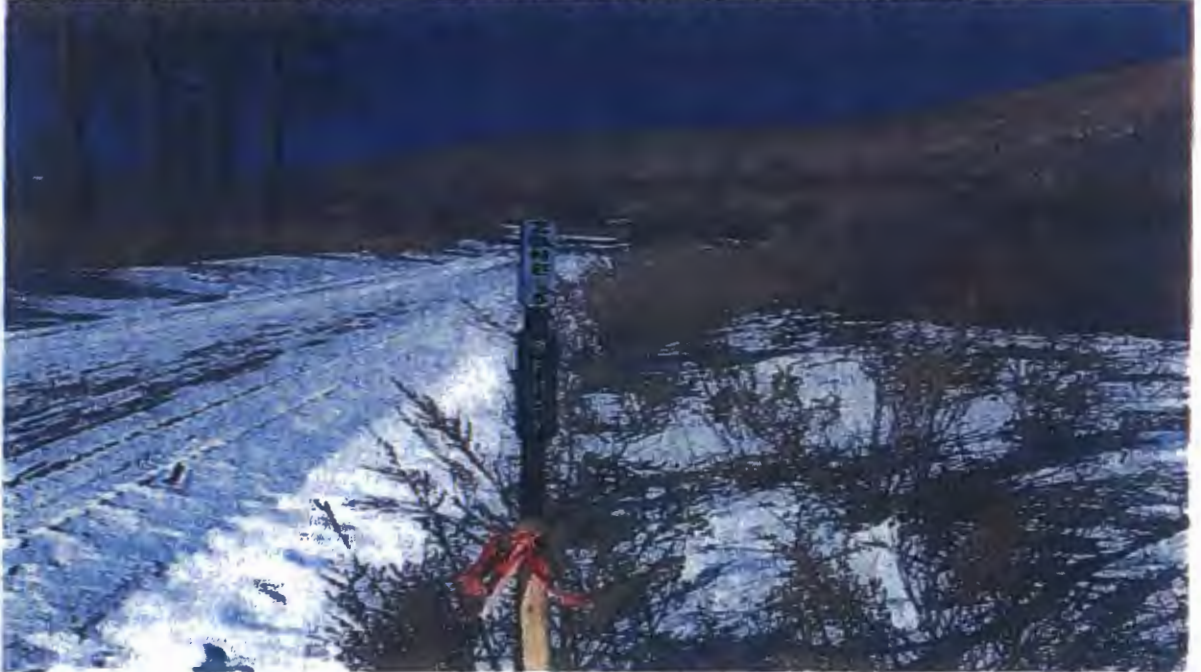
**Photograph 1. Signage identifying the beginning of Zone 1, an approved land application area.**



**Photograph 2. Signage identifying the end of Zone 1 and the beginning of 'no spray' area.**



**Photograph 3. Signage identifying the beginning of Zone 5, an approved land application area.**



**Photograph 4. Signage identifying the end of Zone 5 and the beginning of a 'no spray' area.**

