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ENTERED



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 07 2014**
Symbol: ENV-DO-13-0343
LAUR: 13-29467

Mr. Jerry Schoeppner, 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

RECEIVED

JAN 15 2014

NMED
Hazardous Waste Bureau

Dear Mr. Schoeppner:

SUBJECT: DISCHARGE PERMIT DP-1793 AMENDED APPLICATION

In December 2011 the U.S. Department of Energy and Los Alamos National Security, LLC (DOE/LANS) submitted a Ground Water Discharge Permit application for the land application of treated ground water from a pumping test at monitoring well R-28. Subsequently, in March 2012, at the request of the New Mexico Environment Department (NMED), supplemental information was submitted by DOE/LANS to broaden the scope of the application. The application was determined to be administratively complete in August 2012 and public notice (PN1) was completed by DOE/LANS in November 2012. The above-referenced documents are provided in Enclosure 1.

It was jointly determined by NMED and DOE/LANS during meetings in July and December 2013 that the Discharge Permit DP-1793 application was still not sufficiently broad and needed amending. The enclosed amended application (Enclosure 2) modifies the scope of the original application and the March 2012 supplement as follows:

- ✓ Increases the maximum daily discharge
- ✓ Expands the list of potential discharge locations
- ✓ Adds well development and tracer studies to the list of covered activities
- ✓ Expands the list of expected or known contaminants
- ✓ Establishes a generalized storage-treatment-land application system



The enclosed amended permit application is intended to serve as a foundational discharge plan with additional definition being provided to the NMED in the project-specific work plans. As such, this discharge permit will provide umbrella-coverage to a diversity of ground water activities at Los Alamos National Laboratory.

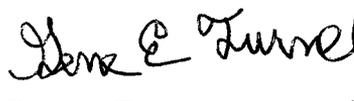
Please contact Robert S. Beers by telephone at (505) 667-7969 or by email at bbeers@lanl.gov if you have questions regarding the amended Discharge Permit DP-1793 application.

Sincerely,



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

Sincerely,



Gene E. Turner
Environmental Permitting Manager
Environmental Projects Office
Los Alamos Field Office
Department of Energy

AMD:GET:RSB/lm

Enclosure:

1. Discharge Permit DP-1793, NMED-DOE/LANS Communications
2. Amended Discharge Permit Application DP-1793
3. List of Sections (55) at LANL Displaying a Public Notice Sign
4. Design criteria and specifications for influent and effluent storage systems

Cy: James Hogan, NMED/SWQB, Santa Fe, NM
John E. Kieling, NMED/HWB, Santa Fe, NM
Steven M. Yanicak, NMED/DOE/OB, (E-File)
Hai Shen, NA-OO-LA, (E-File)
Gene E. Turner, NA-OO-LA, (E-File)
Eric L. Trujillo, NA-OO-LA, (E-File)
Carl A. Beard, PADOPS, (E-File)
Michael T. Brandt, ADESH, (E-File)
Jeffrey D. Mousseau, ADEP, (E-File)
Deborah K. Woitte, LC-ESH, (E-File)
Alison M. Dorries, ENV-DO, (E-File)
Victoria A. George, REG-DO, (E-File)
David J. McInroy, CAP, (E-File)
Craig R. Douglass, CAP, (E-File)
Danny Katzman, ET-EI, (E-File)
Michael R. Alexander, CAP-FS, (E-File)
Charles J. English, REG-SP, (E-File)
Michael T. Saladen, ENV-CP, (E-File)
Robert S. Beers, ENV-CP, (E-File)
LASOmailbox@nnsa.doe.gov, (E-File)
locateteam@lanl.gov, (E-File)
ENV-CP Correspondence File, K490

ENCLOSURE 1

**Discharge Permit DP-1793,
NMED-DOE/LANS Communications**

ENV-DO-13-0343

LAUR-13-29467

Date: JAN 0 7 2014



*Environmental Protection Division
Water Quality & RCRA Group (ENV-RCRA)
P.O. Box 1663, M704
Los Alamos, New Mexico 87545
(505) 667-0666/FAX (505) 667-5224*

*National Nuclear Security Administration
Los Alamos Site Office, A316
3747 West Jemez Road
Los Alamos, New Mexico 87545
(505) 667-5794/FAX (505) 667-5948*

Date: December 20, 2011
Refer To: ENV-RCRA-11-0284
LAUR: 11-12262

Mr. Jerry Schoeppner, Acting 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 Mr. Schoeppner:

SUBJECT: DISCHARGE PERMIT APPLICATION FOR THE LAND APPLICATION OF TREATED GROUNDWATER FROM A PUMPING TEST AT WELL R-28

The US Department of Energy and Los Alamos National Security, LLC (DOE/LANS) are in receipt of your November 9, 2011, letter (Appendix A) requiring a Discharge Permit application for the land application of treated groundwater from a pumping test at monitoring well R-28. The objective of this application is to demonstrate "good cause", in accordance with the provision of Subsection B of 20.6.2.3106 New Mexico Administrative Code (NMAC), and receive from the New Mexico Environment Department (NMED) permission to conduct this discharge without an approved Discharge Permit for a period not to exceed 120 days. As was discussed during a December 7, 2011 telephone conference, DOE/LANS is limiting this application to the R-28 pumping test. Per your request, enclosed are three copies of the required application and \$100.00 filing fee.

The 10-day pumping test at monitoring well R-28 will be conducted pursuant to a requirement in the NMED Hazardous Waste Bureau-approved Sandia Canyon Phase II Investigation Work Plan (Appendix E). The work plan describes a cross-hole pumping test at R-28 to better define the spatial distribution of regional aquifer heterogeneity and anisotropy in the vicinity of the chromium plume near wells R-28 and R-42. Data collected from the pumping test will be used to constrain flow parameters used in the model for groundwater flow and transport in the regional aquifer and will be reported in the Sandia Canyon Phase 2 Investigation Report due to NMED Hazardous Waste Bureau on July 31, 2012.

Mr. Jerry Schoeppner
ENV-RCRA-11-0284

-2-

December 20, 2011

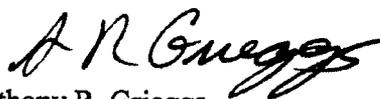
Groundwater produced during the pumping test at R-28 will be treated by ion exchange (IX) prior to land application. The IX treatment system will remove chromium to less than the New Mexico Water Quality Control Commission (NMWQCC) Regulation 3103 groundwater standard of 50 µg/L. Based on existing water quality data from R-28, no other regulated contaminants exceed NMWQCC Regulation 3103 groundwater standards.

At a pumping rate of 30 gallons per minute for 10 days, the pumping test is expected to produce measureable responses at nearby monitoring wells, including R-43, R-42, R-11, R-35b, R-36, R-45, R-44, R-50, R-15, and R-33. Los Alamos County (the County) drinking water supply wells PM-5 and PM-3, also in the vicinity of R-28, must not be in an active pumping mode during the test to eliminate the potentially interfering signal on water-level responses. The County has agreed to halt pumping at PM-3 and PM-5 during the test, but only if the test is conducted during the winter, low-demand, season. The County has informed DOE/LANS that the target date for completing the test—including the water-level recovery period—should be March 15, 2012. This target date also provides DOE/LANS an opportunity to adequately incorporate the pumping test data into the Sandia Canyon Phase 2 Investigation Report.

To achieve the March 15, 2012, target date, DOE/LANS will need to receive permission from the NMED Ground Water Quality Bureau no later than February 1, 2012. Therefore, we respectfully request your agency's expedited review of this Discharge Permit application.

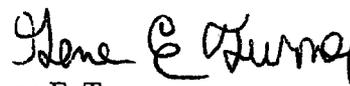
Please contact Bob Beers at (505) 667-7969 of the Water Quality and RCRA Group (ENV-RCRA) if you have questions.

Sincerely,



Anthony R. Grieggs
Group Leader
Water Quality & RCRA Group
Los Alamos National Laboratory

Sincerely,



Gene E. Turner
Environmental Permitting Manager
Environmental Projects Office
Los Alamos Site Office
National Nuclear Security Administration

Enclosures: a/s

Cy: James Bearzi, NMED/SWQB, Santa Fe, NM, w/enc.
John Kieling, NMED/HWB, Santa Fe, NM, w/enc.
Hai Shen, LASO-EO, w/enc., A316
Steve Yanicak, LASO-GOV, w/enc., M894
Carl A. Beard, PADOPS, w/o enc., A102
Michael T. Brandt, ADESH, w/o enc., K491
Michael Graham, ADEP, w/o enc., M991
Victoria George, REG-DO, w/o enc., M991
Kate Lynnes, REG-DO, w/enc., M991

Mr. Jerry Schoeppner
ENV-RCRA-11-0284

-3-

December 20, 2011

Cy (Continued):

George J. Rael, LASO-EO, w/o enc., A906
Gene E. Turner, LASO-EO, w/enc., A316
Ted Ball, MNGRFCT-DO, w/o enc., M996
Steve Pearson, CAP-FS, w/o enc., K497
Mike Saladen, ENV-RCRA, w/o enc., K490, (E-File)
Bob Beers, ENV-RCRA, w/enc., K490, (E-File)
Taylor Valdez, w/o enc., K404, (E-File)
Linda Salazar, w/o enc., K491, (E-File)
ENV-RCRA File, w/enc., M704
IRM-RMMSO, (U1102191), w/enc., A150

**DISCHARGE PERMIT APPLICATION FOR THE LAND APPLICATION OF TREATED
GROUNDWATER FROM A PUMPING TEST AT WELL R-28**

Submitted by

LOS ALAMOS NATIONAL SECURITY, LLC

And the

NATIONAL NUCLEAR SECURITY ADMINISTRATION

DECEMBER 2011

ENV-RCRA-11-0284

LA-UR-11-12262





**NEW MEXICO ENVIRONMENT DEPARTMENT
GROUND WATER QUALITY BUREAU**



DISCHARGE PERMIT APPLICATION

Type of Application. Check appropriate box.

- Application for new Discharge Permit – new facility
- Application for new Discharge Permit – existing (unpermitted) facility
- Application for Discharge Permit Renewal
- Application for Discharge Permit Modification
"Modification" is defined as a change to the permit requirements that result from a change in the location of the discharge, a significant increase in the quantity of the discharge, or a significant change in the quality of the discharge.
- Application for Discharge Permit Renewal and Modification

For an existing Discharge Permit, please indicate: DP Number _____ Expiration date _____

Checklist of Application Components.

<input checked="" type="checkbox"/> Part A: Administrative Completeness.	Instructions for completing the application are included on the form itself and on Supplemental Instructions for Parts A and B. You may fill out the application manually, or a Microsoft Word version may be downloaded from www.nmenv.state.nm.us (Ground Water Quality) and filled out electronically.
<input checked="" type="checkbox"/> Part B: Operational, Monitoring, Contingency and Closure Plans, with required attachments. Choose appropriate option: <input type="checkbox"/> Septic Tank System <input checked="" type="checkbox"/> General – Various Facility Types	
<input checked="" type="checkbox"/> Part C: Site Information, with required attachments.	
<input checked="" type="checkbox"/> \$100 Filing Fee, payable to the New Mexico Environment Department. Required from all applicants. An additional fee will be assessed prior to permit issuance. Permit fees are listed in Section 20.6.2.3114 NMAC.	

Certification. Signature must be that of the person named in Item A-3 of Part A of the application.

I certify under penalty of law that I am knowledgeable about the information contained in this application. The information is, to the best of my knowledge and belief, true, accurate, and complete.

Signature: Date: 12/20/11

Signature: Date: 12/21/2011

Name/Title Dennis L. Hjereen, Division Leader, ENV, Los Alamos National Security, LLC

Name/Title Kevin W. Smith, Manager, Los Alamos Site Office, National Nuclear Security Administration

Send three complete copies of this application and the filing fee to:

Program Manager
Ground Water Pollution Prevention Section
New Mexico Environment Department
PO Box 5469
Santa Fe, NM 87502

**GROUND WATER DISCHARGE PERMIT APPLICATION
PART A: ADMINISTRATIVE COMPLETENESS
All Facilities**

- A-1. Facility Information.** See Supplemental Instructions to determine what constitutes the "facility." The physical location of the facility must be provided. If the facility does not have an address, the location can be described by road intersections, mile posts, or landmarks, as appropriate.

Facility Name Los Alamos National Laboratory (LANL or the Laboratory)

Former Names (if any) NA

Physical address/location (mandatory) Los Alamos, New Mexico
County Los Alamos

Mailing address P.O. Box 1663 Mail Stop K404
Los Alamos, NM 87545

Contact person Dennis L. Hjeresen

Title Division Leader, Environmental Protection Division (ENV)

Telephone number(s) 505-665-7251

Fax number 505-667-0731 E-mail address djh@lanl.gov

- A-2. Type of Discharge and Type of Facility.** See Supplemental Instructions.

Type of discharge: Domestic Agricultural Industrial Mining

Type of facility: **Treatment and land application of groundwater produced from monitoring well R-28 during a 10-day pumping test. See site map in Appendix B.**

- A-3. Applicant Information.** The applicant is the person or entity (e.g., corporation, partnership, organization, municipality, etc.) legally responsible for the discharge and for complying with the terms of the Discharge Permit. If the applicant is an entity, then the name and title of a contact person must be provided. This application must be signed by the applicant or contact person named here.

Applicant Name National Nuclear Security Administration (NNSA)¹
Los Alamos National Security, LLC (LANS)²

Mailing address ¹3747 West Jemez Road, Los Alamos, NM 87545
²P.O. Box 1663, MS K404, Los Alamos, NM 87545

Contact person Kevin W. Smith¹, Manager, Los Alamos Site Office, NNSA
Dennis L. Hjeresen², Division Leader, ENV, LANS, LLC

Telephone number(s) ¹(505) 667-5105 ²(505) 665-7251

Fax number ¹665-3811 ²667-0731 E-mail address kevin.smith@nnsa.doe.gov, djh@lanl.gov

A-4. Consultant Information (if applicable). If the consultant is a company or organization, then the name and title of a contact person must be provided.

Consultant/Firm Name NA
 Mailing address _____

 Contact person _____
 Title _____
 Telephone number(s) _____
 Fax number _____ E-mail address _____

A-5. Permit Contact Information (if applicable). If someone other than the applicant listed in Item A-3 or a consultant listed in Item A-4 is a primary contact for this application and/or facility, list here.

Permit Contact Name Robert Beers
 Title Environmental Professional, Water Quality & RCRA Group, LANS, LLC
 Mailing address P.O. Box 1663 MS K490
Los Alamos, NM 87545
 Telephone number(s) 505-667-7969
 Fax number 505-665-9344 E-mail address bbeers@lanl.gov

A-6. Ownership.

The applicant owns (check as appropriate): the facility* some discharge sites all discharge sites
 * National Nuclear Security Administration (NNSA) Facility

If other parties own the facility or any of the discharge sites, attach their names and contact information.

A-7. Discharge Quantity.

Your Discharge Permit will specify a maximum discharge volume, which is typically expressed as the maximum number of gallons per day that may be treated and/or disposed of. Please indicate below the maximum discharge volume for your facility. You must show how it was determined in Part B of your application. For further explanation, see Supplemental Instructions for Part B.

Maximum discharge volume: 43,200* gallons per day (or other units: _____)

*Total volume treated and discharged will be approximately 445,000 gallons: 13,000 gallons of well development water presently in storage plus approximately 432,000 of groundwater produced during the 10-day, 30 gallons per minute (gpm), pumping test.

A-8. Processing, Treatment, Storage and Disposal System. Briefly describe how wastewater, sludge, etc. is processed, treated, stored, and/or disposed of at your facility. See Supplemental Instructions for examples of system components.

A 10-day pumping test at monitoring well R-28 will be conducted pursuant to a requirement in the New Mexico Environment Department (NMED) Hazardous Waste Bureau-approved Sandia Canyon Phase II Investigation Work Plan (Appendix E). The work plan describes a cross-hole pumping test at R-28 to better define the spatial distribution of regional aquifer heterogeneity and anisotropy in the vicinity of the chromium plume near wells R-28 and R-42. Data collected from the pumping test will be used to constrain flow parameters used in the model for groundwater flow and transport in the regional aquifer and will be reported in the Sandia Canyon Phase II Investigation Report due to NMED Hazardous Waste Bureau on July 31, 2012.

Groundwater from well R-28 contains chromium at concentrations greater than the New Mexico Water Quality Control Commission (NMWQCC) Regulation 3103 groundwater standard of 50 µg/L. Prior to discharge, the Laboratory will install an ion exchange (IX) treatment system at the R-28 well site and treat well development water and groundwater produced during the 10-day pumping test to remove chromium. The treatment system design criteria are as follows:

- design flow rate of 30 gpm,
- influent (feed) chromium concentration of 558 µg/L, and
- effluent (product) chromium concentration of 35 µg/L.

Following treatment to remove chromium, groundwater produced from well R-28 will be applied to the land surface in accordance with the Laboratory's Standard Operating Procedure, ENV-RCRA-QP-010.2, *Land Application of Groundwater*.

Appendix C provides additional information on the following: (1) final treatment system configuration, (2) IX vessel, (3) IX resin type, and (4) treatment system vendor.

A-9. Discharge Locations. List the locations of your facility and of all components of your processing, treatment, storage and/or disposal system. Examples of components include septic tanks, lagoons, leachfields, irrigation sites, mine stockpiles, etc. Additional examples are listed in the Supplemental Instructions. Latitude and longitude are optional unless township, range and section are not available.

Components	Township	Range	Section(s)	Latitude	Longitude
R-28	T19N	R06E	S24		
Ion exchange (IX) treatment system	T19N	R06E	S24		
Land application sites—See Appendix B	T19N	R06E	S23, S24		

A-10. Discharge Quality.

Indicate the expected quality of the discharge – wastewater, leachate, sludge, etc. – generated, stored, treated, processed and/or discharged at your facility. List the contaminants of concern and the expected concentrations. *Not all facilities need to characterize influent quality.* See Supplemental Instructions for typical contaminants and additional guidance.

Expected or Known Contaminants	Expected or Known Contaminants Indicate units: mg/L, CFU/100 ml, etc.	
	Incoming (Influent)	Final (Effluent)
chromium	558 µg/L	35 µg/L

For new septic tank systems, you may either fill out the chart above or simply check one of the following options:

- typical domestic wastewater
- low-strength domestic wastewater (large gray water component; e.g., laundromat, spa, etc.)
- high-strength domestic wastewater (low water use; e.g., RV park, low-flow toilets at campground, etc.)

A-11. Ground Water Conditions.

All applicants must provide the depth to and pre-discharge TDS concentration of the ground water that could be affected by the discharge. Refer to Supplemental Instructions for details on how to obtain these values.

Indicate the depth to the most shallow ground water beneath the discharge site. If there are multiple discharge sites, indicate the range of depths.

Depth to water : 890 ft bgs¹ / 45 ft bgs²
¹regional aquifer, ²alluvial groundwater

Reference:

- Measurement, nearby monitoring well
- Measurement, nearby supply well
- Well log from nearby well (attach copy)
- Office of the State Engineer
<http://www.oae.state.nm.us/>
- Report or study (give citation here and attach relevant portion):
- Other (describe):

Indicate pre-discharge total dissolved solids (TDS) concentration of most shallow ground water beneath the discharge site. Attach copies of analyses.

TDS (mg/L): 300 mg/L¹ / 270 mg/L²
¹R-28 / ²MCO-7

Reference:

- Analysis from upgradient monitoring well
- Analysis from on-site supply well
- Analysis from shallow nearby supply well
- Concentration provided in previous Discharge Permit application
- Report or study (give citation here and attach relevant portion):
- Other (describe):

A-12. Public Notice. See Supplemental Instructions.

a) The public notice packet including instructions and materials should be sent to:

- Applicant Consultant Other: Permit Contact (A-5)

b) Copies of the public notice packet (excluding sign) should be sent to:

- Applicant Consultant Other: Permit Contact (A-5)

c) The applicant is required to provide public notice of this application by placing a display ad in a newspaper of general circulation near the location of the proposed discharge. Indicate newspaper you intend to place the ad in:

Newspaper: Los Alamos Monitor

d) *For new or modification applications only:* The applicant must post a sign for 30 days in a conspicuous location at or near the facility, as approved by NMED. One sign must be posted for each 640 contiguous acres or less of the discharge site. An additional notice must be posted at an off-site location conspicuous to the public. Describe the locations below where you intend to post the notices. You may also attach sketches or photographs.

At or near facility: **Two (2) signs will be posted within Township 19N, Range 6E, Sections 23 & 24. 2 by 3 feet in size**

Off-site location: **A flyer size notice will be posted at the LANL Public Reading Room at the J. Robert Oppenheimer Study Center and Research Library, located on West Jemez Road at Casa Grande, Los Alamos, NM**

**PART B: OPERATIONAL, MONITORING, CONTINGENCY AND CLOSURE PLANS
GENERAL FORM (VARIOUS FACILITY TYPES)**

Operational Plan [Section 20.6.2.3106.C, 3109.C NMAC]

B-1. Source(s) of the Discharge. Describe what generates the wastewater, sludge or other discharges processed and/or disposed of at your facility. Identify all sources. Attach additional pages, if needed. See Supplemental Instructions.

R-28 is a regional aquifer monitoring well. Groundwater produced during the following two activities will require treatment prior to discharge:

1. **Well development.** R-28 was developed following construction to remove fine-grained sediments and to restore the porosity and permeability of the formation materials around the well screen. Approximately 13,000 gallons of groundwater from well development are currently in storage at the well site.
2. **Pumping Test.** A 10-day pumping test at monitoring well R-28 will be conducted pursuant to a requirement in the NMED Hazardous Waste Bureau-approved Sandia Canyon Phase II Investigation Work Plan (Appendix E).

B-2. Discharge Quantity. Describe the methods/calculations used to determine the maximum discharge volume listed in Item A-6 in Part A of your application. Attach additional pages, if needed. See Supplemental Instructions.

LANL proposes to generate approximately 432,000 gallons (gal) of groundwater during a 10-day, 30 gpm, pumping test at well R-28. LANL also proposes to concurrently treat and discharge approximately 13,000 gal of well development water that are currently stored at the well site.

B-3. Site Map. Attach a site map showing the components of your proposed system and relevant surrounding features, clearly labeled, such as:

- | | | |
|-----------------------------------|----------------------|---|
| • treatment units | • pits | • extraction/injection wells |
| • lagoons | • stockpiles | • arroyos |
| • tanks | • leachfields | • nearby water bodies such as ponds or canals |
| • sumps | • sludge drying beds | • property boundaries |
| • manure separators | • roads | • other permitted discharges |
| • land application fields | • buildings | • required setbacks |
| • domestic wastewater reuse areas | • supply wells | • north arrow |
| | • monitoring wells | |

If map is not to scale, mark distances on the map.

Site map is attached. See Appendix B.

B-4. Flood Protection. Describe the methods used to prevent flooding and run-off at the facility (tank protection, berms, diversion channels, etc.)

The proposed pumping test, groundwater treatment, and land application are one-time activities that will be conducted during the winter, no-flow season in Mortandad Canyon. No flood protection measures are necessary.

B-5. Plans and Specifications. For new facilities and for new components of existing systems, attach plans and specifications certified by a New Mexico registered professional engineer. [Section 20.6.2.1202 NMAC]

Not applicable because no new facilities are proposed.

Plans and specifications are attached. See Appendix C.

Plans and specifications were previously submitted. Submittal date(s): _____

B-6. Description of Components. Provide descriptive details of all components of your processing, treatment, storage and/or disposal system. Include all components listed under Item A-8 in Part A.

Component	Description (construction material, liner type, irrigation method, capacity, dimensions, area, etc.)
R-28	Monitoring well equipped with 30 gpm submersible pump
Influent storage tank (3)	21,000 gal steel frac tank
Influent sump pump (2)	One operational pump and one on-site spare
Ion exchange treatment vessel (6)	Siemens 12-cu ft IX vessel w/ USF A-284 anion resin
Effluent storage tank (3)	21,000 gal steel frac tank
Effluent sump pump (2)	One operational pump and one on-site spare
Water truck (2)	5,000 gal water wagon w/cannon sprayer for land application

B-7. Operational Plan. Attach a detailed description of how you operate your processing, treatment, storage and/or disposal system.

Animal feeding operations: include stormwater management, nutrient management plans, method for mixing irrigation and wastewater.

Domestic wastewater treatment facilities: include pre-treatment, solids management, vegetation management for land application.

Facilities using reclaimed domestic wastewater above ground: include proposed water quality classification(s), effluent monitoring, setbacks, irrigation schedules, etc. that will result in protection of public health and the environment. Please refer to *NMED Ground Water Quality Bureau Guidance: Above-Ground Use of Reclaimed Domestic Wastewater* for further information. A copy of the guidance document is available on the NMED website www.nmenv.state.nm.us under "Ground Water Quality".

Groundwater produced during the 10-day pumping test will be discharged into 21,000-gal steel frac tanks at the well site. A submersible sump pump will feed influent groundwater to two ion exchange (IX) treatment vessels to remove chromium to <35 µg/L. The maximum throughput for each 12-cu ft IX vessel is approximately 96,000 gallons. Six (6) treatment vessels—with a total throughput capacity of approximately 576,000 gallons—will be staged on-site providing an excess treatment capacity of approximately 33%. Treated water (product) from the IX treatment system will be discharged into 21,000-gal steel frac tanks prior to land application to the sites identified in Appendix B. Effluent monitoring—as described in Section B-13—will ensure that chromium concentrations do not exceed the NMWQCC Regulation 3103 standard of 50 µg/L. At the conclusion of treatment activities, management of the IX treatment vessels and used IX resin will be the responsibility of the treatment system subcontractor; management will be conducted in accordance with all applicable regulations. Appendix C contains additional information on the ion exchange (IX) treatment system.

B-8. System Maintenance. Attach a description of the operations and maintenance procedures which ensure that your processing, treatment and disposal system functions properly; e.g., inspections, pumping schedules, equipment maintenance, etc.

The proposed 10-day pumping test and treatment system operation will be supervised 24-hrs per day by operators fully qualified to perform system maintenance.

B-9. Backflow Prevention. If wastewater is used for land application or irrigation, describe methods used to protect wells from contamination by wastewater backflow. For new facilities or new systems at an existing facility, only air gap or reduced pressure valve assemblies are acceptable methods.

No backflow prevention is required for this activity because no connections to a potable water system will be made.

a) Clearly describe and/or sketch the location of air gaps or devices and attach specifications.

~~b) Describe how devices are maintained.~~

- B-10. Water Rights.** Animal feeding operations which land apply wastewater must attach documentation of irrigation water rights for the proposed land application fields, sufficient to sustain the intended crop rotation.

- Water right documentation is attached.
 Not applicable.

- B-11. Past Ground Water Monitoring Results.** This item applies only to existing facilities seeking renewal and/or modification of a Discharge Permit that required ground water monitoring.

- a) Attach a graph or a table showing all analytical results from ground water sampling at your facility. If preparing graphs, a separate graph should be developed for each constituent, except that nitrate and TKN may be shown on the same graph. Multiple wells may be shown on the same graph. See Supplemental Instructions for sample table and graph.

See Appendix D, water quality data from monitoring well R-28.

- b) If the monitoring results indicate that ground water standards have been violated or that there is an upward trend approaching standards, attach a description of what actions you have taken or will take to address the elevated concentrations. Ground water standards are listed in Section 20.6.2.3103 NMAC. See the Supplemental Instructions for frequently referenced standards.

Samples of influent (feed) and effluent (product) water from the IX treatment system will be collected twice daily for chromium analysis; results will be returned from the analytical laboratory within 24 hrs. If chromium concentrations exceed 45 µg/L (90% of the NM WQCC Regulation 3103 standard of 50 µg/L), then land application will cease until the spent IX vessel is replaced.

Monitoring Plan [Section 20.6.2.3107.A NMAC]

- B-12. Discharge Volumes.** Describe how and where the monthly discharge volume at your facility will be. For all measuring devices, provide type, location, and units of measure including multipliers (e.g., gallons, gallons x 16 acre-ft, etc.) See Supplemental Instructions. Attach additional pages, if necessary.

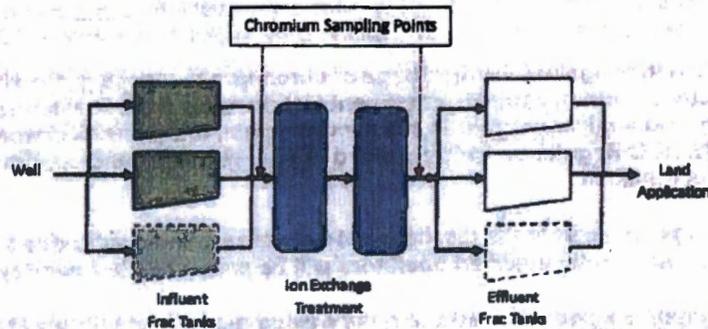
Pumping rates, times, and volumes will be monitored and recorded during the entire pump test. A totalizing flow meter and an automated meter capable of measuring both instantaneous and total flow will be installed on the discharge pipe from the well.

- B-13. Discharge Quality Monitoring.** Discharge Permits typically require that the discharge (treated wastewater, sludge, septage, etc.) be sampled on a regular basis. The frequency of sampling varies by type of facility, as do the contaminants of concern. Domestic and agricultural Discharge Permits typically require sampling for total Kjeldahl nitrogen (TKN), nitrate-nitrogen (NO₃-N), total dissolved solids (TDS) and chloride on a quarterly or semi-annual basis. (continued on next page)

Samples of influent (feed) and effluent (product) water from the IX treatment system will be collected twice daily for chromium analysis by the Laboratory's Geochemistry and Geomaterials Research Laboratory (GGRL). Sample analysis will be conducted by the GGRL within 24-hrs of sample submittal. Analytical results will be reported twice daily to the project team—during the morning and evening operator shift changes—to ensure that reductions in treatment efficiency can be identified early. The schematic below identifies the sample collection locations. If chromium concentrations exceed 45 µg/L (90% of the NM WQCC Regulation 3103 standard of 50 µg/L), then land application will cease until the spent IX vessel is replaced.

If reclaimed domestic wastewater will be discharged for above ground uses, testing of the discharge for additional parameters is appropriate. Please refer to the *NMED Ground Water Quality Bureau Guidance: Above-Ground Use of Reclaimed Domestic Wastewater* for further information.

In the space below, provide a description or sketch of the sampling point(s) to be used for sampling the discharge at your facility.



Optional: In the space below (or as an attachment), you may propose revisions or additions to the standard discharge quality monitoring requirements. If you do, provide the rationale for your proposal.

B-14. Ground Water Quality Monitoring. Discharge Permits typically require that ground water samples be collected quarterly from properly constructed monitoring wells located downgradient from discharge locations. The samples must be analyzed for contaminants of concern. For most domestic and agricultural Discharge Permits, the typical contaminants of concern are total Kjeldahl nitrogen (TKN), nitrate-nitrogen (NO₃-N), total dissolved solids (TDS) and chloride.

The proposed discharge is a one-time only activity. All land application will be conducted within the Mortandad Canyon watershed, a watershed with an extensive network of both alluvial and regional aquifer monitoring wells. Routine sampling of Mortandad Canyon monitoring wells is conducted in accordance with the NMED-approved Interim Facility Groundwater Monitoring Plan.

Optional: In the space below (or as an attachment), you may propose revisions or additions to the standard ground water monitoring requirements. If you do, provide the rationale for your proposal.

For existing facilities:

Indicate number of existing monitoring wells: _____

Attach copies of monitoring well logs.

- Well logs attached.
- Well logs cannot be located.
- Well logs previously submitted. Submittal date(s): _____

Attach copy of monitoring well survey (typically not applicable if fewer than 3 monitoring wells).

- Survey attached.
- No survey has been conducted.
- Survey previously submitted. Submittal date(s): _____

B-15. Other Monitoring. In addition to discharge volumes, discharge quality monitoring and ground water sampling, Discharge Permits typically require the following monitoring, depending on the type of facility:

- inspection and pumping of septic tanks, grease tanks, lift stations
- inspection of leachfields
- inspection of lagoons
- process testing for treatment plants
- land application data sheets (LADS)
- tracking of chemical fertilizer applications to land application areas
- soil sampling (agricultural and selected other facilities land applying wastewater)
- harvested plant material testing (agricultural facilities)

Optional: In the space below (or as an attachment), you may propose revisions or additions to the other standard monitoring requirements for your type of facility. If you do, provide the rationale for your proposal. NA

Contingency Plan [Section 20.6.2.3107.A.10 NMAC]

B-16. System Failure. Describe your contingency plan in the event there is a failure of your wastewater or discharge system (e.g., wastewater back-up, pump failure, pipe breaks, tank overflow, leachfield failure, saturated fields etc.)

As a contingency against the discharge of chromium in excess of the NMWQCC Regulation 3103 groundwater standard, samples of effluent (product) from the IX treatment system will be collected twice daily and analyzed within 24-hrs for chromium. If chromium concentrations exceed 45 µg/L (90% of the NMWQCC Regulation 3103 standard of 50 µg/L), then land application will cease until the spent IX vessel is replaced.

As a contingency against the discharge of untreated groundwater due to the failure of treatment system's components, qualified operators will be present 24 hrs per day during the 10-day pump test.

As a contingency against the discharge of treated groundwater into waters of the state, the land application of treated groundwater from R-28 will be conducted in accordance with the terms and conditions of the Laboratory's Standard Operating Procedure, ENV-RCRA-QP-010.2, *Land Application of Groundwater*. Criteria for land application include, but are not limited to, the following:

- land application site cannot be located in a watercourse
- land application cannot result in runoff to a watercourse
- land application cannot create ponds or pools
- land application must be conducted in a manner that maximizes infiltration and evaporation
- land application is restricted to daylight hours and for a maximum of 10 hrs/day
- land application must be supervised at all times
- land application is prohibited while precipitation is occurring

B-17. Contingency Leachfield Location. *This item applies only if your disposal system includes a leachfield.* Identify a location on your site map (Item B-3) for a contingency leachfield in the event that your leachfield must be replaced. If no land is available for a contingency leachfield at an existing facility, describe how you will address a failed leachfield. New facilities must provide for a contingency leachfield location. NA

B-18. Other Contingencies. Discharge Permits typically contain standard contingencies to address: NA

- exceeding wastewater quality limits
- violation of ground water or surface water standards
- spills or illegal releases of wastewater
- migration of soil nitrogen
- loading nitrogen above limit

Propose additional contingency plans, if appropriate:

Closure Plan [Section 20.6.2.3107(A)11 NMAC]

B-18. Facility Closure and Post-Closure Monitoring. Discharge Permits contain standard requirements to address the closure of part or all of your discharge system, as follows:

- cap or plug lines to prevent the flow of wastewater to treatment or disposal system
- empty and remove or backfill tanks
- empty lagoons, perforate or remove liners, re-grade to surface topography
- appropriately dispose of solids
- regrade and cover stockpiles at mine facilities
- continue ground water monitoring for at least two years, longer as appropriate
- enact contingency plans if ground water standards are violated
- financial assurance may be required.

Propose additional closure plans in the space below or as an attachment, if appropriate:

The proposed discharge is a one-time only activity that will conclude after 10 days. At the completion of the pumping test, and the treatment and land application of the produced water, all storage tanks and IX treatment equipment will be removed from the R-28 well site. Management of the IX treatment system vessels and resins will be the responsibility of the subcontractor and will be conducted in accordance with all applicable regulations.

Please Note: You must also complete Part C of the application.

PART C: SITE INFORMATION
All Facilities

- C-1. Area Map.** Attach a current area map showing roads and clearly mark the location of your facility.

See Appendix B.

- C-2. Directions to Site.** Provide driving directions to the site from the nearest town or, if located in a town, from an easily identifiable location.

Monitoring well R-28 is located in Mortandad Canyon. Because access to the well site requires entry through one of Los Alamos National Laboratory's Pajarito Corridor Vehicle Access Portals, visitors without a LANL badge site must be escorted to the project site. Visits to the project site may be coordinated through the point of contact listed in A-5 of this application.

- C-3. Topographic Map.** Attach a copy of the appropriate US Geological Survey topographic map. You may provide just the relevant portion. USGS maps are available at many outdoor equipment stores or bookstores, from the USGS at www.usgs.gov or 1-888-ASKUSGS, and from commercial websites.

On the map clearly indicate the location of your facility. Also identify the approximate locations of all wells within 1,000 feet of your discharge locations. The Office of the State Engineer has a searchable database of supply wells on its website at www.ose.state.nm.us.

USGS map attached with facility location and neighboring wells marked.

See Appendix B.

- C-4. Flood Potential.** Attach a copy of the latest Federal Emergency Management Agency (FEMA) flood map with your facility's location clearly marked, to the best of your ability. Information about how to obtain this map, formally known as a Flood Insurance Rate Map (FIRM) is available at www.fema.gov, insurance agencies or county government offices. A site specific analysis may be substituted.

FEMA map or site-specific analysis attached.

Previously submitted and still up-to-date. Submittal date(s): _____

Land application will be conducted in the Mortandad Canyon watershed during no-flow winter conditions. No flood protection measures are necessary.

- C-5. Soils.** Attach either:

- a) A copy of the appropriate Natural Resource Conservation Service (NRCS) soil survey map, with your site clearly identified to the best of your ability. Include the descriptive information for soils associated with the discharge locations. To obtain the map, contact your local NRCS office – there is one in every county.
- b) A site-specific assessment showing the soils classifications. This is preferred over the more generalized NRCS surveys.

NRCS soil survey or site-specific assessment attached.

Previously submitted. Submittal date(s): _____

See Appendix B, LANL Soils map.

- C-6. Geology.** Provide information on the geology beneath the site by attaching relevant portions of geologic reports, well logs for on-site or nearby wells, or site specific assessments. A variety of geology publications and resources are available from the New Mexico Bureau of Geology and Mineral Resources at <http://geoinfo.nmt.edu> or 505-835-5420 (Socorro). Well logs are available from the New Mexico State Engineer's Office at <http://www.ose.state.nm.us/>.

Geologic report attached.

Well log(s) attached.

Appendix E contains the following reports:

1. Hydrogeologic Studies of the Pajarito Plateau, LA-14263-MS
2. 2009 Hydrogeologic Site Atlas, LAUR-09-3763
3. 2010 Groundwater Level Status Report for 2010, LA-14437-PR
4. Sandia Canyon Phase II Investigation Work Plan, LAUR-10-04921

Geologic information previously submitted. Submittal date(s): _____

C-7. Ground Water Hydrology. Ground water hydrology refers to the occurrence, distribution, movement and chemistry of ground water. The ground water hydrology at your site will determine in large part whether your discharge will adversely affect ground water quality. You may need to present detailed information in order to "demonstrate that the Discharge Permit will not result in concentrations in excess of the standards of Section 20.6.2.3103 NMAC or the presence of any toxic pollutant." (20.2.3106.C.7 NMAC)

At a minimum, provide information below on the direction of ground water flow. Ground water may not flow in the same direction as water on the surface of the ground. A monitoring well survey is one of the best methods to determine the direction of ground water flow at a particular site. Such surveys are routinely required for many Discharge Permit locations.

If a survey is not available, check with well drillers, the city water department, staff at the Office of the State Engineer, environmental consultants or other knowledgeable persons in your area. In addition, relevant reports have been published for some areas. See the OSE website at www.ose.state.nm.us or the NMBGMR website at <http://geoinfo.nmt.edu>.

Direction of ground water flow: Southeast

If ground water flow shifts seasonally, describe here: _____

Reference:

On-site well survey attached. Previously submitted. Submittal date(s): _____

Nearby well survey attached. Previously submitted. Submittal date(s): _____

Other. Specify: See Appendix E.

Relevant portion attached.

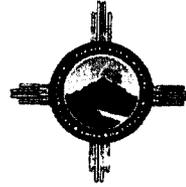
Previously submitted. Submittal date(s): _____

Attach any additional information available about ground water hydrology at the site.

C-8. Other Permitted Discharge Locations. If applicable, list other locations of wastewater or stormwater discharges on your site that are not described in this application and indicate what permits apply to them. Examples include discharges from small septic systems (covered by Liquid Waste Permits, discharges to surface waters under a NPDES permit, a discharge covered by a separate Discharge Permit, etc. Be sure these other discharge locations are identified on the site map required in Item B-3.

Discharge Type	Permit Identification
Sanitary & industrial outfalls (15)	NPDES Permit No. NM0028355
Individual Stormwater Permit	NPDES Permit No. NM0030759
Construction Stormwater Permits	Each construction project disturbing more than 1 acre
Sanitary wastewater	NMED Discharge Permit DP-867
Industrial wastewater	NMED Discharge Permit Application DP-1132
Domestic septic tanks	NMED Discharge Permit Application DP-1589

- C-9. Other Information.** Describe below or attach any additional information to demonstrate that your proposed discharge plan will be protective of ground water quality, public health and property. NA



*Environmental Safety & Health
Environmental Protection Division*
P.O. Box 1663, K491
Los Alamos, New Mexico 87545
(505) 665-6592/FAX (505) 665-3811

*National Nuclear Security Administration
Los Alamos Site Office, A316*
3747 West Jemez Road
Los Alamos, New Mexico 87545
(505) 667-5794/FAX (505) 667-5948

Date: March 13, 2012
Refer To: ENV-DO-12-0009
LAUR: 12-10423

Mr. Jerry Schoeppner, Acting 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 Mr. Schoeppner:

SUBJECT: SUPPLEMENTAL INFORMATION, DISCHARGE PERMIT DP-1793, ON-SITE TREATMENT AND LAND APPLICATION OF PUMPING TEST WATER

The US Department of Energy and Los Alamos National Security, LLC (DOE/LANS) are in receipt of your January 13, 2012, letter (Enclosure 1) requesting supplemental information for Discharge Permit DP-1793 by March 13, 2012. Per your request, Enclosure 2 contains a broad but detailed process for managing groundwater produced during activities that are outside the scope of the New Mexico Environment Department (NMED)-approved Decision Tree (Enclosure 3). Activities covered by DP-1793 would include, but not be limited to, pumping tests, aquifer tests and well rehabilitation. The scope of DP-1793 will include both groundwater that meets regulatory standards for discharge without treatment and groundwater that will require on-site treatment to meet regulatory standards prior to discharge. All groundwater discharged under DP-1793 will comply with the regulatory standards of §20.6.2.3103 NMAC and the Environmental Protection Agency's Regional Tap Water Screening Levels for all §20.6.2.7 NMAC Toxic Pollutants. Further, each planned discharge will be preceded by the submission of a work plan for NMED Ground Water Quality Bureau approval.

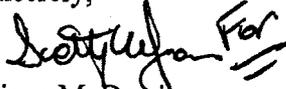
ENV-DO-13-0343
Mr. Jerry Schoeppner
ENV-DO-12-0009

ENCLOSURE 1
-2-

LAUR-13-29467
March 13, 2012

Please contact Bob Beers at (505) 667-7969 of the Water Quality and RCRA Group (ENV-RCRA) if you have questions.

Sincerely,



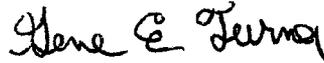
Alison M. Dorries
Division Leader
Environmental Protection Division
Los Alamos National Laboratory

AMD:GET:BB/lm

Enclosures: a/s

Cy: James Bearzi, NMED/SWQB, Santa Fe, NM, w/enc.
John Kieling, NMED/HWB, Santa Fe, NM, w/enc.
Hai Shen, LASO-EO, w/enc., A316
Kevin W. Smith, LASO-OOM, w/o enc., A316
Gene Turner, LASO-EO, w/enc., A316
Steve Yanicak, LASO-GOV, w/enc., M894
Carl A. Beard, PADOPS, w/o enc., A102
Michael T. Brandt, ADESH, w/o enc., K491, (E-File)
Alison M. Dorries, ENV-DO, w/o enc., K49, (E-File)
Scotty Jones, ENV-DO, w/o enc., K491, (E-File)
Michael Graham, ADEP, w/o enc., M991, (E-File)
Tori George, REG-DO, w/o enc., M991, (E-File)
Kate Lynnes, REG-DO, w/enc., M992, (E-File)
Danny Katzman, ET-EI, w/enc., M992, (E-File)
Ted Ball, MNGRCT-DO, w/enc., M996, (E-File)
Mike Saladen, ENV-RCRA, w/enc., K490, (E-File)
Bob Beers, ENV-RCRA, w/enc., K490
ENV-RCRA File, (12-0061) w/enc., M704
IRM-RMMSO, (U1200114), w/enc., A150, (E-File)

Sincerely,



Gene E. Turner
Environmental Permitting Manager
Environmental Projects Division
Los Alamos Site Office
Department of Energy

ENV-DO-13-0343



SUSANA MARTINEZ
Governor
JOHN A. SANCHEZ
Lieutenant Governor

ENCLOSURE 1

**NEW MEXICO
ENVIRONMENT DEPARTMENT**

Ground Water Quality Bureau

1190 St. Francis Drive
P.O. Box 5469, Santa Fe, NM 87502
Phone (505) 827-2918 Fax (505) 827-2965
www.nmenv.state.nm.us

LAUR-13-29467



DAVE MARTIN
Secretary
BUTCH TONGATE
Deputy Secretary

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

August 22, 2012

Kevin Smith, Manager
National Nuclear Security Administration
3747 West Jemez Road
Los Alamos, NM 87545

Dennis L. Hjeresen, Division Leader
Los Alamos National Security, LLC
PO Box 1663 MS K404
Los Alamos, NM 87545

**RE: Administrative Completeness Determination and Applicant's Public Notice
Requirements, DP-1793, Los Alamos National Laboratory**

Dear Mr. Smith:

The New Mexico Environment Department (NMED) received a Ground Water Discharge Permit Application for the above referenced facility on December 22, 2011. Pursuant to Section 20.6.2.3108 NMAC of the New Mexico Water Quality Control Commission Regulations (20.6.2 NMAC), NMED determined on August 1, 2012 that your application is administratively complete.

Within 30 days of the date when the US Postal Service first makes notice to you of its possession of this letter, you must provide public notice. Instructions and materials needed to complete the public notice are enclosed.

After NMED receives the completed proof of public notice, a technical reviewer will contact you if additional information is needed to process your application. If you have a deadline of concern in the interim or any questions, please call the Ground Water Quality Bureau at (505) 827-2900.

ENV-DO-13-0343
Kevin Smith, DP-1793

ENCLOSURE 1

LAUR-13-29467

August 22, 2012

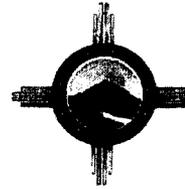
Page 2

Sincerely,



✓ Jerry Schoeppner, Chief
Ground Water Quality Bureau

enc: Instructions for Completing Public Notice Requirements
Affidavit
Public Notice Flyer
Text for Newspaper Display Ad
Public Notice Sign
Invoice (\$15 fee per printed sign) if not attached, the invoice will be mailed separately



Environmental Protection Division
Water Quality & RCRA Group (ENV-RCRA)
P.O. Box 1663, K490
Los Alamos, New Mexico 87545
(505) 667-0666

National Nuclear Security Administration
Los Alamos Site Office, A316
3747 West Jemez Road
Los Alamos, New Mexico 87545
(505) 667-5794/FAX (505) 667-5948

Date: **NOV 14 2012**
Refer To: ENV-RCRA-12-0247
LAUR: 12-25980

Mr. Jerry Schoeppner, 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 Mr. Schoeppner:

SUBJECT: AFFIDAVIT OF PUBLIC NOTICE COMPLETION, DISCHARGE PERMIT APPLICATION DP-1793, ON-SITE TREATMENT AND DISCHARGE OF GROUNDWATER

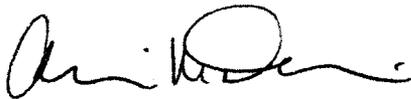
The U.S. Department of Energy and Los Alamos National Security, LLC (DOE/LANS) have completed the public notice requirements for Discharge Permit application DP-1793 in accordance with Section 20.2.6.3108 of the New Mexico Administrative Code (NMAC) and the public notice instructions specified in your August 22, 2012, letter (Enclosure 1). This letter and enclosures provides the New Mexico Environment Department (NMED) Ground Water Quality Bureau with the Proof of Notice required within 15 days of completing public notice; DOE/LANS completed public notice on November 1, 2012. Accordingly, the following documents are enclosed:

1. A signed *Affidavit of Public Notice Completion* form (Enclosure 2)
2. Copy of the newspaper advertisement (Enclosure 3)
3. Copy of the U.S. Postal Service (USPS) Mail Order Form and mailing list (Enclosure 4)

The invoice from the NMED to Los Alamos National Laboratory for the public notice posters (\$825.00) was submitted to your agency under separate cover (ENV-RCRA-12-0208, September 17, 2012).

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

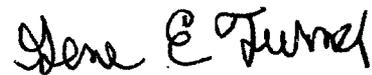
Sincerely,



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

AMD:GET:RSB/lm

Sincerely,



Gene E. Turner
Environmental Permitting Manager
Environmental Projects Office
Los Alamos Site Office
Department of Energy

Enclosures:

1. Copy of August 22, 2012, letter from NMED RE: Public Notice Requirements for DP-1793
2. A signed *Affidavit of Public Notice Completion* form
3. Copy of the newspaper advertisement
4. Copy of the USPS Mail Order Form and mailing list

Cy: James Hogan, NMED/SWQB, Santa Fe, NM, w/enc.
John Kieling, NMED/HWB, Santa Fe, NM, w/enc.
Steve Yanicak, NMED/DOE/OB, w/enc., (E-File)
Hai Shen, LASO-EPO, w/enc., (E-File)
Gene E. Turner, LASO-EPO, w/enc., (E-File)
Carl A. Beard, PADOPS, w/o enc., A102
Michael T. Brandt, ADESH, w/o enc., (E-File)
Alison M. Dorries, ENV-DO, w/o enc., (E-File)
Jeffrey D. Mousseau, ADEP, w/o enc., (E-File)
Victoria A. George, REG-DO, w/enc., (E-File)
Kathryn D. Lynnes, REG-SP, w/enc., (E-File)
Michael T. Saladen, ENV-RCRA, w/o enc., (E-File)
Robert S. Beers, ENV-RCRA, w/enc., K490
IRM-RMMSO, w/enc., (E-File)
ENV-RCRA Correspondence File, w/enc., K490

ENCLOSURE 2

Amended Discharge Permit Application DP-1793

ENV-DO-13-0343

LAUR-13-29467

Date: JAN 07 2014



**NEW MEXICO ENVIRONMENT DEPARTMENT
GROUND WATER QUALITY BUREAU**



AMENDED DISCHARGE PERMIT APPLICATION

Type of Application. Check appropriate box.

- Application for new Discharge Permit -- new facility. **Amended Discharge Permit Application. Original application submitted by U.S. Department of Energy and Los Alamos National Security, LLC on December 22, 2011 (ENV-RCRA-11-0284).**
- Application for new Discharge Permit -- existing (unpermitted) facility
- Application for Discharge Permit Renewal
- Application for Discharge Permit Modification
"Modification" is defined as a change to the permit requirements that result from a change in the location of the discharge, a significant increase in the quantity of the discharge, or a significant change in the quality of the discharge.
- Application for Discharge Permit Renewal and Modification

For an existing Discharge Permit, please indicate: DP Number 1793 Expiration date _____

Checklist of Application Components.

<input checked="" type="checkbox"/> Part A: Administrative Completeness.	<i>Instructions for completing the application are included on the form itself and on Supplemental Instructions for Parts A and B. You may fill out the application manually, or a Microsoft Word version may be downloaded from www.nmenv.state.nm.us (Ground Water Quality) and filled out electronically.</i>
<input checked="" type="checkbox"/> Part B: Operational, Monitoring, Contingency and Closure Plans, with required attachments. <i>Choose appropriate option:</i> <input type="checkbox"/> Septic Tank System <input checked="" type="checkbox"/> General – Various Facility Types	
<input checked="" type="checkbox"/> Part C: Site Information, with required attachments.	
<input type="checkbox"/> \$100 Filing Fee, payable to the New Mexico Environment Department. <i>Required from all applicants. An additional fee will be assessed prior to permit issuance. Permit fees are listed in Section 20.6.2.3114 NMAC.</i>	

Certification. Signature must be that of the person named in Item A-3 of Part A of the application.

I certify under penalty of law that I am knowledgeable about the information contained in this application. The information is, to the best of my knowledge and belief, true, accurate and complete.

Signature: *Alison Dorries acting DL* Date: 12/23/13
 Signature: *William I. White* Date: 1/6/14

Name/Title Alison Dorries, Division Leader, ENV-DO, Los Alamos National Security, LLC

Name/Title William I. White, Acting Manager, Los Alamos Field Office, NNSA

Send three complete copies of this application and the filing fee to:

Program Manager
 Ground Water Pollution Prevention Section
 New Mexico Environment Department
 PO Box 5469, Santa Fe, NM 87502

**GROUND WATER DISCHARGE PERMIT APPLICATION
PART A: ADMINISTRATIVE COMPLETENESS
All Facilities**

A-1. Facility Information. See Supplemental Instructions to determine what constitutes the "facility." The physical location of the facility must be provided. If the facility does not have an address, the location can be described by road intersections, mile posts, or landmarks, as appropriate.

Facility Name	<u>Los Alamos National Laboratory (LANL or the Laboratory)</u>		
Former Names (if any)	<u>NA</u>		
Physical address/location (mandatory)	<u>Los Alamos, New Mexico</u>		County <u>Los Alamos</u>
Mailing address	<u>P.O. Box 1663 Mail Stop K499</u>		
	<u>Los Alamos, NM 87545</u>		
Contact person	<u>Alison M. Dorries</u>		
Title	<u>Division Leader, Environmental Protection Division (ENV-DO)</u>		
Telephone number(s)	<u>505-665-6952</u>		
Fax number	<u>505-665-3811</u>	E-mail address	<u>adorries@lanl.gov</u>

A-2. Type of Discharge and Type of Facility. See Supplemental Instructions.

Type of discharge: Domestic Agricultural Industrial Mining

Type of facility: **The treatment and land application of groundwater produced from pumping tests, aquifer tests, well development & well rehabilitation, and tracer studies.**

A-3. Applicant Information. The applicant is the person or entity (e.g., corporation, partnership, organization, municipality, etc.) legally responsible for the discharge and for complying with the terms of the Discharge Permit. If the applicant is an entity, then the name and title of a contact person must be provided. This application must be signed by the applicant or contact person named here.

Applicant Name	<u>National Nuclear Security Administration (NNSA)¹</u>		
	<u>Los Alamos National Security, LLC (LANS)²</u>		
Mailing address	<u>¹3747 West Jemez Road, Los Alamos, NM 87545</u>		
	<u>²P.O. Box 1663, MS K499, Los Alamos, NM 87545</u>		
Contact person	<u>William I. White¹, Acting Manager, Los Alamos Field Office, NNSA</u>		
	<u>Alison M. Dorries², Division Leader, ENV-DO, LANS, LLC</u>		
Telephone number(s)	<u>¹(505) 667-5105 ²(505) 665-6952</u>		
Fax number	<u>¹665-3811</u>	<u>²665-3811</u>	E-mail address <u>william.white@nnsa.doe.gov, adorries@lanl.gov</u>

A-4. Consultant Information (if applicable). If the consultant is a company or organization, then the name and title of a contact person must be provided.

Consultant/Firm Name NA

Mailing address _____

Contact person _____

Title _____

Telephone number(s) _____

Fax number _____ E-mail address _____

A-5. Permit Contact Information (if applicable). If someone other the applicant listed in Item A-3 or a consultant listed in Item A-4 is a primary contact for this application and/or facility, list here.

Permit Contact Name Robert Beers

Title Environmental Professional, LANS

Mailing address P.O. Box 1663 MS K490
Los Alamos, NM 87545

Telephone number(s) 505-667-7969

Fax number na E-mail address bbeers@lanl.gov

A-6. Ownership.

The applicant owns (check as appropriate): the facility* some discharge sites all discharge sites

*** National Nuclear Security Administration (NNSA) Facility**

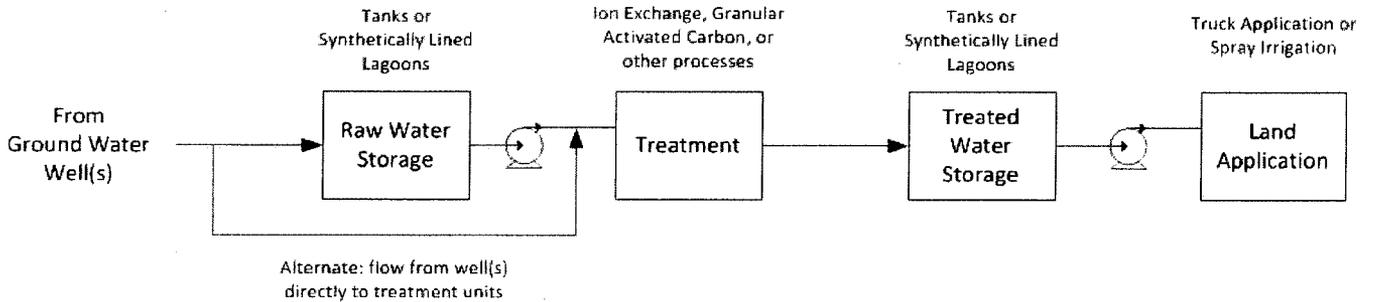
If other parties own the facility or any of the discharge sites, attach their names and contact information.

A-7. Discharge Quantity.

Your Discharge Permit will specify a maximum discharge volume, which is typically expressed as the maximum number of gallons per day that may be treated and/or disposed of. Please indicate below the maximum discharge volume for your facility. You must show how it was determined in Part B of your application. For further explanation, see Supplemental Instructions for Part B.

Maximum discharge volume: 350,000 gallons per day (or other units: _____)

A-8. Processing, Treatment, Storage and Disposal System. Briefly describe how wastewater, sludge, etc. is processed, treated, stored, and/or disposed of at your facility. See Supplemental Instructions for examples of system components. **Below is a generalized process flow diagram for the storage, treatment, and land application of groundwater for activities conducted under this discharge permit.**



**Generalized Process Flow Diagram
Groundwater Treatment**

A-9. Discharge Locations. List the locations of your facility and of all components of your processing, treatment, storage and/or disposal system. Examples of components include septic tanks, lagoons, leachfields, irrigation sites, mine stockpiles, etc. Additional examples are listed in the Supplemental Instructions. Latitude and longitude are optional unless township, range and section are not available.

On June 11, 2012 (ENV-RCRA-12-0120), DOE/LANS reported to the NMED that activities proposed under this Discharge Permit Application could be conducted anywhere within the 36 square-mile Los Alamos National Laboratory site. Accordingly, DOE/LANS propose to include all 55 sections as possible discharge locations. These locations are listed by range, township, and section in Enclosure 3.

Components	Township	Range	Section(s)
Regional (61) & Intermediate-Perched (38) monitoring wells	See Enclosure 3		
Treatment & storage systems	See Enclosure 3		
Land application sites	See Enclosure 3		

A-10. Discharge Quality.

Indicate the expected quality of the discharge -- wastewater, leachate, sludge, etc. -- generated, stored, treated, processed and/or discharged at your facility. List the contaminants of concern and the expected concentrations. *Not all facilities need to characterize influent quality.* See Supplemental Instructions for typical contaminants and additional guidance.

Expected or Known Contaminants	Expected or Known Contaminants Indicate units: mg/L, CFU/100 ml, etc.	
	Incoming (Influent)	Final (Effluent)
20.6.2.3103 NMAC	> 20.6.2.3103 NMAC ground water stds	<90% of 20.6.2.3103 NMAC ground water stds
20.6.2.7.WW NMAC Toxic Pollutants	>Table A-1, NMED Risk Assessment Guidance SSLs for Tap Water	<90% of Table A-1, NMED Risk Assessment Guidance SSLs for Tap Water

For new septic tank systems, you may either fill out the chart above or simply check one of the following options:

- typical domestic wastewater
- low-strength domestic wastewater (large gray water component; e.g., laundromat, spa, etc.)
- high-strength domestic wastewater (low water use; e.g., RV park, low-flow toilets at campground, etc.)

A-11. Ground Water Conditions.

All applicants must provide the depth to and pre-discharge TDS concentration of the ground water that could be affected by the discharge. Refer to Supplemental Instructions for details on how to obtain these values.

Indicate the depth to the most shallow ground water beneath the discharge site. If there are multiple discharge sites, indicate the range of depths.

Depth to **890 ft bgs¹ / 45 ft bgs² / 100-900 ft bgs³** water:

¹regional aquifer, ²alluvial, ³intermediate-perched

Reference:

- Measurement, nearby monitoring well
- Measurement, nearby supply well
- Well log from nearby well (attach copy)
- Office of the State Engineer
<http://www.ose.state.nm.us/>
- Report or study (give citation here and attach relevant portion):
- Other (describe):

Indicate pre-discharge total dissolved solids (TDS) concentration of most shallow ground water beneath the discharge site. Attach copies of analyses.

TDS (mg/L): **300 mg/L¹ / 270 mg/L²**

¹R-28 / ²MCO-7

Reference:

- Analysis from upgradient monitoring well
- Analysis from on-site supply well
- Analysis from shallow nearby supply well
- Concentration provided in previous Discharge Permit application
- Report or study (give citation here and attach relevant portion):
- Other (describe):

A-12. Public Notice. See Supplemental Instructions.

a) The public notice packet including instructions and materials should be sent to:

- Applicant
- Consultant
- Other: Permit Contact (A-5)

b) Copies of the public notice packet (excluding sign) should be sent to:

- Applicant
- Consultant
- Other: Permit Contact (A-5)

c) The applicant is required to provide public notice of this application by placing a display ad in a newspaper of general circulation near the location of the proposed discharge. Indicate newspaper you intend to place the ad in:

Newspaper: Los Alamos Monitor

d) *For new or modification applications only:* The applicant must post a sign for 30 days in a conspicuous location at or near the facility, as approved by NMED. One sign must be posted for each 640 contiguous acres or less of the discharge site. An additional notice must be posted at an off-site location conspicuous to the public. Describe the locations below where you intend to post the notices. You may also attach sketches or photographs.

At or near facility: **55 signs will be posted within Los Alamos National Laboratory (See Enclosure 3)**
2 by 3 feet in size

Off-site location: **A flyer size notice will be posted at the LANL Public Reading Room, 94 Cities of Gold Road, Santa Fe, NM, 87506**

PART B: OPERATIONAL, MONITORING, CONTINGENCY AND CLOSURE PLANS
GENERAL FORM (VARIOUS FACILITY TYPES)

Operational Plan [Section 20.6.2.3106.C, 3109.C NMAC]

B-1. Source(s) of the Discharge. Describe what generates the wastewater, sludge or other discharges processed and/or disposed of at your facility. Identify all sources. Attach additional pages, if needed. See Supplemental Instructions.

This discharge permit application is specific to the following three groups of activities:

1. **Aquifer tests and pumping tests.** Aquifer tests and pumping tests are typically conducted to evaluate an aquifer by "stimulating" the aquifer through constant pumping, and observing the aquifer's "response" in observation wells. Developing conceptual models on the nature and extent of groundwater contamination at LANL may require aquifer testing to better define aquifer parameters and variations in contaminant concentrations during pumping. Aquifer testing produces groundwater requiring management and disposal. There are 61 regional aquifer wells and 38 intermediate-perched aquifer wells at the Laboratory that may be candidates for aquifer testing. In addition, new wells may be constructed during the term of this Discharge Permit that may be candidates for aquifer testing. Groundwater produced during an aquifer test is eligible for discharge by land application if it meets the conditions of this Discharge Permit.
2. **Well development and well rehabilitation.** Concerns about the reliability or representativeness of groundwater quality data obtained from a well may necessitate well rehabilitation. Well rehabilitation may produce groundwater requiring management and disposal. There are 61 regional aquifer wells and 38 intermediate-perched aquifer wells at the Laboratory that may be candidates for rehabilitation. In addition, new wells may be constructed during the term of this Discharge Permit that would require development prior to completion. Groundwater produced during well development and rehabilitation is eligible for discharge by land application if it meets the conditions of this Discharge Permit.
3. **Tracer studies.** Tracers may be deployed in conjunction with a pumping or aquifer test, or as a stand-alone study. Injection in the regional aquifer or intermediate-perched aquifers is done to characterize hydraulic, geochemical and transport properties of the subsurface flow medium. Groundwater containing recovered tracers is eligible for discharge by land application if it meets the conditions of this Discharge Permit.

The U.S. Department of Energy and Los Alamos National Security, LLC (DOE/LANS) propose to submit a work plan 60 days prior to the commencement of any of the activities described in Section B-1 of this permit application. Each work plan will contain the following information, as applicable to the project:

- Map showing the well and proposed land application sites
- Detailed description of the activity, including a statement of purpose
- Existing water quality data showing concentrations of contaminants exceeding regulatory standards
- Detailed description of the on-site treatment system to remove contaminants of concern
- Schematic of treatment system and treatment unit specifications.
- Detailed description of the containment systems
- Maximum daily discharge volume
- Total volume of proposed discharge
- Proposed sampling plan to demonstrate treatment efficiency & compliance with regulatory standards
- Land application procedures
- Project schedule
- Submission of a final report within 60 days of completing the discharge. Final report shall include the following information:
 - Total volume of groundwater discharged
 - Analytical results from samples collected under the water quality sampling plan
 - Locations that received land applied groundwater

- B-2. Discharge Quantity.** Describe the methods/calculations used to determine the maximum discharge volume listed in Item A-6 in Part A of your application. Attach additional pages, if needed. See Supplemental Instructions.

Activities at LANL that may produce groundwater requiring treatment prior to land application include (1) pumping tests, aquifer tests, and tracer studies to characterize of ground water quality and aquifer properties; (2) well development during construction of new monitoring and pilot pumping wells; and (3) the rehabilitation of existing wells that are no longer providing representative data.

Individual projects—for example, the Chromium Project— may consist of multiple wells pumping simultaneously with collective production up to 85 gallons per minute (gpm). Under circumstances where multiple projects are overlapping then the maximum daily discharge volume could reach approximately 250 gpm or approximately 350,000 gallons per day.

- B-3. Site Map.** Attach a site map showing the components of your proposed system and relevant surrounding features, clearly labeled, such as:

- | | | |
|-----------------------------------|----------------------|---|
| • treatment units | • pits | • extraction/injection wells |
| • lagoons | • stockpiles | • arroyos |
| • tanks | • leachfields | • nearby water bodies such as ponds or canals |
| • sumps | • sludge drying beds | • property boundaries |
| • manure separators | • roads | • other permitted discharges |
| • land application fields | • buildings | • required setbacks |
| • domestic wastewater reuse areas | • supply wells | • north arrow |
| | • monitoring wells | |

If map is not to scale, mark distances on the map.

Site map is attached. **See Appendix B, Discharge Permit Application, DP-1793, December 22, 2011 (ENV-RCRA-11-0284)**

- B-4. Flood Protection.** Describe the methods used to prevent flooding and run-off at the facility (tank protection, berms, diversion channels, etc.)

No components will be sited within a watercourse. However, some activities may be conducted within the flood plain of a watercourse because of the necessity of siting components in close proximity to the groundwater wells they are serving.

- B-5. Plans and Specifications.** For new facilities and for new components of existing systems, attach plans and specifications certified by a New Mexico registered professional engineer. [Section 20.6.2.1202 NMAC]

Not applicable because no new facilities are proposed.

Plans and specifications are attached.

Plans and specifications were previously submitted. Submittal date(s):

See Section B-1 of this amended application. Project-specific work plans will be submitted to NMED for review and approval. Each work plan will contain plans & specifications for the project components.

B-6. Description of Components. Provide descriptive details of all components of your processing, treatment, storage and/or disposal system. Include all components listed under Item A-8 in Part A.

Component**	Description (construction material, liner type, irrigation method, capacity, dimensions, area, etc.)
Groundwater monitoring well	61 regional wells & 38 intermediate-perched wells at LANL
Influent (raw water) storage tank	Steel frac tank. See Enclosure 4, Design Criteria
Influent (raw water) storage tank	Lined modular tank. See Enclosure 4, Design Criteria
Influent (raw water) storage lagoon	Synthetically-lined lagoon. See Enclosure 4, Design Criteria
Treatment system feed pump	Delivers raw water from tank or lagoon to treatment unit
Treatment unit	Treatment unit to remove contaminants >stds (eg, IX, GAC)
Effluent (treated water) storage tank	Steel frac tank. See Enclosure 4, Design Criteria
Effluent (treated water) storage tank	Lined modular tank. See Enclosure 4, Design Criteria
Effluent (treated water) storage lagoon	Synthetically-lined lagoon. See Enclosure 4, Design Criteria
Effluent (treated water) transfer pump	Transfers effluent to water truck or spray irrigation
Water truck	Water truck w/sprayers for land application
Spray irrigation system	Pump, valves, piping, and spray nozzles for land application

**Components are listed singularly. Each work plan will specify the number of components and their configuration.

B-7. Operational Plan. Attach a detailed description of how you operate your processing, treatment, storage and/or disposal system.

Animal feeding operations: include stormwater management, nutrient management plans, method for mixing irrigation and wastewater.

Domestic wastewater treatment facilities: include pre-treatment, solids management, vegetation management for land application.

Facilities using reclaimed domestic wastewater above ground: include proposed water quality classification(s), effluent monitoring, setbacks, irrigation schedules, etc. that will result in protection of public health and the environment. Please refer to *NMED Ground Water Quality Bureau Guidance: Above-Ground Use of Reclaimed Domestic Wastewater* for further information. A copy of the guidance document is available on the NMED website www.nmenv.state.nm.us under "Ground Water Quality".

Groundwater pumped from a well during the covered activity (See Section B-1) will be discharged into a steel frac tank, a lined modular tank, and/or a synthetically-lined lagoon at the well site. A feed pump will transfer the raw water to the treatment system to remove contaminants of concern to concentrations below regulatory limits. Treated water from the treatment system will be discharged into a lined modular tank or a synthetically-lined lagoon prior to land application. Treated water monitoring will ensure that contaminant concentrations do not exceed the 20.6.2.3103 NMAC standards or the Table A-1 limits in the NMED Risk Assessment Guidance for 20.6.2.7.WW NMAC Toxic Pollutants. At the conclusion of treatment activities, management of treatment system solids will be the responsibility of the treatment system subcontractor; management will be conducted in accordance with all applicable local, state, and federal regulations.

B-8. System Maintenance. Attach a description of the operations and maintenance procedures which ensure that your processing, treatment and disposal system functions properly; e.g., inspections, pumping schedules, equipment maintenance, etc.

All covered activities proposed in this discharge permit application will be supervised daily by operators fully qualified to perform system maintenance.

- B-9. Backflow Prevention.** If wastewater is used for land application or irrigation, describe methods used to protect wells from contamination by wastewater backflow. For new facilities or new systems at an existing facility, only air gap or reduced pressure valve assemblies are acceptable methods.

No backflow prevention is required for this activity because no connections to a potable water system will be made.

- a) Clearly describe and/or sketch the location of air gaps or devices and attach specifications.
b) Describe how devices are maintained.

- B-10. Water Rights.** Animal feeding operations which land apply wastewater must attach documentation of irrigation water rights for the proposed land application fields, sufficient to sustain the intended crop rotation.

Water right documentation is attached.

Not applicable.

- B-11. Past Ground Water Monitoring Results.** *This item applies only to existing facilities seeking renewal and/or modification of a Discharge Permit that required ground water monitoring.*

- a) Attach a graph or a table showing all analytical results from ground water sampling at your facility. If preparing graphs, a separate graph should be developed for each constituent, except that nitrate and TKN may be shown on the same graph. Multiple wells may be shown on the same graph. See Supplemental Instructions for sample table and graph.

Groundwater quality data will be submitted in the project-specific work plan.

- b) If the monitoring results indicate that ground water standards have been violated or that there is an upward trend approaching standards, attach a description of what actions you have taken or will take to address the elevated concentrations. Ground water standards are listed in Section 20.6.2.3103 NMAC. See the Supplemental Instructions for frequently referenced standards.

Samples of influent (feed) and effluent (product) water from the treatment system will be collected routinely for contaminants of concern. If contaminants concentrations exceed 90% of the NM WQCC Regulation 3103 standard or the Table A-1 NMED Risk Assessment Guidance limits for Toxic Pollutants then land application will cease until corrective actions can be implemented.

Monitoring Plan [Section 20.6.2.3107.A NMAC]

- B-12. Discharge Volumes.** Describe how and where the monthly discharge volume at your facility will be. For all measuring devices, provide type, location, and units of measure including multipliers (e.g., gallons, gallons x 100, acre-ft, etc.) See Supplemental Instructions. Attach additional pages, if necessary.

Pumping rates, times, and volumes will be monitored and recorded during the entire activity. A totalizing flow meter capable of measuring both instantaneous and total flow will be installed on the discharge pipe from the well. Volumes of treated water land applied by truck and spray irrigation will be recorded.

- B-13. Discharge Quality Monitoring.** Discharge Permits typically require that the discharge (treated wastewater, sludge, septage, etc.) be sampled on a regular basis. The frequency of sampling varies by type of facility, as do the contaminants of concern. Domestic and agricultural Discharge Permits typically require sampling for total Kjeldahl nitrogen (TKN), nitrate-nitrogen (NO₃-N), total dissolved solids (TDS) and chloride on a quarterly or semi-annual basis. *(continued on next page)*

Samples of influent (feed) and effluent (product) water from the treatment system will be collected for analysis for contaminants of concern. Analytical results will be reported to the project team to ensure that changes in treatment efficiency can be identified prior to media exhaustion.

If reclaimed domestic wastewater will be discharged for above ground uses, testing of the discharge for additional parameters is appropriate. Please refer to the *NMED Ground Water Quality Bureau Guidance: Above-Ground Use of Reclaimed Domestic Wastewater* for further information.

In the space below, provide a description or sketch of the sampling point(s) to be used for sampling the discharge at your facility.

Optional: In the space below (or as an attachment), you may propose revisions or additions to the standard discharge quality monitoring requirements. If you do, provide the rationale for your proposal.

- B-14. Ground Water Quality Monitoring.** Discharge Permits typically require that ground water samples be collected quarterly from properly constructed monitoring wells located downgradient from discharge locations. The samples must be analyzed for contaminants of concern. For most domestic and agricultural Discharge Permits, the typical contaminants of concern are total Kjeldahl nitrogen (TKN), nitrate-nitrogen (NO₃-N), total dissolved solids (TDS) and chloride.

No project-specific groundwater monitoring is proposed. The Laboratory conducts groundwater monitoring program through the *Interim Facility-Wide Groundwater Monitoring Plan* under the direction of the NMED Hazardous Waste Bureau.

Optional: In the space below (or as an attachment), you may propose revisions or additions to the standard ground water monitoring requirements. If you do, provide the rationale for your proposal.

For existing facilities:

Indicate number of existing monitoring wells: _____

Attach copies of monitoring well logs.

Well logs attached.

Well logs cannot be located.

Well logs previously submitted. Submittal date(s): _____

Attach copy of monitoring well survey (typically not applicable if fewer than 3 monitoring wells).

Survey attached.

No survey has been conducted.

Survey previously submitted. Submittal date(s): _____

- B-15. Other Monitoring.** In addition to discharge volumes, discharge quality monitoring and ground water sampling, Discharge Permits typically require the following monitoring, depending on the type of facility:

- inspection and pumping of septic tanks, grease tanks, lift stations
- inspection of leachfields
- inspection of lagoons
- process testing for treatment plants
- land application data sheets (LADS)
- tracking of chemical fertilizer applications to land application areas
- soil sampling (agricultural and selected other facilities land applying wastewater)
- harvested plant material testing (agricultural facilities)

Optional: In the space below (or as an attachment), you may propose revisions or additions to the other standard monitoring requirements for your type of facility. If you do, provide the rationale for your proposal.

NA

Contingency Plan [Section 20.6.2.3107.A.10 NMAC]

- B-16. System Failure.** Describe your contingency plan in the event there is a failure of your wastewater or discharge system (e.g., wastewater back-up, pump failure, pipe breaks, tank overflow, leachfield failure, saturated fields etc.)

As a contingency against the discharge of contaminants in excess of the NMWQCC Regulation 3103 groundwater standards and Toxic Pollutants in excess of Table A-1 NMED Risk Assessment limits, samples of effluent (product) from the treatment system will be collected routinely. If contaminant concentrations exceed the above-referenced limits, then land application will cease until corrective measures can be identified and implemented.

As a contingency against the discharge of untreated groundwater due to the failure of treatment system's components, qualified operators will be present daily to supervise the test.

As a contingency against the discharge of treated groundwater into waters of the state, the land application of treated groundwater will be conducted in accordance with the terms and conditions of the Laboratory's Standard Operating Procedure, ENV-RCRA-QP-010.3, *Land Application of Groundwater*. Criteria for land application include, but are not limited to, the following:

- land application site cannot be located in a watercourse
- land application cannot result in runoff to a watercourse
- land application cannot create ponds or pools
- land application must be conducted in a manner that maximizes infiltration and evaporation
- land application is restricted to daylight hours and for a maximum of 10 hrs/day
- land application must be supervised at all times
- land application is prohibited while precipitation is occurring

B-17. Contingency Leachfield Location. *This item applies only if your disposal system includes a leachfield.* Identify a location on your site map (Item B-3) for a contingency leachfield in the event that your leachfield must be replaced. If no land is available for a contingency leachfield at an existing facility, describe how you will address a failed leachfield. New facilities must provide for a contingency leachfield location. **NA**

B-18. Other Contingencies. Discharge Permits typically contain standard contingencies to address: **NA**

- exceeding wastewater quality limits
- violation of ground water or surface water standards
- spills or illegal releases of wastewater
- migration of soil nitrogen
- loading nitrogen above limit

Propose additional contingency plans, if appropriate:

Closure Plan [Section 20.6.2.3107(A)11 NMAC]

B-18. Facility Closure and Post-Closure Monitoring. Discharge Permits contain standard requirements to address the closure of part or all of your discharge system, as follows:

- cap or plug lines to prevent the flow of wastewater to treatment or disposal system
- empty and remove or backfill tanks
- empty lagoons, perforate or remove liners, re-grade to surface topography
- appropriately dispose of solids
- regrade and cover stockpiles at mine facilities
- continue ground water monitoring for at least two years, longer as appropriate
- enact contingency plans if ground water standards are violated
- financial assurance may be required.

Propose additional closure plans in the space below or as an attachment, if appropriate:

At the completion of all activities covered by this application, all storage tanks, lagoons, treatment systems, and associated components will be removed from the project site. Management of spent treatment system resins and media will be the responsibility of the subcontractor and will be conducted in accordance with all applicable local, state, and federal regulations.

Please Note: You must also complete Part C of the application.

PART C: SITE INFORMATION
All Facilities

C-1. Area Map. Attach a current area map showing roads and clearly mark the location of your facility.

See Appendix B, Discharge Permit Application, DP-1793, December 22, 2011 (ENV-RCRA-11-0284)

C-2. Directions to Site. Provide driving directions to the site from the nearest town or, if located in a town, from an easily identifiable location.

All project sites are located at Los Alamos National Laboratory, Los Alamos, NM. Project-specific maps will be provided to NMED in each work plan,

C-3. Topographic Map. Attach a copy of the appropriate US Geological Survey topographic map. You may provide just the relevant portion. USGS maps are available at many outdoor equipment stores or bookstores, from the USGS at www.usgs.gov or 1-888-ASKUSGS, and from commercial websites.

On the map clearly indicate the location of your facility. Also identify the approximate locations of all wells within 1,000 feet of your discharge locations. The Office of the State Engineer has a searchable database of supply wells on its website at www.ose.state.nm.us.

USGS map attached with facility location and neighboring wells marked.

See Appendix B, Discharge Permit Application, DP-1793, December 22, 2011 (ENV-RCRA-11-0284)

C-4. Flood Potential. Attach a copy of the latest Federal Emergency Management Agency (FEMA) flood map with your facility's location clearly marked, to the best of your ability. Information about how to obtain this map, formally known as a Flood Insurance Rate Map (FIRM) is available at www.fema.gov, insurance agencies or county government offices. A site specific analysis may be substituted.

FEMA map or site-specific analysis attached.

Previously submitted and still up-to-date. Submittal date(s): _____

NA

C-5. Soils. Attach either:

a) A copy of the appropriate Natural Resource Conservation Service (NRCS) soil survey map, with your site clearly identified to the best of your ability. Include the descriptive information for soils associated with the discharge locations. To obtain the map, contact your local NRCS office – there is one in every county.

b) A site-specific assessment showing the soils classifications. This is preferred over the more generalized NRCS surveys.

NRCS soil survey or site-specific assessment attached.

Previously submitted. Submittal date(s): _____

See Appendix B, LANL Soils map, Discharge Permit Application, DP-1793, December 22, 2011 (ENV-RCRA-11-0284)

C-6. Geology. Provide information on the geology beneath the site by attaching relevant portions of geologic reports, well logs for on-site or nearby wells, or site specific assessments. A variety of geology publications and resources are available from the New Mexico Bureau of Geology and Mineral Resources at <http://geoinfo.nmt.edu> or 505-835-5420 (Socorro). Well logs are available from the New Mexico State Engineer's Office at <http://www.ose.state.nm.us/>.

Geologic report attached.

Well log(s) attached.

Appendix E, Discharge Permit Application, DP-1793, December 22, 2011 (ENV-RCRA-11-0284) contains the following reports:

- 1. **Hydrogeologic Studies of the Pajarito Plateau, LA-14263-MS**
- 2. **2009 Hydrogeologic Site Atlas, LAUR-09-3763**
- 3. **2010 Groundwater Level Status Report for 2010, LA-14437-PR**
- 4. **Sandia Canyon Phase II Investigation Work Plan, LAUR-10-04921**

Geologic information previously submitted. Submittal date(s): _____

C-7. Ground Water Hydrology. Ground water hydrology refers to the occurrence, distribution, movement and chemistry of ground water. The ground water hydrology at your site will determine in large part whether your discharge will adversely affect ground water quality. You may need to present detailed information in order to “demonstrate that the Discharge Permit will not result in concentrations in excess of the standards of Section 20.6.2.3103 NMAC or the presence of any toxic pollutant.” (20.2.3106.C.7 NMAC)

At a minimum, provide information below on the direction of ground water flow. Ground water may not flow in the same direction as water on the surface of the ground. A monitoring well survey is one of the best methods to determine the direction of ground water flow at a particular site. Such surveys are routinely required for many Discharge Permit locations.

If a survey is not available, check with well drillers, the city water department, staff at the Office of the State Engineer, environmental consultants or other knowledgeable persons in your area. In addition, relevant reports have been published for some areas. See the OSE website at www.ose.state.nm.us or the NMBGMR website at <http://geoinfo.nmt.edu>.

Southeast

Direction of ground water flow: _____

If ground water flow shifts seasonally, describe here: _____

Reference:

On-site well survey attached. Previously submitted. Submittal date(s): _____

Nearby well survey attached. Previously submitted. Submittal date(s): _____

Other. Specify: **Appendix E, Discharge Permit Application, DP-1793, December 22, 2011 (ENV-RCRA-11-0284)**

Relevant portion attached.

Previously submitted. Submittal date(s): _____

Attach any additional information available about ground water hydrology at the site.

C-8. Other Permitted Discharge Locations. If applicable, list other locations of wastewater or stormwater discharges on your site that are not described in this application and indicate what permits apply to them. Examples include discharges from small septic systems (covered by Liquid Waste Permits, discharges to surface waters under a NPDES permit, a discharge covered by a separate Discharge Permit, etc. Be sure these other discharge locations are identified on the site map required in Item B-3.

Discharge Type	Permit Identification
Sanitary & industrial outfalls	NPDES Permit No. NM0028355
Individual Stormwater Permit	NPDES Permit No. NM0030759
Construction Stormwater Permits	Each construction project disturbing more than 1 acre
Sanitary wastewater	NMED Discharge Permit DP-857
Industrial wastewater	NMED Discharge Permit Application DP-1132
Domestic septic tanks	NMED Discharge Permit Application DP-1589

- C-9. Other Information.** Describe below or attach any additional information to demonstrate that your proposed discharge plan will be protective of ground water quality, public health and property. **NA**

ENCLOSURE 3

List of Sections (55) at LANL Displaying a
Public Notice Sign

ENV-DO-13-0343

LAUR-13-29467

Date: JAN 07 2014

List of Sections (55) at Los Alamos National Laboratory Displaying a Public Notice Sign.

Count	Range	Township	Section
1	R05E	T19N	S25
2	R05E	T19N	S36
3	R06E	T18N	S1
4	R06E	T18N	S2
5	R06E	T18N	S3
6	R06E	T18N	S4
7	R06E	T18N	S10
8	R06E	T18N	S11
9	R06E	T18N	S12
10	R06E	T18N	S13
11	R06E	T18N	S14
12	R06E	T18N	S24
13	R06E	T18N	S25
14	R06E	T19N	S13
15	R06E	T19N	S14
16	R06E	T19N	S15
17	R06E	T19N	S16
18	R06E	T19N	S17
19	R06E	T19N	S18
20	R06E	T19N	S19
21	R06E	T19N	S20
22	R06E	T19N	S21
23	R06E	T19N	S22
24	R06E	T19N	S23
25	R06E	T19N	S24
26	R06E	T19N	S25
27	R06E	T19N	S26
28	R06E	T19N	S27
29	R06E	T19N	S28
30	R06E	T19N	S29
31	R06E	T19N	S30
32	R06E	T19N	S31
33	R06E	T19N	S32
34	R06E	T19N	S33
35	R06E	T19N	S34
36	R06E	T19N	S35
37	R06E	T19N	S36
38	R07E	T18N	S5
39	R07E	T18N	S6
40	R07E	T18N	S7
41	R07E	T18N	S8
42	R07E	T18N	S16
43	R07E	T18N	S17

Count	Range	Township	Section
44	R07E	T18N	S18
45	R07E	T18N	S19
46	R07E	T18N	S20
47	R07E	T18N	S21
48	R07E	T18N	S29
49	R07E	T18N	S30
50	R07E	T19N	S17
51	R07E	T19N	S18
52	R07E	T19N	S19
53	R07E	T19N	S20
54	R07E	T19N	S31
55	R07E	T19N	S32

ENCLOSURE 4

Design criteria and specifications for influent and
effluent storage systems

ENV-DO-13-0343

LAUR-13-29467

Date: JAN 07 2014

**DESIGN CRITERIA
FOR STORAGE SYSTEMS
--LAGOONS, LINED MODULAR TANKS, AND STEEL FRAC TANKS--**

Design requirements for lining of the aquifer test storage systems are as follows:

Lagoons

1. Suitable liner materials are identified in the Natural Resources Conservation Service (NRCS) Conservation Practice Standard No. Code 521A – Pond Sealing or Lining – Flexible Membrane.
2. Influent liner material shall be 36 mil flexible reinforced polypropylene (fPP-R) geomembrane such as supplied by Colorado Lining International.
3. Effluent liner material shall be 24 mil (minimum) reinforced polyethylene (PE-R) geomembrane (pond liner) such as supplied by Colorado Lining International.
4. Lagoons shall have a design life of five years.
5. Subgrade shall consist of native silty sand alluvial soils essentially free of angular stones over 3/8" and prepared by smoothing.
6. Maximum lagoon slope: 1.5 horizontal to 1 vertical, and one slope per lagoon shall be no steeper than 3 horizontal to 1 vertical for access/egress.
7. The minimum berm width shall be 5 feet.
8. Lagoons will be monitored for water loss.
9. Each lagoon may have a maximum capacity of 100,000-200,000 gallons.
10. Lagoons will be fenced to prevent animal intrusion.
11. No penetrations of the liner shall be allowed.
12. No vehicles shall be used on the top-slopes of the berms.
13. Liners shall be installed per manufacturer's requirements.
14. Lagoons shall be sized such that field seaming is not required.
15. No entry shall be allowed into the lagoons.
16. Anchor trench shall be designed to support the entire weight of the side slope liner.
17. 2-foot freeboard shall be maintained.

Lined Modular Influent Tanks (such as provided by Modutank)

1. Field erected, above-grade, lined modular tanks (e.g., Modutank, see link below) may be used for influent and effluent storage, possibly in combination with other storage types. An 8-oz geotextile will be placed under the liner as a ground cover. www.modutank.com/modutank/
2. Influent liner material shall be 36 mil flexible polypropylene (fPP) geomembrane such as supplied by Colorado Lining International.
3. Effluent liner material shall be 24 mil (minimum) polyethylene (PE) geomembrane (pond liner) such as supplied by Colorado Lining International.
4. Tanks will be monitored for water losses.

Steel Frac Tanks

1. Steel frac tanks may be used for influent raw water storage, possibly in combination with other storage types.
2. Steel frac tanks are fully enclosed tanks (i.e., covered) with a capacity of approximately 21,000 gallons.



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 TX: 888.546.4641
www.coloradolining.com

RPE - REINFORCED POLYETHYLENE

RPE is a proven solution to many containment needs due to its excellent puncture resistance and UV stability.

Colorado Lining can supply you with custom sized panels or facilitate a full installation with one of our certified installation crews. We want to work with you to make your job a success.

Products & Features:

- Warranty Info:
 - 36 MIL: 15 YEAR
 - 45 MIL: 20 YEAR
- Fish Friendly
- Flexible
- Available In Custom Sized Panels
- Extremely Durable
- Quick Installation
- UV Stable
- Available In 30, 36, & 45 Mils

Uses & Applications:

- Wastewater Treatment Plants
- Agriculture Ponds
- Baffle Curtains
- Oil and Gas Temporary
- Evaporation Ponds
- Golf Course Ponds
- Drop-In & Large Tank Liners
- Irrigation Reservoirs & Canals

*Project Photo: Hangman Valley Golf Course in Spokane, WA
 Pond Liner
 27,000 SF 36 Mil RPE*



RPE Product Data Sheet

Available in 30, 36, & 45 mil

Properties	Test Method	30 mil		36mil		45mil	
		Min Roll Averages	Typical Roll Averages	Min Roll Averages	Typical Roll Averages	Min Roll Averages	Typical Roll Averages
Appearance		Black/Black		Black/Black		Black/Black	
Thickness		27 mil	30 mil	32 mil	36 mil	40 mil	45 mil
Weight lbs Per MSF (oz/yd²)		130 lbs (18.7)	144 lbs (20.7)	156 lbs (22.5)	173 lbs (25)	198 lbs (28.52)	210 lbs (31.70)
Construction		Dense scrim reinforced polyethylene					
*Ply Adhesion	ASTM D 6635	19 lbs or FTB	24 lbs or FTB	19 lbs or FTB	24 lbs or FTB	32 lbs or FTB	37 lbs or FTB
Tensile Strength LBF/IN	ASTM D 7003	160 lbf MD 150 lbf DD	170 lbf MD 168 lbf DD	178 lbf MD 160 lbf DD	190 lbf MD 172 lbf DD	185 lbf MD 170 lbf DD	198 lbf MD 184 lbf DD
Tensile Elongation @ Break % (Film Break)	ASTM D 7003	500 MD 430 DD	604 MD 508 DD	450 MD 400 DD	542 MD 447 DD	600 MD 420 DD	687 MD 624 DD
Tensile Elongation @ Break % (Scrim Break)	ASTM D 7003	32 MD 30 DD	35 MD 31 DD	32 MD 30 DD	36 MD 33 DD	32 MD 30 DD	35 MD 31 DD
Tongue Tear Strength	ASTM D 5884	160 lbf MD 125 lbf DD	187 lbf MD 168 lbf DD	140 lbf MD 100 lbf DD	174 lbf MD 157 lbf DD	80 lbf MD 115 lbf DD	114 lbf MD 147 lbf DD
Grab Tensile (Scrim Break)	ASTM D 7004	270 lbf MD 255 lbf DD	293 lbf MD 274 lbf DD	300 lbf MD 285 lbf DD	316 lbf MD 304 lbf DD	335 lbf MD 335 lbf DD	369 lbf MD 363 lbf DD
Grab Tensile Elongation @ Break% (Scrim Break)	ASTM D 7004	25%	30%	28%	32%	25%	34%
HPOIT	ASTM D 5885	800 min	2400 min	800 min	2400 min	800 min	2400 min
Puncture Resistance	ASTM D 4833	90 lbf	105 lbf	100 lbf	129 lbf	100 lbf	150 lbf
Maximum Use Temperature			180° F		180° F		180° F
Minimum Use Temperature			-70° F		-70° F		-70° F

The data listed in this data sheet is representative of initial production runs. These values may be revised at anytime without notice as additional test data becomes available.

Note: To the best of our knowledge, unless otherwise stated, these are typical property values and are intended as guides only, not as specification limits. Chemical resistance, odor transmission, longevity as well as other performance criteria is not implied or given and actual testing must be performed for applicability in specific applications and/or conditions. COLORADO LINING INTERNATIONAL, INC. MAKES NO WARRANTIES AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and disclaims all liability for resulting loss or damage



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RPP - REINFORCED POLYPROPYLENE

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Colorado Lining can supply you with custom sized panels or facilitate a full installation with one of our certified installation crews. We want to work with you to make your job a success.

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 - 45 MIL: 20 YEAR
- Fish Friendly
- Potable
- Flexible
- Available In Custom Sized Panels
- Extremely Durable
- Quick Installation
- UV Stable
- Colors Available
- Available In 36 & 45 Mils

Uses & Applications:

- Potable Water Storage
- Wastewater Treatment Plants
- Baffle Curtains
- Golf Course Ponds
- Floating Covers
- Drop-In & Large Tank Liners
- Ballast Tubes
- Irrigation Reservoirs & Canals

- *Project Photo: Franzen Reservoir in Salem, OR*
- *Reservoir Liner & Floating Cover*
- *1,300,000 SF 45 Mil RPP*





U.S. Standard Units

Table 1(a) – Flexible Polypropylene Nonreinforced (fPP) and Reinforced (fPP-R) Geomembranes

Property	Test Method ASTM or GRI	fPP 30 mils	fPP 40 mils	fPP-R 36 mils	fPP-R 45 mils	Testing Frequency (minimum)
Mass per Unit Area – lb/ft ² (min. ave.)	D5261	0.12	0.16	0.15	0.18	15,000 lb
Thickness – mils (min. ave.)	D5199	30	40	36	45	per roll
• lowest individual specimen – mils (nominal – 10%)		27	36	32	40	
Tensile Strength						
• dumbbell ⁽¹⁾ – lb/in. (min. ave.)	D6693-IV	60	72	-	-	15,000 lb
• grab ⁽¹⁾ – lb (min. ave.)	D7004	-	-	200	250	15,000 lb
Tensile Elongation						
• dumbbell ^(1,2) - % (min. ave.)	D6693-IV	700	700	-	-	15,000 lb
• grab ⁽¹⁾ - % (min. ave.)	D751-A	-	-	22	22	15,000 lb
Multiaxial Elongation - %	D5617	120	120	-	-	formulation
Tear Resistance						
• nonreinforced ⁽¹⁾ – lb (min. ave.)	D1004	10	12	-	-	15,000 lb
• reinforced ⁽¹⁾ – lb (min. ave.)	D5884	-	-	55	55	15,000 lb
Puncture Resistance – lb (min. ave.)	D4833	25	30	75	85	15,000 lb
Ply Adhesion – lb (min. ave.)	D6636	-	-	15	15	15,000 lb
Low Temperature Flexibility - °F	D2136 ⁽³⁾	-40	-40	-40	-40	formulation
Carbon Black Content ⁽⁴⁾ - %	D4218	2-3	2-3	2-3	2-3	45,000 lb
Ultraviolet Light Resistance ^(5,6)	D7238 @ 70°C					per formulation
(a) % strength retained after 20,000 light hrs.	D6693-IV	≥ 50		n/a		
- or -						
(b) % elongation retained after 20,000 light hrs.	D6693-IV	≥ 50		n/a		
- and -						
(c) Surface Cracking Observation after 20,000 light hrs.	GM16	None		none		
(d) Surface Chalking (or Powdering) ⁽⁷⁾ after 20,000 light hrs.	GM23 (draft)	minor		minor		

(1) Test method modified to 500 mm/min. for unreinforced and 300 mm/min. for reinforced

(2) Calculation based on a 50 mm gage length

(3) Using 32 mm mandrel for 4-hours.

(4) Applicable only to black geomembranes. Also D1603 is an acceptable method to determine carbon black content.

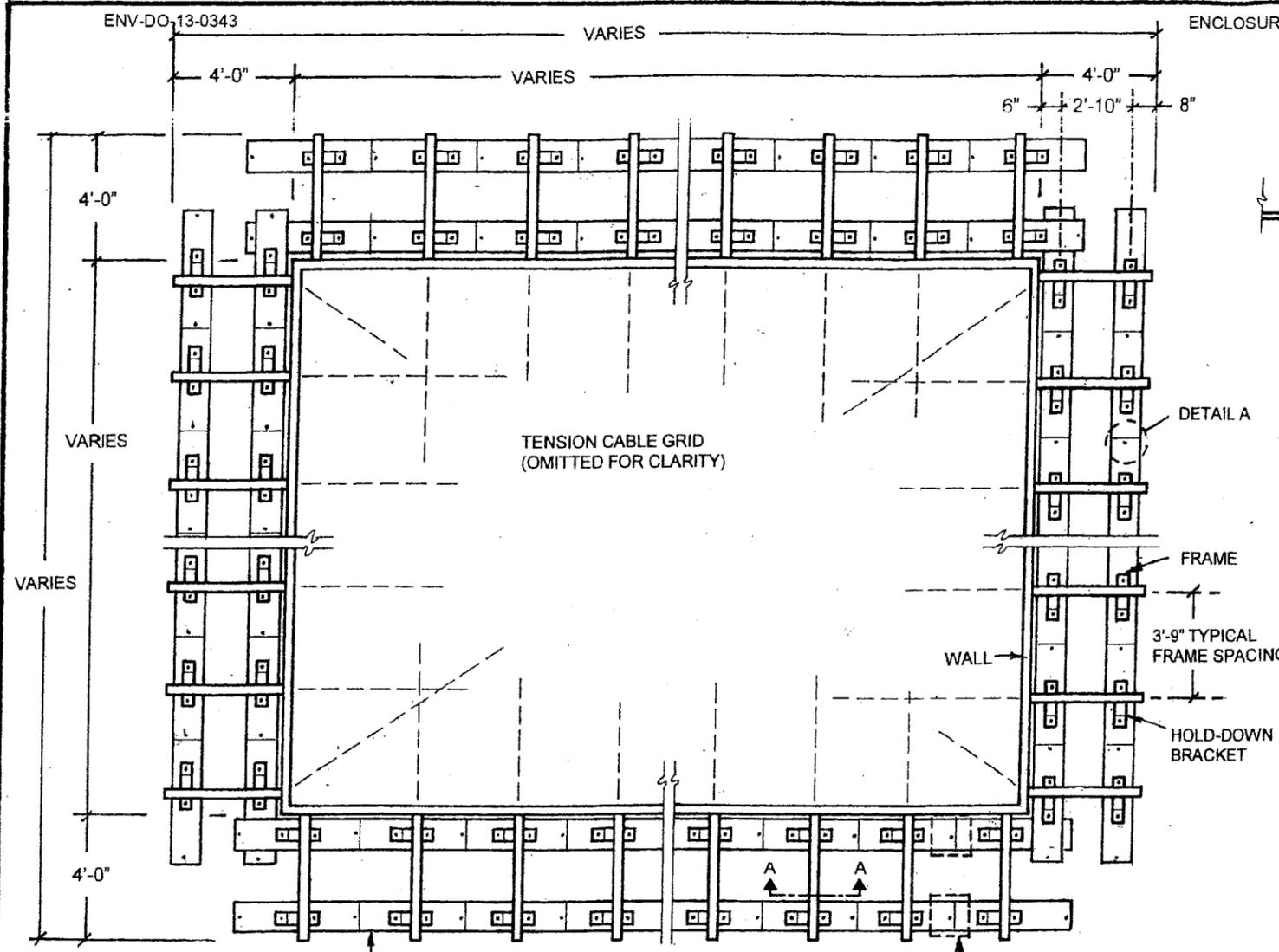
(5) The conditions of the UV Fluorescent exposure method should be 20 hr. UV cycle at 70°C followed by 4 hr. condensation at 60°C.

(6) See Section 5.2 for fPP-R geomembranes.

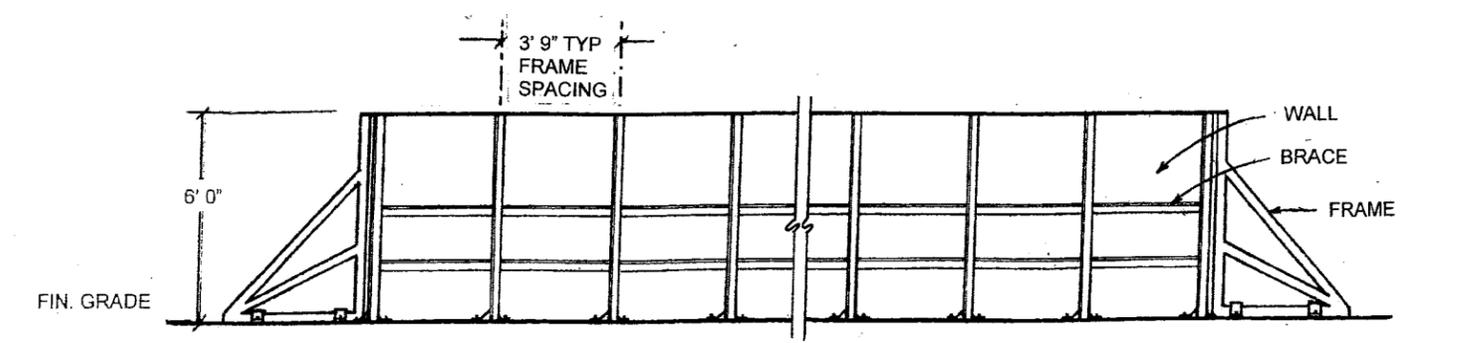
(7) A GRI test method is being developed.

GM18 - rev. 4 -6/19/09

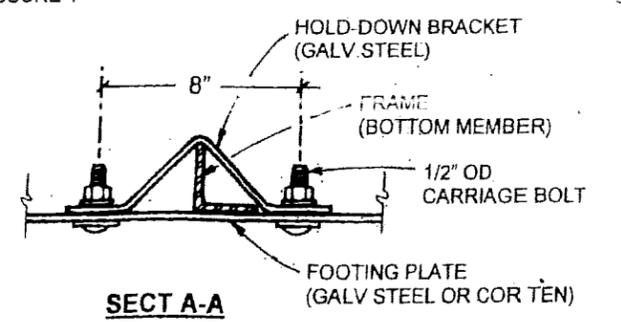
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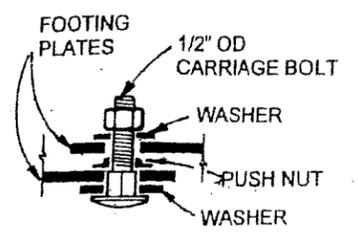
PLAN
NOT TO SCALE



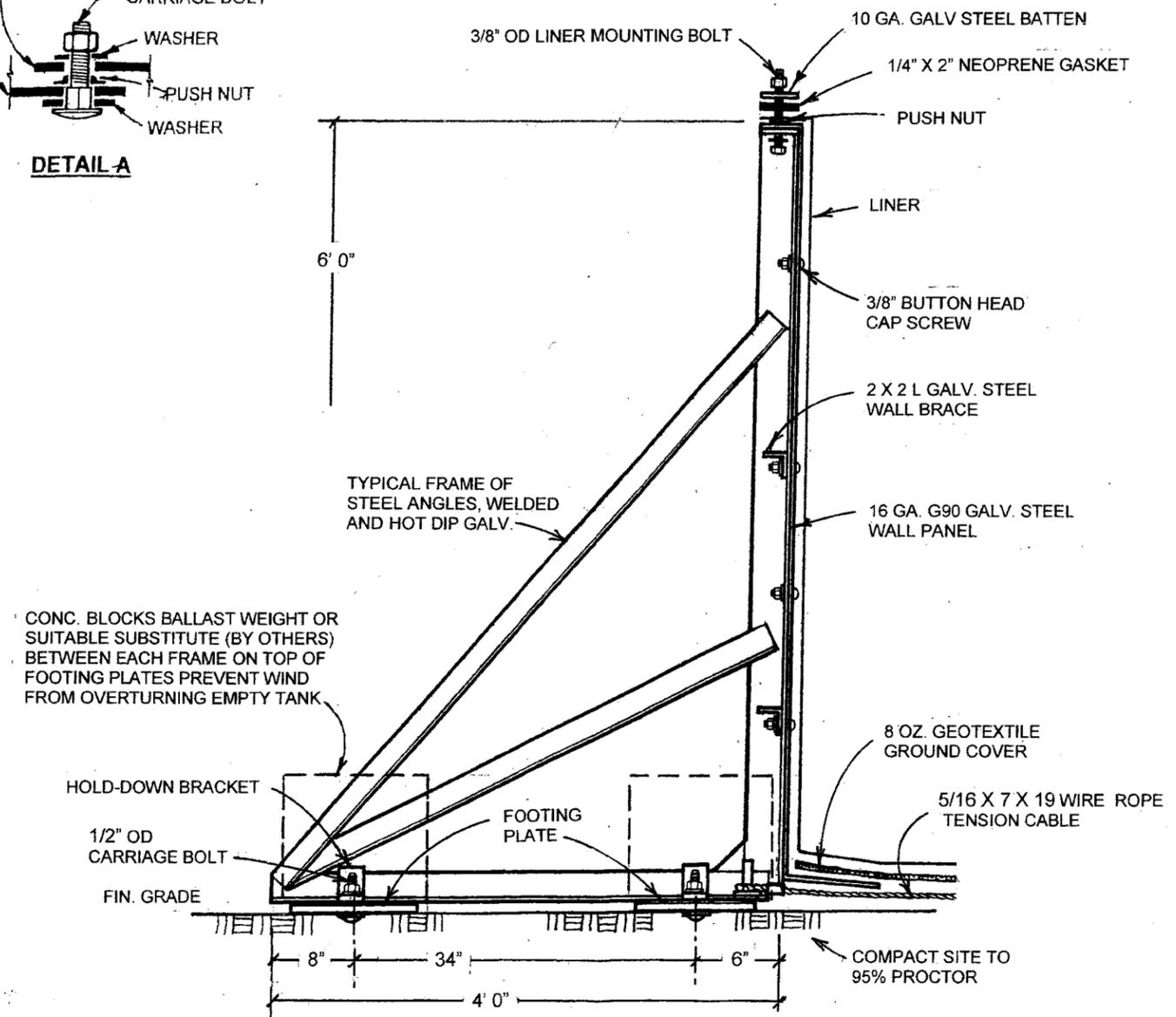
ELEVATION



SECT A-A



DETAIL A



SECT. AT FRAME

NOTE
1. A soil investigation and formal foundation design should be performed by a qualified engineering firm.
2. Site should be as level as possible and compacted to 95% Proctor.

GENERAL ARRANGEMENT- MODUTANK, SINGLE LINER, FOOTING PLATES						REVISED
						REVISED
DWN. BY	CHECKED BY	SCALE	PART NO.	DWG. NO.	DATE	REVISED

Modutank Inc.
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(800) 245-6964, FAX: (718) 786-1008
www.modutank.com, email: info@modutank.com



COPY



GROUND WATER

JAN 08 2014

BUREAU

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 07 2014
Symbol: ENV-DO-13-0343
LAUR: 13-29467

Mr. Jerry Schoeppner, 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 Mr. Schoeppner:

SUBJECT: DISCHARGE PERMIT DP-1793 AMENDED APPLICATION

In December 2011 the U.S. Department of Energy and Los Alamos National Security, LLC (DOE/LANS) submitted a Ground Water Discharge Permit application for the land application of treated ground water from a pumping test at monitoring well R-28. Subsequently, in March 2012, at the request of the New Mexico Environment Department (NMED), supplemental information was submitted by DOE/LANS to broaden the scope of the application. The application was determined to be administratively complete in August 2012 and public notice (PN1) was completed by DOE/LANS in November 2012. The above-referenced documents are provided in Enclosure 1.

It was jointly determined by NMED and DOE/LANS during meetings in July and December 2013 that the Discharge Permit DP-1793 application was still not sufficiently broad and needed amending. The enclosed amended application (Enclosure 2) modifies the scope of the original application and the March 2012 supplement as follows:

- ✓ Increases the maximum daily discharge
- ✓ Expands the list of potential discharge locations
- ✓ Adds well development and tracer studies to the list of covered activities
- ✓ Expands the list of expected or known contaminants
- ✓ Establishes a generalized storage-treatment-land application system