NEW MEXICO ENVIRONMENT DEPARTMENT
GROUND WATER QUALITY BUREAU

GROUND WATER DISCHARGE PERMIT APPLICATION

Instructions for completing the application are included in the form itself and in the Supplemental Instructions found at the back of the application. You may fill out the application manually, or a Microsoft Word version may be downloaded from www.env.nm.gov (Ground Water Quality) and filled out electronically. Timely processing of this application is contingent upon the technical completeness of the submission. Failure to provide all of the information pursuant to Section 20.6.2.3106 NMAC, following notice of technical deficiency, may result in denial of the application.

Send two complete paper copies AND one electronic copy of this application, with the filing fee to:
Program Manager
Ground Water Pollution Prevention Section
New Mexico Environment Department
P.O. Box 5469
Santa Fe, NM 87502

Introduction

Facility Name: Los Alamos National Laboratory

GWQB – Date of Receipt
(Department use only)
RECEIVED
JUL _ 9 2021
GROUND WATER QUALITY BUREAU

For Existing Discharge Permits:
DP Number: 1835
Expiration Date: 12/01/2021

Type of Discharge (*check one*):

- ☐ Domestic
- ☒ Industrial
- ☐ Agricultural
- ☐ Mining

Type of Application (*check appropriate box*)

- ☐ New – new facility
- ☐ New – existing (unpermitted) facility
- ☐ Renewal only
- ☐ Modification only
  "modification" includes a change in the location of a discharge, and/or increase in the quantity of the discharge, and/or a change in the quality of the discharge.
- ☒ Renewal and Modification

If this application is to *modify* or *renew and modify* a Discharge Permit, what is the reason for modification of the Discharge Permit? Describe the proposed changes that would result in modification, meaning a change in the location of a discharge, and/or an increase in the quantity of the discharge, and/or a change in the quality of the discharge.

> This discharge permit application renewal and modification proposes to change the quantity of the discharge, which is currently 648,000 gallons per day. It is proposed to increase the discharge to 1,500,000 gallons per day to allow for increases in the treatment of the chromium plume. No modifications are being proposed that would change location or quality of discharges.

Fees Included with Application

All applicants are required to submit a **$100 Application Filing Fee**. An additional fee will be assessed prior to permit issuance. Permit fees are listed in section 20.6.2.3114 NMAC. **Make checks payable to: NMED-Ground Water Quality Bureau**

Application Checklist

The following checklist has been provided to assist in ensuring that the application is complete prior to submission (*check all that apply*):

☒	Part I. Administrative Completeness ☒ $100 Application Filing Fee ☒ A. General Information ☒ B. Public Notice Information ☒ C. Public Notice Preparation
☒	Part II. Technical Completeness ☒ A. Discharge Volume and Description ☒ B. Identification and Physical Description of Facility ☒ C. Flow Metering ☒ D. Ground Water Monitoring ☒ E. Engineering and Surveying (electronic copies) ☒ F. Land Application Area ☒ G. Closure Plan
☒	Part III. Site-Specific Proposals
☒	Part IV. Electronic (PDF) format of Maps and Logs is required (additional paper copies of maps and logs are optional and may be requested by the Department if required for review) ☒ A. Surface Soil Survey and Vadose Zone Geology ☒ B. Location Map ☒ C. Flood Zone Map

Copies of Application

An applicant applying for a Discharge Permit shall submit **two paper copies of the signed application, and an electronic copy of the signed application including all supporting documentation,** to the address listed below.

☒ Two paper copies – completed and signed

☒ Electronic copy in portable document format (PDF) of the signed application and all supporting documentation (designs, maps, logs), on the following media *(choose one)*:

☒ Compact disc (CD)/DVD ☐ Flash drive

Send application and fees to the following address:
Program Manager
Ground Water Pollution Prevention Section
New Mexico Environment Department
P.O. Box 5469
Santa Fe, NM 87502

Applicant's Signature

Signature must be that of the person listed as the legally responsible party on this application (Part I, 2a).

I, the applicant, attest under penalty of law to the truth of the information and supporting documentation contained in this application for a Ground Water Discharge Permit.

Signature:	M Lee Bishop for (Digitally signed by M Lee Bishop for Date: 2021.07.07 15:13:55 -06'00')	Date:	
Printed Name:	M. Lee Bishop	Title:	Director, Office of Quality and Regulatory Compliance
Signature:		Date:	6/30/2021
Printed Name:	Joseph Murdock		Environment, Safety and Health Program Manager

Part I. Administrative Completeness

General Information

1. Facility Information

See Supplemental Instructions to determine what constitutes a "facility." The physical address 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. See Supplemental Instructions for additional information.

Facility Name	Los Alamos National Laboratory (LANL or the Laboratory)
Discharge Permit #	1835
Physical Address	Los Alamos, New Mexico
County	Los Alamos
Type of Facility	U.S. Department of Energy (DOE) Facility
Driving Directions	From Santa Fe, NM take US-285 north to Pojoaque, NM. Take NM-502 west towards Los Alamos, NM. Visitors without a LANL badge must be escorted to the project site. Visits to the project site may be coordinated through the point of contact listed in Section 2 of this application.

2. Contact Information

a) 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	US Department of Energy, Environmental Management Los Alamos Field Office (EM-LA)[1] Newport News Nuclear BWXT-Los Alamos, LLC (N3B)[2]		Title	NA[1,2]	
Mailing Address	1200 Trinity Drive, Suite 400[1] 1200 Trinity Drive, Suite 150[2]				
	City	Los Alamos[1,2]	State	NM[1,2]	Zip 87544[1,2]
Contact Person	M. Lee Bishop[1] Joseph Murdock[2]		Title	Director, Office of Quality and Regulatory Compliance[1] Environment, Health, and Safety Program Manager, N3B[2]	
Contact Information	Office Number	(505) 257-7902[1] (505) 551-2926[2]	Fax Number	NA	
	Cell Number	(702) 218-4460[1] (757) 870-3678[2]	E-mail	lee.bishop@em.doe.gov[1] joseph.murdock@em-la.doe.gov[2]	

b) Facility Operator/Manager Information Provide the contact information for the facility operator or manager below. If the facility is required to have an operator certified by the State of New Mexico, please include the certification level of the operator named here.

Name	Kim Lebak, N3B	Title	Program Manager (Acting)
Mailing Address	1200 Trinity Drive, Suite 150		

	City	Los Alamos	State	NM	Zip	87544
Contact Information	Office Number	(505) 695-3149		Fax Number	NA	
	Cell Number	(505) 695-3149		E-mail	kim.lebak@em-la.doe.gov	
	Cell Number	NA		E-mail	NA	
Certification Level	NA					

(if applicable)

c) Consultant's Information (if applicable) If the consultant is a company or organization, then the name and title of a contact person must be provided here.

Company Name (1)	NA					
Company Contact						
Mailing Address						
	City		State		Zip	
Contact Information	Office Number			Fax Number		
	Cell Number			E-mail		

Company Name (2)	NA					
Company Contact						
Mailing Address						
	City		State		Zip	
Contact Information	Office Number			Fax Number		
	Cell Number			E-mail		

d) Permit Contact Information (if applicable) If someone other than the contacts listed above is a primary contact for this application and/or facility, list here.

Name	Christian Maupin			Title	Environmental Professional	
Mailing Address	1200 Trinity Drive, Suite 150					
	City	Los Alamos	State	NM	Zip	87544
Contact Information	Office Number	(505) 257-7421		Fax Number	NA	
	Cell Number	(505) 695-4281		E-mail	christian.maupin@em-la.doe.gov	
Facility Affiliation	Regulatory Compliance					

3. Ownership and Real Property Agreements [20.6.2.7HH NMAC]

The applicant owns (check as appropriate):

☒ The facility
☐ All discharge sites
☐ Some discharge sites

If someone other than the applicant owns the facility or any of the discharge sites, provide ownership information below. For any portion of the facility where the applicant is not the owner of record, the applicant shall submit a copy of any lease agreement or other agreement which authorizes the use of the real property for the duration of the term of the requested permit (typically five years). Lease prices or other prices may be redacted.

- If more than one person has ownership interest, or a partnership exists, list all persons with an ownership interest.
- If a corporate entity holds an ownership interest, provide the name of the corporate entity and the entity's registered agent as filed with the New Mexico Public Regulation Commission.

Name	NA	Title _____
Mailing Address	_____	
	City _____	State _____ Zip _____
Contact Information	Office Number _____	Fax Number _____
	Cell Number _____	E-mail _____
Owns	☐ The facility	☐ A discharge site
	☐ Attached – lease (or other authorized use) agreement	

Name	NA	Title _____
Mailing Address	_____	
	City _____	State _____ Zip _____
Contact Information	Office Number _____	Fax Number _____
	Cell Number _____	E-mail _____
Owns	☐ The facility	☐ A discharge site
	☐ Attached – lease (or other authorized use) agreement	

4. Public Notice Information

a) Proposed Maximum Daily Discharge Volume: 1,500,000 gallons per day

Note: Use the information from Part II.A.2 following its completion.

b) Depth-to-Most-Shallow Ground Water: 850-1350 (regional aquifer), 5-50 (alluvial), 100-900 (intermediate perched) feet

Note: Use the information from Part-II.A.2 following its completion.

c) Pre-Discharge Total Dissolved Solids Concentration in Ground Water

[Subsection C of 20.6.2.3106 NMAC]

Provide the concentration of total dissolved solids (TDS) in ground water prior to discharging from the facility. *Note: This information is likely the same as that submitted in the first application for a Discharge Permit for this facility.*

- Pre-discharge TDS concentration in ground water: 130-201 mg/L (ppm)
  - ☒ Attached – Copy of laboratory analysis report (if available)
- From what source was the sample collected (e.g., upgradient monitoring well, on-site supply well, nearest well within a one-mile radius of the facility)?
  Samples collected on 12/16/2020 from performance monitoring well R-45 screen 1 and on 12/17/2020 from performance monitoring well R-50 screen 2. Laboratory analysis results available in Attachment A and Intellus New Mexico (www.intellusnm.com).

5. Facility Location

In the table below, describe the location for the entire facility by listing the Township, Range, and Section, and/or latitude and longitude for the locations of all components of the processing, treatment, storage, and/or disposal system. See Supplemental Instructions for additional information. [Paragraph (2) and (5) of Subsection C of 20.6.2.3106 NMAC]

Component[1] ID	Township	Range	Section(s)	Latitude	Longitude
Injection Well CrIN-1	19N	06E	24	1768269.94	1640094.53
Injection Well CrIN-2	19N	06E	24	1767839.35	1639899.55
Injection Well CrIN-3	19N	06E	25	1767088.56	1639994.53
Injection Well CrIN-4	19N	06E	25	1767039.45	1638871.15
Injection Well CrIN-5	19N	06E	25	1767030.28	1638675.22
Extraction Well CrEX-1	19N	06E	24	1767520.74	1638440.00
Extraction Well CrEX-2	19N	06E	24	1767946.86	1637239.14
Extraction Well CrEX-3	19N	06E	24	1768105.42	1638929.08
Extraction Well CrEX-4	19N	06E	24	1768266.64	1638079.07
Extraction Well CrEX-5	19N	06E	24	1768283.85	1640180.19
Ion Exchange (IX) Units	19N	06E	24/25	N/A	N/A
Influent Pipelines (double-walled)	19N	06E	24/25	N/A	N/A
Treated Water Pipelines (single-walled)	19N	06E	24/25	N/A	N/A

[1] Components include: septic tanks, impoundments, treatment systems, irrigation sites, leachfields, monitoring wells, mine stockpiles, etc. Additional examples are listed in the Supplemental Instructions. Each component should have a unique ID, for example septic tank-1, monitoring well-3, etc.

6. Processing, Treatment, Storage, and Disposal System

Briefly describe how wastewater, sludge, etc. is processed, treated, stored, and/or disposed of at your facility. Include each component listed in the table above.

The system consists of groundwater extraction wells (currently CrEX-1, CrEX-2, CrEX-3, CrEX-4, CrEX-5) and injection wells (currently CrIN-1, CrIN-2, CrIN-3, CrIN-4, and CrIN-5). The system will be operated continuously with water being pumped, treated and injected. Extracted groundwater will be conveyed from the extraction wells to the IX treatment system(s) through buried double-walled piping with leak detection systems. Treated water will be pumped through buried single-walled piping and distributed to the injection wells. Monitoring of the extraction, treatment and injection systems will be conducted to ensure proper system operation. The system will be monitored by a supervisory control and data acquisition (SCADA) system. A personal computer (PC) workstation (SCADA computer) centrally located will contain a man-machine interface graphical software package to monitor and record signals such as flow rates, pressures, liquid levels, groundwater levels, pump on-off status, alarms, etc. from the system sites. See the System Operational Plan in Attachment B. The Chromium Project Process Flow Diagrams are provided in Attachment B.

7. Public Notice Preparation [20.6.2.3108 NMAC]

Once NMED has determined that your application is administratively complete, you must complete the applicant's public notice requirements of Section 20.6.2.3108 NMAC. Language for notifications will be mailed to you with an administratively complete determination. Note: Guidance and instructions for completion of applicant's public notice can also be found at the following link: *https://www.env.nm.gov/gwb/NMED-GWQB-PublicNotice.htm*. The information requested below will be used by NMED to approve or reject the proposed public notice newspaper and signage posting locations in accordance with Subsection A of 20.6.2.3108 NMAC. Note: Other requirements of Section 20.6.2.3108 NMAC not listed here, such as certified mailings to nearby landowners, may also apply.

a) Public Notice Posting Locations

Select the type of application you are submitting and provide the requested information. Language to be used in the required notifications will be included in the administratively complete packet.

☐ Renewal Application

1. Following receipt of an administrative completeness determination from NMED, the applicant is required to provide public notice of this application by placing a 2 inch by 3 inch display ad (classified or legal sections are not acceptable) in a newspaper of general circulation in the location of the proposed discharge. Indicate the newspaper in which you intend to place the ad. [Subsection C of 20.6.2.3108 NMAC]

Newspaper: _____

☒ New Application, Modification Application, or Renewal with Modification Application

1. Following receipt of an administrative completeness determination from NMED, the applicant is required to provide public notice of this application by placing a display ad (classified or legal sections are not acceptable) in a newspaper of general circulation in the location of the proposed discharge. Indicate the newspaper in which you intend to place the ad. [Paragraph (4) of Subsection B of 20.6.2.3108 NMAC]

Newspaper: Los Alamos Daily Post and Albuquerque Journal North

2. Following receipt of an administrative completeness determination from NMED, the applicant is required to post a sign(s) (2 feet x 3 feet in size) for 30 days in a location conspicuous to the public at or near the facility. One sign must be posted for each 640 contiguous acres or less. NMED may require additional postings for facilities of more than 640 acres or when the discharge site(s) is not located on contiguous properties. Indicate the location(s) where you intend to display the sign(s). [Paragraph (1) of Subsection B of 20.6.2.3108 NMAC]

Note: Conspicuous location means a location where the sign is visible and legible to the public and the public has access (e.g., at facility entrance on public road).

- Is the entire facility (including all components and discharge sites) contained within **less than** 640 acres, and is the acreage contiguous?

☐ Yes - Indicate a sign location below.
☒ No – Indicate **two** sign locations below.

Sign Location(s):
1. Off Laredo Road adjacent to TA-72 Building 39
2. Off Mesita del Buey adjacent to TA-54 Building 1009

3. Following receipt of an administrative completeness determination from NMED, the applicant is required to post an additional notice (a flyer 8.5" X 11" or larger) for 30 days at an off-site location conspicuous to the public (e.g., public library). Indicate the location where you intend to display the flyer. [Paragraph (1) of Subsection B of 20.6.2.3108 NMAC]

Note: The U.S. Postal Service no longer allows the posting of flyers in post offices.

Flyer Location: LANL Public Reading Room, 94 Cities of Gold Rd, Pojoaque, NM 87506

b) Mailing Instructions

a) The administrative completeness determination letter, including public notice instructions, should be sent to:

☒ Applicant ☐ Consultant

Part II. Technical Completeness

1. Discharge Volume and Description

a. Date of Initial Discharge at the Facility [Subsections A and B of 20.6.2.3106 NMAC]

Date of Initial Discharge: 12/01/2016

b. Determination of Maximum Daily Discharge Volume [Subsection C of 20.6.2.3106 NMAC]

See Supplemental Instructions for more information.

1. **Proposed maximum daily discharge volume:** 1,500,000 gallons per day.

(*Note: Use this volume to complete Part I.4.a (Public Notice).*

- Describe the methods and calculations used to determine this volume. Acceptable methods are described in the Supplemental Instructions. If you are relying on metered flows, attach a two-year record of meter readings.

Maximum daily discharge volume under this discharge permit application is 1,500,000 gallons per day. Under circumstances where multiple injection wells are operating, cumulative maximum discharge volume is limited to 1,500,000 gallons per day.

- Describe what generates the wastewater, sludge, or other discharges processed and/or disposed of at your facility. Identify all sources (e.g., RV spaces, mobile homes, shower facilities, laundromat, restaurant, backwash systems, septage haulers, contaminated media, etc.). See Supplemental Instructions.

The source of the discharge is due to the extraction of groundwater that requires treatment prior to injection of the water back into the aquifer. Groundwater is extracted from the regional aquifer, treated with IX resin to remove the contaminants, and then injected back into the aquifer.

2. **Identify other wastewater or stormwater discharges at the facility** not described in this application and indicate what other 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 Part II.B.1.

Other Discharges*	Permit Number
Individual Storm Water Permit	National Pollutant Discharge Elimination System (NPDES) Permit No. NM0030759
Construction Storm Water Permits	Each construction project disturbing more than 1 acre in size
Technical Area 54 (TA-54) Maintenance Facility West Multi-Sector General Permit (MSGP)	NPDES Permit No. NMR050011

Other Discharges*	Permit Number
TA-54 Areas G and L MSGP	NPDES Permit No. NMR050012
Land Application Discharge Permit	DP-1793

* Only storm water discharges for Newport News Nuclear BWXT-Los Alamos, LLC (N3B), activities are identified. N3B does not manage any wastewater discharges.

2. Identification and Physical Description of Facility

[Subsection C of 20.6.2.3106 NMAC]

a. Scaled Map

Provide a clear and legible scaled electronic map of the components of your proposed system and relevant surrounding features, indicating the location of all the following features present at the site:

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

See Attachment C for additional information.

b. Description of Components

Provide descriptive details of all components of your processing, treatment, storage, and/or disposal system. Include all components listed in the table of Part I.5.

Component	Status[1]	Date of installation or construction (mm/dd/yyyy)	Description (construction material, liner type, irrigation method, capacity, dimensions, area, model number, etc.)
Extraction Wells	Existing in Use	2014, 2016 to 2017	See Attachment D for additional information.
Influent Water Pipelines	Existing in Use	2016 to 2019	Double-walled pipe
Influent Water Storage	Existing in Use	2017	Storage tanks. See Attachment D for additional information.
Treatment Units	Existing in Use	2015 to 2017	IX Resin and Vessel. See Attachment D for additional information.
Control Units and Level Indicators	Existing in Use	2016 to 2017	Flow controls, remote sensing units, pressure sensors will all be tied to the SCADA system to control the operation of the treatment unit, including the extraction well pumps.
Treated Water Pipelines	Existing in Use	2016 to 2019	Single-walled pipe
Injection Wells	Existing in Use	2016 to 2017	See Attachment D for additional information.

[1] Status = **proposed**; **existing in use**; **existing not in use**, but proposed for use; **abandoned** without closure, not proposed for use; or **closed**

3. Flow Metering

Describe the facility's flow metering system. See Supplemental Instructions for more information.

Meter ID[1]	Proposed or Existing?	Influent or Effluent?	Location Description	Flow Type[2]	Meter Type[3]	Supporting Documents Attached
CrEX-1	Existing	Influent	CrEX-1 wellhead manifold	Pumped	Magnetic	N/A
CrEX-2	Existing	Influent	CrEX-2 wellhead manifold	Pumped	Magnetic	N/A
CrEX-3	Existing	Influent	CrEX-3 wellhead manifold	Pumped	Magnetic	N/A
CrEX-4	Existing	Influent	CrEX-4 wellhead manifold	Pumped	Magnetic	N/A
CrEX-5	Existing	Influent	CrEX-5 wellhead manifold	Pumped	Magnetic	N/A
CTUA	Existing	Effluent	Chromium Treatment Unit A	Pumped	Magnetic	N/A
CTUC	Existing	Effluent	Chromium Treatment Unit C	Pumped	Magnetic	N/A

[1] Meter ID means the numbering or labeling system used to individually identify each meter (e.g., Meter-1, Irrigation Meter-1, etc.).
[2] Flow type - **gravity** flow or pressurized (**pumped**) flow
[3] Meter type - **open channel** such as a weir or flume, or a **closed-pipe** velocity meter such as an electromagnetic meter

4. Discharge Quality

Indicate the expected quality of the discharge (wastewater, leachate, sludge, etc.) that is generated, stored, treated, processed and/or discharged at your facility.

Note: Not all facilities need to characterize influent quality. See Supplemental Instructions for additional guidance.

Contaminants	**Contaminants**	
	Incoming (Influent)	Final (Effluent)
Nitrate as Nitrogen (NO_3-N, mg/L)[1]	See Attachment E	See Attachment E
Total Kjeldahl Nitrogen (TKN, mg/L)[1]	See Attachment E	See Attachment E
Total Dissolved Solids (TDS, mg/L)[1]	See Attachment E	See Attachment E
Chloride (Cl, mg/L)[1]	See Attachment E	See Attachment E
Total Suspended Solids (TSS, mg/L)[2]	See Attachment E	See Attachment E
Biochemical Oxygen Demand (BOD, mg/L)[2]	See Attachment E	See Attachment E
Fecal Coliform Bacteria (CFU/100 mL)[2]	See Attachment E	See Attachment E
pH[3]	See Attachment E	See Attachment E
Metals (attach list)[3]	See Attachment E	See Attachment E
Organic Compounds (attach list)[3]	See Attachment E	See Attachment E

1. Include for all domestic systems.
2. Include for domestic systems that use an advanced treatment process.
3. Include for industrial or mining systems if these are contaminants of concern. If metals or organic compounds are present in the discharge, attach a list of influent and effluent concentrations for each metal/organic compound.

5. Ground Water 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 (NO_3-N), total dissolved solids (TDS), and chloride (Cl). For most industrial Discharge Permits, typical contaminants of concern are volatile and semi-volatile organic compounds (VOC's), polynuclear aromatic hydrocarbons (PAH's), polychlorinated biphenyls (PCB's), metals, and radionuclides. See Supplemental Instructions for additional information.

a. Depth-to-Most-Shallow Ground Water [Subsection C of 20.6.2.3106 NMAC]

1. Facilities *with* on-site monitoring wells

Provide the depth-to-most-shallow ground water from the most recent ground water levels obtained from monitoring wells at the facility. Depth-to-ground water shall be measured to the nearest 0.01 feet using standard methods and techniques [Subsection B of 20.6.2.3107 NMAC].

Depth-to-groundwater is: 5-50 (alluvial), 500-600 (perched-intermediate), 825-1100 (regional aquifer) feet

Note: Use this depth to complete Part I.4.b (Public Notice).

2. **Facilities *without* on-site monitoring wells**

If a facility does not have a monitoring well intersecting most-shallow ground water, provide depth-to-most-shallow ground water for all wells on file located within one mile of the boundary of the facility. This information can be obtained from the Office of the State Engineer (http://www.ose.state.nm.us).

Depth-to-ground water is: _____ feet

Note: Use the range of depths from these records to complete Part I.4.b (Public Notice).

☐ Attached – Records from the Office of the State Engineer, including the following:

- location of each well by latitude/longitude and township, range, and section
- use of each well
- depth to groundwater in each well
- total depth of each well

b. Ground Water Flow Direction [Subsection C of 20.6.2.3106 NMAC]

1. **Facilities with *three or more* on-site monitoring wells**

Provide ground water flow direction beneath the facility on a ground water elevation contour map. The elevation contour map shall be developed based upon the most recent ground water levels and survey data obtained from on-site monitoring wells.

Flow Direction	The general groundwater flow direction at LANL is to the southeast. See Attachment F for groundwater contour map; within the chromium plume flow is east/southeast.

☒ Included – Groundwater contour map from on-site monitoring wells

☒ Included – Monitoring well survey

☐ No survey has been conducted

☐ Survey previously submitted on _____ (date)

2. **Facilities with *less than three* on-site monitoring wells**

If a facility does not have at least three monitoring wells intersecting most-shallow ground water, provide ground water flow direction based upon either the most recent regional water level data or published hydrogeologic information. Attach the sources of information used to determine ground water flow direction. *Select all that apply.*

☐ Ground water flow direction of the most-shallow ground water beneath the facility based upon the *most recent regional water level data* is _____.
-- Reference: _____ (attach relevant portions)

☐ Attached - Survey data from nearby monitoring wells and a *ground water elevation contour map* indicating the direction of ground water flow.

☐ Ground water flow direction of the most-shallow ground water beneath the facility based upon *published hydrogeologic information* is _____.

-- Reference: _____ (attach relevant portions)

c. Monitoring Well Construction and Identification [Subsection C of 20.6.2.3106 NMAC; Subsection A of 20.6.2.3107 NMAC]

1. **For existing monitoring wells**
Submit construction logs for all existing, on-site monitoring wells, which indicate the date of installation and well driller.

☒ Included - Construction logs for each existing monitoring well.

See Attachment G for as-built diagrams for the monitoring wells.

☐ Previously Submitted
Date _____

2. **For all monitoring wells** - Identify proposed and existing monitoring well (MW) locations.

MW ID[1]	Proposed or Existing?	Location Description[2] AND Latitude and Longitude	Screen Interval (ft)	Depth to Water
R-13	Existing	1766994.20, 1640991.70	958.9 to 1018.7	834
R-44	Existing	1767109.85, 1640061.33	S1: 895.0 to 905.0, S2: 985.3 to 995.2	880
R-45	Existing	1768017.72, 1640249.62	S1: 880.0 to 890.0, S2: 974.9 to 994.9	870
R-50	Existing	1767087.32, 1638666.13	S1: 1077.0 to 1087.0, S2: 1185.0 to 1205.6	1060
R-61	Existing	1767422.46, 1637096.80	S1: 1125.0 to 1135.0, S2: 1220.4 to 1241.0	1101
R-70	Existing (Angled)	1768195.35, 1640838.04	S1: 963.0 to 1004.0 linear ft, S2: 1048.0 to 1068.5 linear ft	950 linear ft

[1] MW ID (Monitoring Well ID) is the numbering or labeling system used to identify a MW (e.g., MW-1, MW-2, etc.).
[2] Example: 60 feet south of the top inside edge of the berm of Wastewater Impoundment-1

d. 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. See Supplemental Instructions for additional information.

1. **Attach a graph or table showing all analytical results from ground water monitoring.**

   Historical groundwater quality data from existing groundwater monitoring wells in Section 5.c.2 of this application can be found at Intellus New Mexico (www.intellusnm.com) and Attachment H. Attachment H shows the monitoring results for the wells in Section 5.c.2 for the period of April 1, 2020 through March 31, 2021 if data are available for the wells.

e. Engineering and Surveying

Proposed New Structures or Improvements to Existing Structures

Include electronic plans and specifications for any *proposed* new structures or improvements to existing structures. All final plans and specifications must bear the stamp of a New Mexico licensed Professional Engineer.

- Proposed plans and specifications included (*Select all that apply)*

  ☐ Included for new structure(s)

  ☐ Included for improvements to an existing structure

  ☒ No proposals for new or improved structures

f. Land Application Area Information

For facilities proposing to apply reclaimed or treated wastewater to a land application area, provide calculations showing that nitrogen loading does not exceed 200 lbs/acre/year or that the amount of total nitrogen in the combined application of wastewater and fertilizer does not exceed by more than 25% the amount reasonably expected to be taken up by the crop(s) and removed by harvesting in any 12-month period. Forms to assist in these calculations can be found at: https://www.env.nm.gov/gwb/FORMS/NewMexicoEnvironmentDepartment-GroundWaterQualityBureau-Forms.htm.

☐ Attached – Nitrogen loading calculations

g. Closure Plan [Subsection A of 20.6.2.3107 NMAC]

Facility Closure and Post-Closure Monitoring. Discharge Permits contain standard requirements to address the closure of part or all of you discharge system components, 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 groundwater monitoring for at least two years, longer as appropriate
- Enact contingency plans if groundwater standards are violated
- Financial assurance may be required.

☐ Attached – Closure plan addressing any components not listed above or a site-specific closure plan to fulfill closure requirements at facilities beyond the scope of standard requirements.

The Terms and Conditions of the Closure Plan are provided below instead of being attached to the application.

Upon final cessation of the activity pursuant to the Discharge Permit, the following closure measures shall be performed:

a. Cap or plug all lines to prevent the flow of wastewater to treatment of disposal systems;
b. Empty, clean and remove tanks;
c. Empty lagoons, remove liners, backfill, and re-grade to surface topography;
d. Appropriately dispose of liquids and solids;
e. Regrade and cover stockpiles;
f. Continue groundwater monitoring for at least two years, or as appropriate;
g. Enact contingency plans if groundwater standards are exceeded including any abatement required by NMED pursuant to actions related to the DP-1835 permit.
h. Remove any compounds and equipment pertaining to the remediation activities;
i. Appropriately removed and manage all treatment resins and media in accordance with all applicable local, state and federal regulations;
j. UIC wells must be closed in accordance with State of New Mexico Oil Conservation Division guidelines as described in the *Oil Conservation Division Underground Injection Control Program Manual*, February 26, 2004;
k. Following notification from NMED that post-closure monitoring may cease, the Permittee shall plug and abandon any groundwater monitoring wells not included in the current version of the IFGMP;
l. When all post-closure requirements have been met, the Permittee may request to terminate the Discharge Permit;
m. Should individual components utilized under DP-1835 be required for completion of Consent Agreement activities under other regulatory oversight, the Permittee may request a variance from specific closure activities required by the DP-1835 permit.

Part III. Additional Proposals and Conditions (if applicable)

In the space provided, propose revisions or additions to the standard Discharge Permit requirements. If you propose any revisions or additions, also provide the rational for your proposal.

This renewal and modification discharge permit application is for Discharge Permit 1835 (DP-1835). The technical information supporting this application includes the information submitted for the 2016 permit and the minor changes approved by NMED GWQB on July 21, 2017, are incorporated in this application by reference. The conditions included in DP-1835, as issued in 2016 and modified in 2017, are sufficient to ensure that applicable regulatory requirements are satisfied. DOE/N3B is proposing to make modifications as follows:

1. Changing Section I (Introduction), Section III (Authorization To Discharge), and Permit Condition #4 of the permit to delete the limitation of six underground injection control (UIC) wells. The total injection rate is the limiting factor for how much treated water can be injected into the aquifer. Deletion of the limit on the total number of UIC wells provides necessary operational flexibility while still ensuring equivalent protection through the limit on the injection rate.

2. This discharge permit application renewal and modification proposes to change the quantity of the discharge, which is currently 648,000 gallons per day. It is proposed to increase the discharge to 1,500,000 gallons per day to allow for increases in the treatment of the chromium plume.

3. Addition of a permit condition that new injection/extraction wells may be added to this permit. The permittee shall provide the following information to NMED GWQB within 60 days of completion of new injection/extraction wells, as applicable: description of component (as-built diagram), facility location (component identification, township, range, section, latitude, longitude), and flow metering (influent/effluent, location description, flow type, meter type, and supporting documentation).

4. Addition of a permit condition that new monitoring wells may be added to this permit. The permittee shall provide the following information to NMED GWQB within 60 days of completion of monitoring wells used for the chromium remediation project: Construction as-built diagram, Monitoring Well information (identification number, latitude, longitude, screen interval, depth to water), and lithologic log.

5. It is proposed that only monitoring wells which evaluate the condition of the injection wells be applicable to the Discharge Permit. Propose the deletion of monitoring wells CrPZ-1 (CrCH-1), CrPZ-2 (CrCH-2), CrPZ-3 (CrCH-3), CrPZ-4 (CrCH-4), CrPZ-5 (CrCH-5), R-11, R-43, and R-62 from the Permit Condition #14 of the current Discharge Permit as these wells do not monitor the condition of areas around the injection wells. Proposed to add R-70 as a monitoring well that does evaluate the condition of the area around injection wells.

Part IV. Maps and Logs to be Attached

1. Surface Soil Survey and Vadose Zone Geology

[Subsection C of 20.6.2.3106 NMAC]

☒ Attached - Most recent regional soil survey map and associated descriptions identifying surface soil type(s).

See Attachment I for additional information.

☒ Attached - Lithologic logs for all existing on-site monitoring wells (if available).

See Attachment J for additional information.

2. Topographic Map [Subsection C of 20.6.2.3106 NMAC]

☒ Attached - Location map with topographic surface contours identifying all of the following features located within a one-mile radius of the facility:

- watercourses
- lakebeds
- sinkholes
- playa lakes
- springs (springs used to provide water for human consumption shall be so denoted)
- wells supplying water for a public water system
- private domestic water wells
- irrigation supply wells
- ditch irrigation systems
- acequias
- irrigation canals
- drains

See Attachment C for additional information.

3. Flood Zone Map [Subsection C of 20.6.2.3106 NMAC]

☒ Attached - Most recent 100-year flood zone map developed by the federal emergency management administration (FEMA) documenting flood potential for the facility.

Describe any engineered measures used for flood protection.

Extraction wells, injection wells, and treatment infrastructure are located outside of the floodplain. Pipelines will cross into the 100-year floodplain and are protected through burial at an appropriate depth. The 100-year floodplain is provided in Attachment K.

4. Additional Information

Describe any additional relevant information.

Some activities may be conducted within the floodplain of a watercourse because of the necessity of siting components in close proximity to the groundwater wells they are serving.

Supplemental Instructions

Please note: Discharge Permits are required for a wide range of facilities that process, treat, store and/or dispose of wastewater, sludge, septage, leachate, contaminated soils, mine tailings, industrial waste, mine ore, waste rock, or other similar materials. For the purposes of this application form, the term "discharge" applies to any of these materials whether they are actually discharged or whether they represent only a potential discharge that could occur due to factors such as poor maintenance, improper installation, equipment failure or accidents.

Part I.1 Facility Information and Type of Facility

The "Facility" may be identified as:

- a treatment facility, such as a municipal wastewater treatment plant;
- the source of the discharge, such as a subdivision, or waste rock pile;
- a disposal facility or operation, such as for sludge or septage;
- the discharge location or end user of reclaimed wastewater, such as a golf course or cement plant;
- a storage and/or processing facility with off-site disposal;
- a collection of facilities, such as numerous comfort stations at a state park; or
- a project or operation, such as a construction project or a system to distribute reclaimed wastewater throughout a city.

Examples of a variety of facility types are categorized below. Please note, "Domestic" waste contains human excreta or originates from typical residential plumbing fixtures.

Industrial Waste

- Manufacturing
- Power plant
- Military installation
- Vehicle/equipment wash
- Mortuary
- Hydrocarbon landfarm
- Ground water remediation
- Ethanol plant
- Asphalt plant
- Remediation Systems

Mining Waste

- tailing impoundment
- mine dewatering
- waste rock pile
- smelter slag
- in-situ leach
- leach piles
- pipelines
- collection ponds
- concentrator – other beneficiation

Domestic Waste

- Municipal wastewater treatment plant
- Septage disposal
- Sludge disposal
- Mobile home/RV park
- Campground/park
- School/educational facility
- Restaurant
- Subdivision/apartment complex
- Unincorporated community
- Lodging/resort/spa
- Residential facility
- Commercial/shopping complex
- Laundromat
- Facility using reclaimed domestic wastewater

Agricultural Waste

- Dairy
- Food processing
- Slaughter facility
- Nursery/greenhouse
- Manufacture/processing of agricultural chemicals
- Feedlot
- Livestock truck washout

This listing is only a guide, as there can be crossover between categories. For example, a golf course might use treated industrial wastewater for irrigation. The type of facility in that case is "golf course" and the type of waste is "industrial." A mining operation may need a permit for its restroom and shower facilities. In that case, the type of facility is a "mining operation" and the type of discharge is "domestic waste."

Part I.5: Facility Location

The following are examples of treatment, storage, and disposal components of a wastewater system that should be included in this part.

Treatment Methods

- Septic tank
- Grease interceptor
- Oil/water separator
- Manure separator
- Wetlands
- Lagoon (indicate whether aerated and type of liner)
- Trickling filter
- Activated sludge (extended air, SBR, etc.)
- Sand filter
- Membranes
- Sludge drying bed
- Disinfection (specify type)
  - ➢ chlorination

Disposal Methods

- Leachfield
- Infiltration gallery
- Evaporation lagoon (indicate type of liner)
- Evaporation tank
- Impoundment
- Discharge to waters of the US (NPDES permit required)
- Ongoing land application (specify type)
  - ➢ subsurface irrigation
  - ➢ sprinkler irrigation
  - ➢ flood irrigation
  - ➢ drip irrigation
  - ➢ surface spreading (solids)
  - ➢ surface injection (solids)

- UV/ozone
- Water treatment plant
- Injection Wells
- Temporary uses of reclaimed wastewater
- Ongoing use of reclaimed wastewater for:
  - Manufacturing construction or dust control

Storage Methods

- Above/below ground tank
- Storage lagoon (indicate type of liner)
- Holding tank
- Pit toilet
- Stockpile
- Tailing impoundment

Part II.1 Proposed Maximum Daily Discharge Volume

Your Discharge Permit will allow for the treatment, processing and/or discharge of up to a specified volume, generally, a maximum number of gallons per day. The flow at your facility on any g+iven day must not exceed this "maximum discharge volume." It is determined based on the expected contributions from the sources you identified Part II, 1, b, 1.

NMED will carefully review the basis of the maximum discharge volume you propose. Show all your calculations and assumptions.

Animal feeding operations must provide calculations based on the number of animals and water conservation practices in place.

Landfarms, disposal facilities, processing facilities typically identify the expected number of loads to be delivered.

For septic systems and wastewater treatment plants, the maximum discharge volume is also referred to as the "design flow." It includes a peaking or safety factor to guard against back-ups and overflows.

Municipal wastewater treatment facilities should identify the population served, growth assumptions, and expected per capita usage considering any contributing industries.

On-site domestic wastewater treatment facilities should rely on published design flows such as those provided in the NMED Liquid Waste Regulations (20.7.3 NMAC), the Uniform Plumbing Code or the USEPA On-site Wastewater Treatment Systems Manual.

For existing facilities, the maximum discharge volume may be based on a record of measured flows if no changes are anticipated. At least two years of flow data must be submitted, and the highest monthly discharge volume must be multiplied by a peaking factor of 1.5.
NMED will verify that your proposed or existing facility can handle maximum discharge volume you propose.

Be specific in describing all sources. Consider the following examples:

- Municipalities – identify particular industries or specialized facilities contributing wastewater.
- RV Parks – identify showers, dump stations, laundromat, etc.

- Subdivisions – identify homes, apartments, commercial developments, water softener backwash, etc.
- Landfarms or disposal facilities – specify type of materials accepted, e.g., residential septage, car wash grit trap waste, contaminated soils/water, treated municipal sludge, etc.
- Dairies – identify milking parlors, type of washdown used, sources of stormwater runoff, etc.
- Schools – identify cafeteria, gym, showers, etc.
- Truck stops – identify restaurant, showers, car wash, etc.
- Facilities receiving reclaimed wastewater – identify the treatment facility providing the reclaimed wastewater.
- Food processing and industrial facilities – describe the processes which produce the waste stream and chemicals used.
- Mines – identify processes including beneficiation, tailing, waste rock, leach facilities, pipelines, ponds, catchments, booster stations, in-situ leach facilities.

You do not need to include solid wastes, hazardous wastes or discharges being managed under other permits; however, these must be listed under Item C-7 in Part C of the application.

Part II.3: Flow Metering

You must provide a method for measuring the discharge volume (Section 20.6.2.3109.H.1 NMAC). At facilities with treatment or storage lagoons, it is necessary to measure both the volume entering the treatment system as well as the volume ultimately discharged.

If you land apply wastewater to more than one discharge location, you must be able to track the volume to each location.

If your facility is small and relies on gravity to carry wastewater to the treatment and disposal system, it may be acceptable to estimate the wastewater flow. This can be done by metering water usage and deducting the volume of water used for fresh-water irrigation, swimming pools, evaporative cooling, livestock watering or other uses that do not result in wastewater flowing to the treatment system.

Part II.4: Discharge Quality

Untreated wastewater entering a treatment facility (also referred to as "influent") must be characterized so that the treatment process can be evaluated. It is not necessary to provide influent quality for systems providing minimal treatment prior to discharge or disposal, such as systems relying on crop uptake for treatment (e.g., dairies), septic tank – leachfield systems, storage/processing facilities or evaporative systems. The final quality of the waste or wastewater disposed of or discharged must be characterized for all facilities.

For most agricultural and domestic facilities, the contaminants of concern include nitrate as nitrogen (NO_3-N), total Kjeldahl nitrogen (TKN), total dissolved solids (TDS), and chloride (Cl). For domestic facilities with advanced treatment, additional contaminants include total suspended solids (TSS), biochemical oxygen demand (BOD_5), and fecal coliform bacteria. Contaminants of concern at industrial and mining sites include pH, metals, and organic compounds. List all that apply.

Part II.E: Ground Water Monitoring

The depth to ground water beneath your facility and/or discharge site must be provided. This is true even if your facility or operation is intended to have no discharge. Discharge Permits are required for "no-discharge" lagoons, storage tanks, etc. because of the potential for a discharge to occur due to factors such as improper installation, poor maintenance, equipment failure or accidents.

The best way to determine the depth to water is to measure it in an on-site or nearby monitoring well. If a monitoring well is not available, the measurement may be from a water supply well. If there is a well but it is not possible to access it for a measurement, you could refer to the well log for that well and/or others in the vicinity. Well log information is available on the website of the State Engineer's office:

http://www.ose.state.nm.us/.

Be aware that water levels have dropped in many areas of the state, so more recent well logs in those areas are more reliable.

There may be a significant discrepancy in the depth to water in different wells, even when falling water levels is not a factor. One reason for this is that a water supply well may rely on a deep aquifer rather than water in the "first" or most shallow aquifer. Discharge Permits are intended to protect all ground water, so it is important to report the shallowest depth in the vicinity of your site.

The total dissolved solids (TDS) concentration of the ground water prior to discharge must be provided. As explained for the depth to water, this is true even if your facility or operation is intended to have no discharge. The TDS value provides a general indication of the quality of the ground water that could be affected by your operation.

The best way to obtain a pre-discharge TDS concentration is to sample an on-site or nearby well before your facility begins operating. It is better to sample a shallow rather than a deep well, if possible. It may be that a neighboring facility has existing analytical data for its Discharge Permit. (If so, be sure to obtain data from a non-impacted well.)

If there are no wells in your vicinity or it is not possible to sample them, you may find general TDS concentrations in reports available from sources such as a university, the State Engineer's Office (http://www.ose.state.nm.us/) or the US Geological Survey (http://nm.water.usgs.gov/).
If you are renewing or modifying your Discharge Permit, you may refer to the TDS concentration previously determined if there was a sound basis for it. Monitoring data or other information obtained since the permit was issued, however, may warrant listing a different value.

Part II.E.4: Past Ground Water Monitoring Results

A complete list of ground water standards can be found in Section 20.6.2.3103 NMAC. The standards for contaminants most frequently monitored under Discharge Permits are as follows:

Nitrate-nitrogen (NO_3-N).....10 mg/L
Chloride ..... 250 mg/L
Total dissolved solids (TDS)... 1000 mg/L
Sulfate (SO_4).....600 mg/L
pH ..... between 6 and 9

There is no ground water standard for total Kjeldahl nitrogen (TKN). Because TKN converts readily to nitrate as it moves through the vadose zone, however, concentrations approaching or exceeding 10 mg/L are of concern.

Additional parameters typically apply at mining or industrial facilities.

Some ground waters in the state have TDS or chloride concentrations that naturally exceed these standards. In that case, the standard is the naturally occurring level. You must provide documentation of such elevated natural conditions, such as analytical results from a non-impacted well.

An example table and graph follow:

	Monitoring Well 1	
Date	NO3-N	TKN
Jan-04	4.2	2.2
Apr-04	3.4	1.2
Jul-04	6.5	3.2
Oct-04	10	4.8
Jan-05	3.5	5.6
Apr-05	4.2	2.1
Jul-05	5.5	1.3
Oct-05	5.5	0.8
Jan-06	4.2	3.3
Apr-06	3.2	2.2
Jul-06	6.5	2.2