Final Environmental Impact Statement
Thacker Pass Lithium Mine Project

Appendix B

Mining Plan of Operations

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APPENDIX B. MINING PLAN OF OPERATIONS

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Thacker Pass Project

Proposed Plan of Operations and Reclamation Plan

Permit Application

July 2019

October 2019 - Revised

Submitted to:

Bureau of Land Management

Winnemucca District

Humboldt River Field Office

5100 East Winnemucca Boulevard

Winnemucca, Nevada 89445

Nevada Division of Environmental Protection

Bureau of Mining Regulation and Reclamation

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Summary

Lithium Nevada Corp. (LNC), a wholly owned subsidiary of Lithium Americas Corp. (LAC), proposes to construct, operate, reclaim, and close an open pit lithium mining and processing operation, the Thacker Pass Project (Project), located on public lands in northern Humboldt County, Nevada. The surface and subsurface mineral estates associated with the Project are located on public lands administered by the Bureau of Land Management (BLM), Winnemucca District, and controlled by federal unpatented lode mining claims owned by LNC.

LNC is submitting this Plan of Operations and Reclamation Plan (Plan) to develop the Project in accordance with BLM Surface Management Regulations under 43 Code of Federal Regulations (CFR) 3809, Surface Occupancy regulations under 43 CFR 3715, and Nevada reclamation regulations under Nevada Administrative Code (NAC) 519A.

The purpose of this Plan is to provide BLM with a description of the proposed lithium mining and processing operations. The Reclamation Plan includes measures to be implemented to prevent unnecessary or undue degradation of public lands by operations authorized under the mining laws.

LNC intends to develop a premier lithium operation in the United States through an innovative processing approach, engagement with partners, communities and customers, and a commitment to principled entrepreneurship and sustainable development. The proposed production from the operation is anticipated to meet most or all of U.S. lithium demand, thereby significantly reducing exposure to foreign supplies. The Project's design is sensitive to carbon emissions, water needs by recycling water, and protecting high-value ecological areas in the Montana Mountains.

The proposed Plan of Operations (POO) boundary (defined as the "Project area") will encompass approximately 10,468 acres with an estimated disturbance footprint of approximately 5,545 acres. LNC has permitted and performed mineral exploration activities within the Project area since 2007, including construction of drill sites and access roads. These authorizations, when combined, total less than 200 acres and are included as part of the proposed Project disturbance area.

LNC will develop the Project in two phases (Phase 1 and Phase 2) over the estimated 41-year mine life. Pending LNC receiving the required authorizations and permits for Phase 1 of the Project, pre-stripping will commence in early 2021 and construction in the first quarter of 2021, with mining production and ore processing estimated to commence in late 2022. LNC estimates that it will complete mining, processing and concurrent reclamation activities in 2065, after which,

reclamation, site closure activities, and post-closure monitoring will occur for a minimum of five years.

The Project will provide employment to approximately 300 workers during the operational phase. The proposed activities and facilities associated with the Project include:

- Development of an open pit mine to recover approximately 230.0 million cubic yards (M CY) of ore. Pit dewatering is not expected to be required as part of the Project until 2055;
- Concurrent backfill of the open pit using approximately 144.3 M CY of waste rock and 75.2 M CY of coarse gangue material;
- Construction of two Waste Rock Storage Facilities (WRSFs) to accommodate permanent storage of approximately 45.9 M CY of excavated mine waste rock material;
- Construction and operation of mine facilities to support mining operations;
- Construction of a 494 thousand cubic yard Run-of-Mine (ROM) stockpile;
- Construction and operation of an attrition scrubbing process to separate the lithium-rich fine clay from the coarse low-grade material (coarse gangue);
- Construction of a coarse gangue stockpile designed with a storage capacity of approximately 48.4 M CY;
- Construction and operation of lithium processing facilities designed to produce lithium carbonate, lithium hydroxide monohydrate, lithium sulfide, lithium metal, and solid-state lithium batteries;
- Construction of a sulfuric acid plant that will generate sulfuric acid for use in a leaching process and will also generate steam for energy that will provide power to support the Project. Excess heat, in the form a steam, will be diverted to a turbo generator to produce electricity for the lithium process. The sulfuric acid plant will generate electrical power using double contact double absorption technology with an integrated steam turbo generator set;
- Construction and operation of a Clay Tailings Filter Stack (CTFS) to permanently store clay tailings, neutralization solids, and various salts generated during lithium processing. LNC will place approximately 353.6 M CY of material on the CTFS;
- Construction and maintenance of haul and secondary roads;
- Construction and maintenance of stormwater management infrastructures including diversions and sediment ponds;
- Construction of three growth media stockpiles with material salvaged within the footprint of proposed disturbances;

- Construction of raw water supply facilities including two supply wells (Quinn Production Well and Quinn Backup Well), two booster pump stations, a water pump tank station, and underground water pipeline to the process plant; Construction of a seven mile 25-kilovolt (kV) power transmission line from a new substation installed in the process plant area to the raw water supply facilities to the east, and a two-mile power transmission line to new mine area substations to the west; and,
- Construction of ancillary facilities to support the Project such as septic systems, communication towers, guard shacks, reclaim ponds, weather station, fiber optic line, buffer areas, and fencing.

Reclamation of disturbed areas resulting from activities associated with the Project will be completed in accordance with BLM and Nevada Division of Environmental Protection (NDEP) regulations to prevent unnecessary or undue degradation of public lands by operations authorized under the mining laws. LNC will initiate concurrent reclamation of areas no longer required for operations at the earliest economically and technically feasible time over the mine life. LNC's proposed Reclamation Plan is set forth in Section 6 of this Plan.

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List of Acronyms

°F	degrees Fahrenheit
ABA	acid base accounting
AF	Acre-Feet
AJD	Approved Jurisdictional Determination
amsl	above mean sea level
AP	Acid Potential
APLIC	Avian Powerline Interaction Committee
ARDML	Acid Rock Drainage and Metal Leaching
ASSB	all-solid-state batteries
ATF	Bureau of Alcohol, Tobacco, Firearms and Explosives
BACT	Best Available Control Technology
BAPC	Bureau of Air Pollution Control
BBCS	Bird & Bat Conservation Strategy
BHPS	Bureau of Health Protection Services
BLM	Bureau of Land Management
BMP	Best Management Practice
BMRR	Bureau of Mining Regulation and Reclamation
BSDW	Bureau of Safe Drinking Water
BWM	Bureau of Waste Management
BWPC	Bureau of Water Pollution Control
CFR	Code of Federal Regulations
CTFS	Clay Tailings Filter Stack
ENU	Elementary Neutralization Unit
EPA	Environmental Protection Agency
ET	evapotranspiration
FR	Federal Register
HCT	humidity cell test
HPZ	Hot Pot Zone
GCL	geosynthetic clay liner
GHMA	General Habitat Management Area
gpm	gallons per minute
HDPE	high-density polyethylene
Kg	kilogram
kV	kilovolt
KVCM	Kings Valley Clay Mine
Lb	pound
LAC	Lithium Americas Corporation
LCE	lithium carbonate equivalent
LNC	Lithium Nevada Corporation
M CY	million cubic yards
MSHA	Mine Safety and Health Administration
MW	Megawatt
MWMP	meteoric water mobility procedure

NAC	Nevada Administrative Code
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NDEP	Nevada Division of Environmental Protection
NDWR	Nevada Division of Water Resources
No.	Number
NOI	Notice of Intent
Non-PAG	Non-Potentially Acid Generating
NP	Neutralization potential
NPR	Neutralizing Potential Ratio
NRCS	Natural Resources Conservation Service
NRS	Nevada Revised Statues
NRV	Nevada Reference Value
OSHA	Occupational Safety and Health Administration
PHMA	Priority Habitat Management Area
PMU	Population Management Unit
POO	Plan of Operations
ppm	parts per million
Project	Thacker Pass Project
PUCN	Public Utilities Commission of Nevada
RCRA	Resource Conservation and Recovery Act
ROM	Run-Of-Mine
SEM	scanning electron microscopy
SO_2	sulfur dioxide
SO_3	sulfur trioxide
SR	State Route
SRCE	Standard Reclamation Cost Estimator
SWCA	SWCA Environmental Consultants
SWPPP	Stormwater Pollution Prevention Plan
T $CaCO_3$/kT	expression of NP units as tons of calcium carbonate per thousand tons of material
tpy	short tons per year
Tv	tertiary volcanics
U.S.C.	United States Code
USACE	United States Army Corps of Engineers
VRM	visual resource management
WLC	Western Lithium USA Corporation
WPCP	Water Pollution Control Permit
WRC	Wildlife Resource Consultants
WRSF	Waste Rock Storage Facility
XRD	x-ray diffraction

1 Operator Information

Lithium Nevada Corp. (LNC), a Nevada corporation, is a wholly owned subsidiary of Lithium Americas Corp. (LAC). The Thacker Pass Project (Project) is 100 percent owned by LNC.

Lithium Americas Corp.'s common shares are listed for trading on both the New York Stock Exchange and the Toronto Stock Exchange. As a publicly traded company, LAC is subject to applicable securities legislation in respect of all of its disclosure, including disclosure made by LNC in this document. As a result, LAC advises that statements in this document that are not historical fact are forward looking statements and information, which are subject to the risks, assumptions and uncertainties described in LAC's public disclosure documents. Readers are cautioned to review those documents in full prior to trading in LAC's securities.

1.1 Individual Completing Application

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1.5 Taxpayer Identification Number

LNC will provide the Federal Tax Identification Number in a separate document.

1.6 Claim Information and Land Status

LNC owns 492 unpatented lode mining claims that provide the necessary surface and subsurface mineral estate for the Project. The subject unpatented mining claims are located on public lands administered by the Bureau of Land Management (BLM) and have been properly located, filed, recorded, and maintained, in accordance with 30 United States Code (U.S.C.) Part 28, 43 U.S.C. Part 1744, 43 Code of Federal Regulations (CFR) parts 3830 through 3839, and Nevada Revised Statutes (NRS) 46, Ch. 517. All claims are owned or controlled by LNC. Mining claim information can be found in Appendix A. The list includes BLM serial numbers of unpatented mining claims and the corresponding claim names, as required by 43 CFR 3809.

2 Description of Existing Conditions

A general description of the proposed Project location and a summary of the existing environment in the area are presented below.

2.1 Project Location

The Project site is located in northern Nevada in Humboldt County, approximately 20 miles west-northwest of Orovada, 62 miles north-northwest of Winnemucca, and approximately 20 miles south of the Oregon border (Figure 1). The Project is situated between Kings River Valley to the west, the Quinn River Valley to the east, the Montana Mountains to the north, and the Double H Mountains to the south in an area known as Thacker Pass. The area is located approximately 4,200 to 5,650 feet above mean sea level (amsl).

The proposed Plan of Operation (POO) boundary will encompass 10,468 acres (Figure 2) with an estimated disturbance footprint of approximately 5,545 acres. The proposed POO boundary is referred to herein as the "Project area." The Project area sits at the southern end of the McDermitt Caldera Complex in Township 44 North (T44N), Range 34 East (R34E), and within Sections 1 and 12; T44N, R35E within Sections 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, and 17; and, T44N, R36E, within sections 7, 8, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, and 29. All lands within the Project area are public lands administered by the BLM as shown on Figure 2.

2.2 Land Disturbance

LNC has permitted and performed mineral exploration activities within the Project area since 2007, including construction of drill sites and access roads. Exploration activities have been conducted in the Project area as part of the Kings Valley Lithium Exploration Project (N85255). A portion of the proposed Project disturbance (114 acres) was included in the Kings Valley Clay Mine (KVCM) (BLM Case File Number N91547), which was permitted in 2014 but never developed (LNC 2018). LNC also has two active Notice of Intents (NOI); the Quinn River Valley NOI (N94510) and Far East NOI (N95396). These authorizations, when combined, total less than 200 acres. Existing disturbance is shown in Figure 3.

2.2.1 Areas Disturbed by Previous Operator

There are no areas within the proposed Project area that were disturbed by a previous operator.

2.2.2 Areas Disturbed by Current Operator Prior to January 1, 1981 and Inactive

There are no areas within the proposed Project area that were disturbed by the current operator prior to January 1, 1981, and that are inactive.

2.2.3 Areas Disturbed by Current Operator Prior to January 1, 1981 and Still Active

There are no areas within the proposed Project area that were disturbed by the current operator prior to January 1, 1981, and that are still active.

2.2.4 Areas Disturbed by Current Operator after January 1, 1981, but Prior to October 1, 1990 and Inactive

There are no inactive areas within the proposed Project area that were disturbed by the current operator after January 1, 1981, but prior to October 1, 1990.

2.2.5 Areas Disturbed by Current Operator after January 1, 1981, but Prior to October 1, 1990 and Still Active

There are no still active areas within the proposed Project area that were disturbed by the current operator after January 1, 1981, but prior to October 1, 1990.

2.2.6 Areas Active On or After October 1, 1990

Disturbance which was created, or is active, after October 1, 1990, includes exploration roads and drill sites associated with the ongoing LNC drilling campaigns, specifically associated with the Kings Valley Lithium Exploration POO (N85255), the Far East NOI (NOI, N95396), and a small test pit mined under existing authorizations (Kings Valley Clay Mine [KMCM], N91547). Disturbance also took place to support the Quinn River Valley Test Well NOI (N94510), now called the Quinn Production Well. LNC intends to incorporate all existing disturbance into this Project. Authorization of this POO and Plan will terminate the KVCM POO (N91547), Kings Valley Lithium Exploration Project (N85255), the Quinn River Valley Test Wells NOI (N94510), the Far East NOI (N95396) and all reclamation requirements.

2.2.7 Access Roads Existing Prior to January 1, 1981

Access roads that existed within the proposed Project area prior to January 1, 1981, are shown on Figure 3. These roads include county and four-wheel drive roads that have access to the Project area. These roads are not included as roads that need to be reclaimed as they have not been altered other than by maintenance activities and minor repairs since January 1, 1981.

2.2.8 Location of Surface Water Bodies within One-Half Mile Downgradient of the Disturbance

The proposed Project area contains numerous small ephemeral drainages, five seasonal springs (SP-001, SP-002, SP-058, SP-059, and SP-061 as shown on Figure 4), and limited reaches of intermittent surface waters as shown in Figure 4. Thacker Creek is perennial and lies directly west and outside of the Project area, while Pole and Crowley creeks are intermittent and located north and east of the Project area. Pole Creek intermittently flows into Crowley Creek, which transitions into a losing stream as it enters the Quinn River Valley east of the Project area. Surface water bodies in the Project area are further described in Section 2.3.4.

2.3 Baseline Environmental Conditions

In compliance with BLM Instruction Memorandum No. NV-2011-004, Guidance for Permitting 3809 Plans of Operation, per 43 CFR 3809.401(b), and in consultation with the BLM, LNC has completed baseline studies that support this POO document and subsequent environmental analysis. The following sections present a summary of the existing baseline conditions within and in the vicinity of the Project area. Baseline surveys were performed within a larger 18,686-acre Survey area, that included the 10,468-acre Project area, as shown on Figure 2. LNC has consulted with BLM and the State in the development and conduct of environmental baseline surveys in accordance with applicable guidance. Environmental conditions described in this section are based on surveys conducted with BLM approval and submitted to BLM for review.

2.3.1 Climate

Northern Nevada has a high-desert climate with cold winters and hot summers (Advisian 2018). A meteorological station has continuously operated in the Project area since 2011. The station collects data relating to temperature, precipitation, wind speed and direction, solar radiation, and relative humidity.

The temperature recorded at the LNC station from 2011 to 2017 ranged from zero degrees Fahrenheit (°F) to 99°F. The area is generally dry. Annual precipitation in the Project area ranged from 8.6 inches in 2013 to 15.7 inches in 2014 as shown in Table 2-1. Winter precipitation (December to February) during that period ranged from 0.3 to 3.7 inches. Precipitation recorded during the summer (June to August) were lower, ranging from 0.0 to 1.3 inches (Advisian 2018).

Table 2-1 Annual Precipitation at the Project Area (in inches)

Month	2011	2012	2013	2014	2015	2016	2017	2018	2019
January	NM	1.7	1.0	0.4	0.4	2.5	3.0	0.6	1.4
February	NM	0.3	0.2	2.1	0.8	0.2	1.6	0.6	2.3
March	NM	1.2	0.3	3.0	0.5	1.4	0.9	2.1	-
April	NM	1.2	0.3	1.4	1.2	0.8	2.1	1.5	-
May	NM	0.3	2.2	0.6	3.5	NM	0.9	1.7	-
June	NM	0.4	0.4	0.1	0.4	NM	1.3	0.4	-
July	NM	0.4	0.4	0.6	0.8	0.0	0.0	0.0	-
August	0.4	0.5	0.7	1.1	0.1	0.0	0.4	0.0	-
September	0.0	0.7	1.2	2.9	0.2	0.9	0.3	0.0	-
October	1.2	1.1	1.0	0.5	1.8	1.3	0.3	1.3	-
November	0.6	1.1	0.8	1.2	0.6	0.7	1.3	0.7	-
December	0.0	2.7	0.3	1.8	3.7	2.7	0.1	1.5	-
Annual	**2.2[1]**	**11.6**	**8.8**	**15.7**	**14.0**	**10.5[1]-**	**12.2**	**10.4**	**3.7[1]**

Note: NM = Not measured
[1]: Total value is missing one or more months
Source: LNC Unpublished Data

Within the Project area, wind predominantly blows from the west (Advisian 2018). Hourly average wind speeds are highest from March through August, with a maximum average monthly wind speed of 5.1 miles per hour observed at the meteorological station between 2011 and 2017 (Advisian 2018).

Open water evaporation estimates are based on pan evaporation data collected at Rye Patch Reservoir, located approximately 56 miles to the south at an elevation of 4,136 feet amsl (Advisian 2018). Using a pan coefficient of 0.7, the estimated open-water evaporation rate is 3.5 feet per year. The region is characterized by a water deficit, with estimated evaporation substantially greater than the recorded precipitation as set forth in Table 2-1.

Based on data collected at the Project's meteorological station between 2011 and 2017, the average monthly relative humidity ranges from 20 to 80 percent (Advisian 2018). Relative humidity is higher in the winter and less than 40 percent in the summer months. The minimum daily average solar radiation (i.e., total frequency spectrum of electromagnetic energy emanating from the sun), occurs in November and December. The maximum daily average solar radiation mostly occurs in June (Advisian 2018).

2.3.2 Geology

The Project area is located within an extinct super volcano named the McDermitt Caldera, which was formed approximately 16.3 million years ago (Advisian 2018). Following an initial eruption at the McDermitt Caldera, water leached lithium from nearby volcanic rocks and deposited it in the caldera basin over hundreds of thousands of years. Associated lacustrine deposits settled in a lake that formed in the caldera. Renewed volcanic activity uplifted the center of the caldera, which drained the lake and brought lithium-rich sediments to the surface near the present-day Montana Mountains (Advisian 2018).

Regional Geology

Volcanic activity at the McDermitt Caldera Complex was characterized by extrusion of early metaluminous and peralkaline rhyolite, followed by eruption of a voluminous ignimbrite with peralkaline rhyolite to metaluminous dacite compositions (SRK 2016). The central part of the caldera complex contained a moat-like lake, which was formed between the dome and caldera walls. Volcaniclastic sediments were deposited in the lake in the form of a ring within the caldera. The lithium deposits at the Project consist of lens-shaped bodies hosted by the moat sedimentary rock (SRK 2016).

Local Geology

LNC and preceding claim holders have identified lithium deposits in a north-south zone along the western and southern part of the McDermitt Caldera (Figure 5). LNC has proposed its lithium Project in the Thacker Pass area, south of the Montana Mountains, in order to minimize environmental impacts of the Project, as discussed in the Options Analysis (LNC 2019a).

The Project deposit is composed of lithium-rich clay that sits sub-horizontally beneath a thin alluvial cover and underlain by intracaldera rhyolite tuff (LNC 2018). The deposit lies in moat caldera lake sediments that have been separated from the topographically higher deposits to the north. The sedimentary section, which has a maximum drilled thickness of approximately 700 feet, consists of alternating layers of thick claystone and thin volcanic ash. The claystone comprises 40 to 90 percent of the section. In many intervals, the claystone and ash are intimately intermixed. Individual claystone-rich units may laterally reach distances of more than 500 feet, though unit thickness can vary by as much as 20 percent. Ash-rich layers are more variable and appear to have some textures that suggest reworking. All units exhibit finely graded bedding and laminar textures that imply a shallow lacustrine (lake) depositional environment.

Mineralogically, the upper clay horizons are dominated by smectite-type clay, while the deeper horizons are dominated by illite-type clay, with the latter showing mineralization of up to 9,000 parts per million (ppm), and the former up to 4,000 ppm. The moat sedimentary rocks drilled in the Thacker Pass basin contain anomalously high lithium contents (greater than 100 ppm) with no change in lithium content across the boundary between oxidized and unoxidized rock (SRK 2016). Exposures of moat sedimentary rocks in the Project area are limited to a few drainages and isolated road cuts. The stratigraphic sequence of the deposit has been primarily derived from core drilling.

The smectite-to-illite transition and associated increase in lithium concentration occurs across the whole caldera, supporting the hypothesis that the mineralization is associated with burial diagenesis. Vertical drilling indicates that the clay intersections range from a few feet up to 300 feet (LNC 2018).

2.3.3 Soils

Approximately 60 percent of the soil type in the Survey area (Figure 2) is Dewar-Dacker Association (Cedar Creek 2018a). The Dewar soil series is a moderately deep, well-drained alluvium that formed from mixed rocks, including volcanics and wind deposited sediment. The Dacker soil series consists of moderately deep soils over a duripan, well-drained soils that formed in silty alluvium derived from mixed rocks with a component of loess and volcanic ash.

Dominant, minor, and sub-dominant soils in the Survey area (Figure 2) were verified and found to be accurately mapped by the Natural Resources Conservation Service (NRCS) Soil Survey. Soil types mapped in the Survey area are presented in Table 2-2 below.

Table 2-2 LNC Thacker Pass Project – Soils Extent Summary

NRCS Map Unit Symbol	Map Unit Name	Area (Acres)	Percent of Baseline Study Area
1312	Dewar-Dacker association	11,083	59.5
335	McConnel very gravelly fine sandy loam, 0-2% slopes	1,597	8.6
962	Zevadez-Vanwyper association	1,179	6.3
596	Trunk-Burrita association	1,020	5.5
1470	Zymans-Burrita-Devada association	852	4.6
340	Boger-Soughe association	548	2.9
727	Dewar-Midraw association	518	2.8
338	McConnel-Pumper-Whirlo complex, 2-8% slopes	336	1.8
453	Kingsriver loam, drained, 0-2% slopes	322	1.7
217	Flue-loam, 0-2% slopes	278	1.5
1436	Rodock loam, 0-2% slopes	237	1.3
161	Bliss-Chiara association	226	1.2
734	Kelk silt loam, occasionally flooded, 0-2% slopes	181	1.0
360	Needle Peak silt loam	97	0.5
790	Rio King loam	67	0.4
501	Enko loamy very fine sand, 0-2% slopes	29	0.2
946	Soughe-Rubble land complex, 30-75% slopes	26	0.1
452	Kingsriver loam, 0-2% slopes	19	0.1
331	McConnel gravelly fine sandy loam, 2-8% slopes	3	0.0
	Total	**18,618**	**100.0**

Source: Cedar Creek 2018a

No evidence of previous or current irrigated agriculture was observed on any soils designated as Prime Farmland, Prime Farmland if irrigated and reclaimed of excess salts and sodium, or Farmland of Statewide Importance. Soils observed within the Survey area were very coarse; these soils, coupled with the lack of current irrigation potential, warrant exclusion from these special designations of land use potential (Cedar Creek 2018a).

2.3.4 Water Resources

The Project straddles the watershed divide (Figure 4) separating the Kings River Valley hydrographic basin (Rio King Subarea) and the Quinn River Valley hydrographic basin (Orovada Subarea), with most of the Project draining to Quinn River Valley. Topography surrounding the Project area is typical of the Basin and Range province, consisting of narrow, short mountain ranges with moderate to high relief bounded by extensional faults. The ranges are separated by broad valleys composed of basin fill and lacustrine deposits (Piteau 2019a).

Surface Water

Lands within the proposed Project area primarily drain eastward in the direction of the Quinn River Valley. A small portion of the proposed mine pit area and West WRSF resides in the Kings Valley hydrographic basin and thus drains west in the direction of Thacker Creek. Figure 4 shows the location of the surface water bodies in and around in the vicinity of the Project area. The proposed Project provides for on-site drainage and fluid management and does not include off-site discharge. As described below, the Project site does not contain jurisdictional Waters of the United States.

Perennial and ephemeral surface water locations located near the Project area include Thacker Creek, Pole Creek, Rock Creek, and Crowley Creek (Figure 4). Thacker Creek is a perennial stream fed by springs and is located nearest to the Project area. Pole and Rock creeks are ephemeral streams whose headwaters reside in the Montana Mountains and ultimately discharge to Crowley Creek when flow is present (Piteau 2019b). The lower reach of Crowley Creek, below the confluence with Rock Creek, is ephemeral while the upper reach is perennial. Stream flow is episodic except for the upper reaches of Crowley Creek, which is perennial.

In April 2018, three surface water monitoring stations were established in Crowley Creek, Upper Thacker Creek, and Lower Thacker Creek to assess baseflow conditions, evapotranspiration (ET) consumption, and monitor stream responses to storm events. Key findings from one-year of stream flow monitoring include the following:

- Discharge varies seasonally in Crowley Creek, peaking in March to April and tapering off during summer months. Dry, no flow conditions were observed from July through November 2018 corresponding to peak ET consumption.
- Flow in Upper Thacker Creek peaked in spring months (220 gallons per minute [gpm]) and tapered off during summer months (less than 5 gpm). Flow in Upper Thacker Creek is perennial due groundwater baseflow, which gains as the creek flows downstream (see point below).
- Flow at Lower Thacker Creek is also perennial, with smaller seasonal variation than observed at the Upper Thacker monitoring station. Springtime flows are approximately 270 gpm to 330 gpm during March and April with baseflow rates estimated to be 234 gpm.

Groundwater

The Project area is situated on a groundwater divide which is controlled by a series of north to south minor faults located approximately 1,000 feet east of the watershed divide (Figure 4). Groundwater to the west flows toward Thacker Creek and ultimately Kings River Valley while groundwater to the east of the divide flows toward Crowley Creek and Quinn River Valley (Piteau 2019a). Groundwater levels have been monitored through a series of ten grouted-in piezometers, nine active monitoring wells, and three production wells located across the Project area. Initial monitoring wells were drilled in 2011, five of which continue to function as monitoring wells. Four additional monitoring wells and nine grouted-in piezometers were drilled in 2018. Two production wells have been drilled and tested. An additional grouted-in piezometer and production well were drilled installed in the Quinn River Valley to evaluate the feasibility of a mine production water source from the alluvial aquifer.

Groundwater levels reside between 4,625 feet amsl to 5,034 feet amsl across the Project (Piteau 2019a). Water levels have remained steady through time except for well WSH-17. Most monitoring locations equilibrate in a period of months and then remain steady through time. Recharge is thus interpreted as predominantly bedrock percolation from higher and wetter elevations rather than from infiltration of surface runoff.

Geologic units in the Project area have been grouped into the following seven hydrogeologic units or zones of similar properties, with some compartmentalization of groundwater flow by faults:

- Basin fill alluvium (Quinn River and Kings River Valleys): Basin fill alluvium transitions from the basin margins towards the basin center and are formed by bulk alluvial, younger alluvial fans, and floodplain deposits. Materials are comprised of sub-angular gravels, sands, and silts, with generally less than 30 percent fine-grain content. Basin fill is incised by younger reworked alluvium and pinches out towards the basin margins.
- Thacker Pass Alluvium: Alluvium in Thacker Pass is generally thin, ranging from a few feet to less than 100 feet, and comprised of fine-grained sands, silt, and clays. Alluvium is thicker near structural fault boundaries (as observed in PZ18-04) where deposition is actively ongoing. Stream drainages, such as Thacker Creek, are thought to have some structural control, thus relatively thicker sequences of alluvial materials.
- Thacker Pass claystone/ash: The claystone unit is dominantly composed of moat sediments in the form of clays, lithified claystone, and ash. Thin beds of volcanic ash, ranging from less than one to five feet in thickness are regularly interbedded within claystone deposits. The claystone unit is approximately 300 to 400 feet thick in the Project area. This unit hosts the lithium-rich hectorite clays which compose the ore body and is the unit in which open pit mining will occur.
- Thacker Pass basal ash: The basal ash unit is found in the Southwest basin, south of Silica Hill (Figure 5), and lies stratigraphically below the claystone/ash unit. Basal ash is primarily

composed of rhyolitic volcanic unit ranging from 50 to 200 feet thick. Claystone is interbedded in the ash, but less abundant than in the claystone/ash unit.
- Thacker Pass indurated claystone: Indurated claystone is comprised of compacted, and possibly silicified, claystone beds with less abundant ash beds. They are located in the northeast sector of the Thacker Pass Project.
- Thacker Pass volcanic tuff: Volcanic tuff (primarily the Tuff of Long Ridge or McDermitt Tuff) is located stratigraphically below the claystone/ash unit. The top of the lithic tuff is a lithified, competent silicic volcanic rock which serves as the boundary between claystone and tuff. Groundwater flow principally occurs through secondary fractures and along structural features.
- Thacker Pass drainages: Stream channels in the Montana Range represent corridors of enhanced transmissivity, interpreted as tectonic shear zones. These zones connect springs and streams to upgradient recharge areas but are enveloped by unfractured bedrock.

Hydrogeologic testing was carried out to characterize hydrogeologic parameters (transmissivity, hydraulic conductivity, and storage) through a series tests spanning all field investigation campaigns. Testing methods included packer testing in core holes, injection/airlift testing, a 56-hour pumping test, a 72-hour pumping test, and a long term 35-day pumping test. The investigations analyzed 32 separate tests for the hydrogeologic units and summarized in Piteau's Baseline Hydrology Report (Piteau 2019b). The testing and characterization program led to several key conclusions pertaining to the Thacker Pass Project hydrogeologic system including:

- Faulting has compartmentalized groundwater as evidenced by the pumping tests conducted at PH-1 and TW18-02. The corridor of N-S minor faults is responsible for the elevated groundwater levels encountered while drilling WSH-5, WSH-6, WSH-17, and PH-1. The PH-1 pumping test was affected by nearby hydraulic barriers, accelerating the rate of drawdown. During the TW18-02 pumping test, NW – SE trending vent faults (and the uplifted block of volcanic tuff) hydraulically separated the pit area monitoring locations from the production well. Compartmentalization will affect the resulting geometry of drawdown during mine operations.
- Thacker Creek was hydraulically insulated from the 35-day pumping test by geologic contacts and N-S trending vent faults. This compartmentalization will reduce or possibly prevent impacts from mine dewatering.
- The basal ash unit in the southwest basin was the primary flow conduit for groundwater during the 35-day pumping test. The basal ash beds had approximately an order of

magnitude higher transmissivity and hydraulic conductivity values than the more common claystone/ash beds near the open pit which have a greater abundance of clay.

- QRPW18-01 is located in a very transmissive alluvial aquifer. Water production from QRPW18-01 will be sustainable at a rate of 4,000 gpm and can satisfy the water requirements for the project.

Recharge in Quinn River and Kings River valleys begins in mountain blocks with elevations above 5,000 feet, and is distributed to the alluvial basin via two processes: (1) deep bedrock recharge representing precipitation and snowmelt percolation in bedrock mountain blocks; and (2) runoff recharge derived from infiltration of surface water runoff as it flows across alluvium material along basin margins.

Groundwater discharge from Quinn River and Kings River valleys occurs primarily through four processes: (1) evapotranspiration through phreatophytes; (2) irrigation pumping; (3) seeps and springs; and (4) groundwater outflow to adjacent basins. Prior to the 1950s, discharge occurred primarily through evapotranspiration of phreatophytes. However, with the increase in agricultural production during the 1950-60s, irrigation pumping is the largest component of groundwater discharge.

Groundwater chemistry ranges from calcium/sodium – bicarbonate to calcium/sodium – sulfate types, possessing nearly equal components of calcium and sodium cations. Major ion chemistry of monitoring wells is like that of seeps and springs, with the exception that the seeps and springs are slightly enriched with regard to sodium. Chemistry correlation between monitoring wells and springs supports that springs, where they have perennial flow, are expressions of the groundwater system, and are recharged by younger groundwater with shorter flow paths and residence times. In highly transmissive drainage corridors, the residence time from recharge to spring flow is very short and ephemeral.

Minor ion composition of groundwater possesses elevated background concentrations of several constituents (arsenic, fluoride, iron, and manganese) which exceed Nevada Reference Values (NRV) for drinking water (NDEP Profile I). Groundwater at the Thacker Pass facilities does not currently serve as a source of drinking water and will not serve as a source of drinking water.

Seeps and Springs

Quarterly seep and spring surveys were performed within and in the vicinity of the Survey area (Figure 2) between May 2011 and March 2013 (WLC 2013). The primary objective of the 2011 to

2013 seep and spring inventory was to monitor the current locations and conditions of the 26 seeps and springs identified within the hydrologic study area and to collect water quality data. LNC re-initiated quarterly seep and spring surveys in March of 2018, which continued for four consecutive quarters (Piteau 2018). Surveys were a continuation of the quarterly seep and spring monitoring initiated in 2011 and followed Level I Stevens protocol guidelines (Stevens et al. 2016). A total of 56 seeps and springs have been identified within or near the Project area. Springs located within the Project area are shown on Figure 4.

Water chemistry analyses indicate that most springs exceed NRVs for arsenic (Piteau 2019b). This is representative of background groundwater chemistry conditions derived from host rock which is primarily volcanic tuff, claystone, or basalt and conducive to leaching arsenic. A number of other seeps and springs also demonstrated elevated levels of other constituents including aluminum, antimony, iron and magnesium (Piteau 2019b).

Jurisdictional Wetlands and Waters of the United States

Thacker Creek and Crowley Creek are the principal streams found to drain within the vicinity of the Project area. Both streams were verified as isolated channels that do not reach the Kings River or Quinn River (Redhorse 2018). The Survey area (Figure 2) contained approximately nine acres of channels and 28 acres of wetlands (Redhorse 2018). All features delineated were isolated with no connection to foreign or interstate commerce. All ephemeral channels lacked a significant nexus to any Traditional Navigable Water. Aquatic resources in the Survey area did not meet the criteria of jurisdictional Waters of the United States (Redhorse 2018). This was confirmed by the United States Army Corps of Engineers (USACE), which issued an Approved Jurisdictional Determination (AJD) on February 8, 2019 providing that no aquatic resources within the Survey area are regulated by the USACE (Identification Number SPK-2011-01263).

This finding was consistent with previous AJDs made by the USACE on October 11, 2012 and July 26, 2017 within the Survey area (Redhorse 2018). Both of the previous AJDs also determined that aquatic resources within the area were not subject to federal Clean Water Act Section 404 permitting requirements because all wetlands and streams within the Survey area were isolated with no interstate or foreign commerce connection.

2.3.5 Vegetation

SWCA Environmental Consultants (SWCA) performed botanical baseline studies for vegetation communities, noxious weeds, and BLM federally listed plant species in the Survey area (SWCA 2018). The baseline studies included the following activities:

- Mapping of general vegetation communities through the Survey area;
- Reviewing listed plants of all designations for their potential to occur within the Survey area and conducting surveys within all potentially suitable habitat;
- Surveying and mapping all noxious weeds within the Survey area; and,
- Recording a full species list of flora found within the Survey area.

The following subsections discuss the methods employed in each of the vegetation surveys, the results, and conclusions.

General Vegetation

A wildland fire burned the Survey area and vicinity in 1963. Following the wildland fire, the Survey area was part of a larger area seeded by the BLM Thacker Pass seeding project (BLM Project Number [No.] N2-R-235). The area was plowed with rubber-tired tractors and then seeded with a combination of crested wheatgrass (*Agropyron cristatum*) and yellow sweetclover (*Melilotus officinalis*). A 1,000-acre area in the northeast portion of the plow zone was seeded with Russian wildrye (*Psathyrostachys juncea*) (BLM 2009).

The Survey area includes a combination of native vegetation and disturbance (i.e., two-track roads and existing improved roads). In part, due to recent fires and re-seeding efforts across the Survey area, ecological site descriptions and associated state-and-transition models, rather than the Southwest Regional Gap Analysis Project, were utilized to determine habitat potential, given current site potential and restoration and transition pathways into other vegetation community phases, which may provide unique habitat potential.

Most of the Survey area is comprised mostly of the Dewar-Dacker soil association, which consists of fine sandy and gravely clay loams, 8 to 10 inches (SWCA 2018). The presence of gravel and cobble creates a well-drained soil with little water-holding capacity within rooting depth of plants. This site, prior to high-severity fire, was dominated by Thurber's needlegrass (*Achnatherum thurberianum*) and Wyoming big sagebrush (*Artemisia tridentata* var. *wyomingensis*). The introduction of invasive species (namely cheatgrass [*Bromus tectorum*] and mustards [*Sisymbrium altissimum*, *Lepidium perfoliatum*, and *Descurainnia sophia*]), grazing without perennial grass recovery, and high severity fire caused a transition from a sagebrush/perennial grass mosaic pattern to an invasive grassland with sprouting shrubs (*rabbitbrush* [*Chrysothamnus* sp.]). The most common grasses found on-site during surveys in the summer of 2018 were cheatgrass, squirreltail (*Elymus elymoides*), Great Basin wild rye (*Leymus cinereus*), and Sandberg bluegrass (*Poa secunda*). The most common forbs consisted of clasping pepperweed (*Lepidium perfoliatum*) and tall tumble mustard (*Sisymbrium altissimum*). The dominant shrubs found on-site include Wyoming big sagebrush, yellow rabbitbrush (*Chrysothamnus viscidiflorus*), rubber rabbitbrush (*Ericameria nauseosa*), and greasewood.

The northwest edge of the Survey area is higher in elevation and the soils are generally rockier. This area is represented by Loamy 8 to 10 inches site. This ecological site is somewhat like the site noted above in that the reference community is dominated by Wyoming big sagebrush and Thurber's needlegrass; however, Utah juniper (*Juniperus utahensis*) may also be present but not dominant. During surveys in the summer of 2018, this site was found to be dominated by grasses. Cheatgrass was the most common, followed by Great Basin wild rye. The most common forb was tall tumble mustard. Shrubs found in this site were sparse (seven percent ground cover) but included Wyoming big sagebrush, silver sagebrush (*Artemesia cana*), and greasewood (SWCA 2018).

The southeast portion of the Survey area grades into a lower-elevation salt scrub ecosystem (Loamy 5 to 8 inches). Excessive herbivory and fire have changed the vegetation composition severely, depleting the perennial grasses and palatable shrub component. Sandberg bluegrass and cheatgrass now dominate, with shadscale saltbrush and rabbitbrush a minor component. During surveys in the summer of 2018 (SWCA 2018), this site was found to be dominated by grasses (82 percent ground cover). Cheatgrass was the most common, followed by Sandberg bluegrass, Great Basin wild rye, and foxtail barley (*Hordeum jubatum*). Forbs were primarily tall tumble mustard, Russian thistle (*Salsola tragus*), and clasping pepperweed. Shrubs found in this site were sparse but included Wyoming big sagebrush, shadscale saltbrush, and greasewood.

Special Status Vegetation

Special status plant species of concern have not been recorded to occur within the Survey area but have been recorded near the Survey area. Specifically, one BLM sensitive species, Crosby's buckwheat (*Eriogonum crosbyae*), was found to occur southwest and outside of the Survey area (SWCA 2018).

Noxious and Invasive Weeds

No noxious weeds were observed in the Survey area during a noxious weed survey performed in May 2017 (SRK 2017), nor during the June 2018 botanical survey (SWCA 2018). The surveys recorded

11 invasive, nonnative species within the Survey area: bull thistle (*Cirsium vulgare*), hairy whitetop (*Cardaria pubescens*), cheatgrass, western tansy mustard (*Descurainnia pinnata*), Russian thistle, common dandelion (*Taraxacum officinale*), desert madwort (*Alyssum desertorum*), crossflower (*Chorispora tenella*), prickly lettuce (*Lactuca serriola*), bur buttercup (*Ceratocephala testiculata*), and rough cocklebur (*Xanthium strumarium*). Cheatgrass was the most extensively established invasive species within the Survey area and occurred on all aspects of slopes, ranging from gentle to steep. All invasive, nonnative species tended to occur in disturbed open areas, along roadsides and other clearings, near springs, and in other similar areas where native vegetation was sparse or previously removed.

2.3.6 Wildlife

General Wildlife

In 2018, SWCA coordinated baseline wildlife surveys with the BLM Winnemucca District Office/Humboldt River Field Office and the Nevada Department of Wildlife (NDOW) to determine suitable protocols and assure Project data accuracy (SWCA 2019a). SWCA included a desktop review of primary literature and peer-reviewed databases as part of its wildlife study in the Survey area (Figure 2).

Wildlife species observed in the Survey area included pronghorn antelope (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), coyotes (*Canis latrans*), cottontails (*Sylvilagus nuttallii*) and black-tailed jackrabbits (*Lepus californicus*), desert horned lizard (*Phrynosoma platyrhinos*), sagebrush lizard (*Sceloporus graciosus*), Great Basin rattlesnake (*Crotalus oreganus lutosus*), and Great Basin gopher snake (*Pituophis catenifer deserticola*).

Biologists conducted separate surveys for land birds, burrowing owls, bats, and pygmy rabbit (SWCA 2019a). SWCA detected a total of 1,228 birds and identified a total of 54 species of birds through its land bird surveys. Most species were grassland/shrub residents. The most commonly detected species (comprising 78 percent of all bird detected) included Horned lark (*Eremophila alpestris*), western meadowlark (*Sturnella neglecta*), brewer's sparrow (*Spizella breweri*), mourning dove (*Zenaida macroura*), sage sparrow (*Artemisiospiza nevadensis*), lark sparrow (*Chondestes grammacus*), black-throated sparrow (*Amphispiza bilineata*), cliff swallow (*Petrochelidon pyrrhonota*), common raven (*Corvus corax*), and long-billed curlew (*Numenius americanus*).

Burrowing owl surveys were conducted by SWCA in accordance with BLM and NDOW guidance. A multitude of owls were seen throughout the Survey area including long-eared owls (*Asio otus*), shorteared owls, and burrowing owls. Most owl observations were near the reservoir located west and outside of the Project area (SWCA 2019a).

Bat acoustic monitoring was performed in the spring, early summer, and fall of 2018 (SWCA 2019a). Monitoring diverse habitat distributed throughout the Survey area contributed to the development of the comprehensive species list.

Suitable habitat for pygmy rabbits (*Brachylagus idahoensis*), typically found in sagebrush steppe areas within the Great Basin and Intermountain regions (Gabler et al. 2001) is declining in areas because of grazing, agriculture, and development (Sanchez et al. 2009). SWCA (2019a) determined that approximately 19 percent of the Survey area was suitable pygmy rabbit habitat and was surveyed for pygmy rabbit sign. Of the 3,562 acres surveyed, zero acres were found to be active and occupied pygmy rabbit habitat. Signs of pygmy rabbit use of the Survey area consisted of 39 inactive burrows (intact inactive, historic, or collapsed) and ten sightings of pellets unassociated with a burrow.

Special Status Wildlife

A formal raptor survey was performed by Wildlife Resource Consultants (WRC) in 2018 and 2019. A total of 207 nests were observed in or within the ten-mile buffer around the Survey area in the 2019 survey (WRC 2019). Seventy-six nests were classified as likely belonging to golden eagles. Thirteen nests were classified as occupied. Six nests classified as golden eagle nests were occupied, all by golden eagles. Breeding attempts were confirmed at six golden eagle nests, all by golden eagles.

Sage-Grouse

The Project sits within the Lone Willow Population Management Unit (PMU), which is one of seven PMUs located within Humboldt County used to describe and manage sage-grouse habitat. According to the BLM, portions of the Survey area are identified as Priority Habitat Management Area (PHMA), General Habitat Management Area (GHMA), and non-habitat (SWCA 2019b).

Other habitat in the Survey area, and primarily in the Project area, has been considerably modified by recent and historical wildfires and contiguous infestations of invasive annual grasses, primarily cheatgrass. The landscape is generally devoid of large, extensive and healthy sagebrush assemblages, with patchy occurrences of sagebrush in partially decadent stands and evidence of severe defoliation from the Aroga moth. Since 2011, LNC has performed six independent baseline surveys for sage-grouse. No sage-grouse or sage-grouse signs have been identified within the Survey area. In 2018, SWCA performed intensive surveys within the Project area per the State of Nevada

Conservation Credit System framework. The 2018 surveys evaluated the quantified habitat function of sage-grouse habitat throughout the Project area and calculated the number of debits that would result from development and operation of the Project.

2.3.7 Visual Resources

The Project area is located in the southern portion of the McDermitt Caldera and sits at the southern end of the Montana Mountains, with its western border occurring east of Thacker Creek. Physiography is characterized by rolling topography trending eastward and slopes generally ranging from one to five percent.

Vegetation colors within the Project area include light green and grayish tan. Soils range from light grey to reddish tan, and rock colors vary from medium gray to light brown.

The Project area is predominately located in a Class II visual resource management (VRM) area. The objective of the Class II VRM category is to retain the existing character of the landscape. A portion on the east side of the Project area is classified as a Class III VRM area. The Class III objective is to allow for management activities to partially retain the existing character of the landscape (BLM 2015). Inventory classes are informational in nature and provide the basis for considering visual values in the resource management planning process, rather than as a basis for constraining or limiting surface disturbing activities.

During operations, based on Key Observation Points, views of Project facilities will primarily be observed by motorists on SR 293, with lesser visual effects to the east of the Project at points near Pole Creek Road. The mine pit will be developed in a phased approach and will be backfilled and reclaimed concurrently to minimize visual impacts. Short-term visual intrusion may appear as to different portions of the mine pit depending on the phasing sequence. Form and line of the land will change as the WRSFs and the CTFS are filled. The facilities will be sloped and reclaimed to blend with the landscape, keeping color and texture in place, and permanent contrasts from the current view will be minimal.

2.3.8 Cultural Resources

Far Western Anthropological Research Group performed a baseline cultural resources investigation (Far Western 2018) to comply with Section 106 of the National Historic Preservation Act of 1966, as amended, and to support comprehensive effects analyses under the National Environmental Protection Act. Previous inventories within the Survey area were reviewed subject to BLM guidelines for coverage and data adequacy. The Survey area falls within the Thacker Pass Obsidian Procurement Area, an element of the National Register of Historic Places (National Register) eligible Double H/Whitehorse Obsidian Procurement District.

The Class III cultural resources inventory identified and documented 762 archaeological sites and 170 isolated finds (two sites outside the Survey area were also documented). During field sessions between May and August 2018, Far Western recorded and evaluated 720 newly identified sites and updated records for 42 previously documented sites (Far Western 2018). Most of these sites were composed of Simple Flaked Stone Assemblages, reflecting lithic procurement and reduction activities related to the presence of naturally occurring obsidian. Historic-era resources in the Survey area were uncommon and primarily composed of roads and sites related to ranching or the Civilian Conservation Corps.

2.3.9 Socioeconomics

In 2017, the University Center for Economic Development at the University of Nevada, Reno, prepared a report to estimate the economic, fiscal, and community impacts that construction and operation of a new lithium mine would have in the Project area. Key social and economic characteristics of Humboldt County are presented below (UCED 2017):

- Over 52 percent of Humboldt County's population is between 25 and 65 years of age.
- Educational attainment for residents 25 years and older reported that approximately 15 percent of the population had less than a 12th grade education, nearly 37 percent had a high school diploma or their General Education Diploma, and nearly 48 percent of residents received post-high school education.
- In 2017, Humboldt County reported 7,864 housing units with approximately 59 percent being owner-occupied, 27 percent being rented, and 14 percent vacant. Nearly 32 percent of the vacant housing was classified as seasonal or for recreational uses.
- The top three industries accounted for over 80 percent of the total county's employment. The service industry accounted for approximately 41.5 percent of total employment, followed by the agriculture/mining sector at 28.5 percent, and retail trade at 10.4 percent.
- Approximately 40.5 percent of Humboldt County residents 16 years and older were employed in white collar jobs, and approximately 39 percent were employed in blue collar jobs. The remaining 20 percent of the population was employed in service occupations.
- Nearly 54 percent of households had annual income between $35,000 and $99,999.

2.3.10 Livestock Grazing

The Project area contains portions of three livestock grazing allotments: Kings River Allotment (consisting of 79,195 acres), Pole Creek Allotment (consisting of 34,501 acres), and Crowley Creek Allotment (consisting of 50,463 acres).

2.3.11 Floodplains

The Project area is located in National Flood Hazard "Zone X – Area of Minimal Flood Hazard," according to the Federal Emergency Management Agency (FEMA 2019). This zone is a low-risk zone and there are no special requirements for construction in areas of minimal flood hazard.

2.4 Authorized Operations

LNC has received several authorizations for exploration and mining, including mineral exploration activities. Table 2-3 shows LNC's authorized disturbance in the Project area to date.

Table 2-3 Project Area Authorized Disturbance

Project Name	BLM Casefile Number	Authorized Date	Authorized Disturbances (acres)
Kings Valley Lithium Exploration Project	N85255	01/25/2010	75.0
Kings Valley Clay Mine (KVCM)	N91547	05/15/2014	114.0
Quinn River Valley Test Wells NOI	N94510	02/02/2017	3.5
Far East NOI	N95396	05/23/2017	1.5
		Total	194.0

Note: NOI = Notice of Intent

LNC has permitted and performed mineral exploration activities within the Project area since 2007, including construction of drill sites, access roads, and a 114-acre hectorite clay mine (KVCM) that was never developed. The Kings Valley Lithium Exploration Project POO was analyzed under the Kings Valley Clay Mine Environmental Assessment (DOI-BLM-NV-W010-2010-0001-EA) and a Finding of No Significant Impact was signed (BLM 2010). The Kings Valley Clay Mine POO Project was analyzed under the Kings Valley Clay Mine Environmental Assessment (DOI-BLM-NV-W010-2013-0046-EA) and a Finding of No Significant Impact was signed (BLM 2014).

LNC intends to incorporate all existing disturbance into this Project. Authorization of this Plan will terminate the KVCM POO (N91547), Kings Valley Lithium Exploration Project (N85255), Far East NOI (N95396), and the Quinn River Valley Test Wells NOI (N94510) and all reclamation requirements.

2.4.1 Exploration

In 1975, Chevron began a uranium exploration program in the volcanic rocks located throughout the McDermitt Caldera. The United States Geological Survey notified Chevron on the presence of anomalous concentrations of lithium associated with the caldera. Chevron initiated a clay analysis program, which confirmed the presence of high lithium concentrations using airborne gamma ray spectrometry, although their exploration program continued to focus on uranium (Advisian 2018).

Chevron drilled 234 holes in the 1970s and 1980s that broadly outlined the lithium deposit. Between 1980 and 1987, Chevron conducted a drilling program that focused on lithium targets and conducted extensive metallurgical testing to determine the viability of extracting lithium from the clays.

In 2007, Western Lithium USA Corporation (WLC) began an exploration drilling program focused on the southern portion of the caldera. WLC drilled 232 exploration holes over the course of four years in the Project area, which identified an anomalously high-grade lithium deposit. As part of a merger, WLC officially changed its name to LAC in March of 2016 and ownership of the Project was placed in LAC's Nevada-based wholly owned subsidiary, Lithium Nevada Corporation (LNC). The Kings Valley Project was also changed to the Lithium Nevada Project (now known as the Thacker Pass Project).

2.4.2 Mining

In 2012, LNC (then WLC) proposed the Kings Valley Clay Mine (KVCM). A Plan of Operations (POO) (BLM Casefile Number N91547) and Reclamation Permit (RP# 0357) for the KVCM included two open pits, two WRSFs, a mobile crusher, exploration area, stormwater controls, and ancillary facilities. The KVCM POO and Reclamation Permit were submitted to BLM and the Nevada Division of Environmental Protection (NDEP) Bureau of Mining Regulation and Reclamation (BMRR) in 2012. The KVCM POO was analyzed by an Environmental Assessment and approved in May 2014. The KVCM was never developed due to a decrease in hectorite clay demand immediately following its approval. Approval of this Plan will terminate the KVCM POO (N91547) and its reclamation requirements (RP#0357), as disturbance for this Project will incorporate the authorized KVCM disturbance.

3 Proposed Operations

LNC proposes to construct, operate, reclaim, and close an open pit claystone lithium mine and lithium processing operation located on public lands in northern Humboldt County, Nevada. LNC will develop the Project in two phases (Phase 1 and Phase 2) over the 41-year mine life providing employment to approximately 300 workers during the operational phase.

The proposed activities and facilities associated with the Project include (Figure 6):

- Development of an open pit mine;
- Concurrent backfill of the open pit using waste rock and coarse gangue material;
- Construction of two WRSFs for permanent storage of excavated mine waste rock;
- Construction and operation of mine facilities;
- Construction of a Run-of-Mine (ROM) stockpile;
- Construction and operation of an attrition scrubbing process including an ore slurry pipeline;
- Construction of a coarse gangue stockpile;
- Construction and operation of a lithium processing facility;
- Construction and operation of a sulfuric acid plant and associated energy production;
- Construction and operation of a battery production facility;
- Construction and operation of a Clay Tailings Filter Stack (CTFS);
- Construction and maintenance of haul and secondary roads;
- Construction and maintenance of stormwater management infrastructures (diversions and sediment ponds);
- Construction of three growth media stockpiles;
- Construction of electricity transmission lines, substations, and distribution;
- Installation of water supply, conveyance pipeline, booster pump stations, and storage infrastructure;
- Construction of ancillary facilities to support the Project such as septic systems, communication towers, guard shacks, reclaim ponds, monitoring wells, weather station, fiber optic line, buffer areas, and fencing.

LNC developed an Options Analysis (LNC 2019a) to present the range of options considered during planning of Project facilities. The Options Analysis also presents the rationale used to select and develop the proposed Project discussed in Section 3. LNC considered potential environmental and social impacts that could result from construction, operation, and closure of the Project and identified actions to minimize or eliminate potential impacts, to the extent practicable.

3.1 Plan Purpose and Need for the Project

LNC is submitting this POO and Reclamation Plan (Plan) to develop the Project in accordance with BLM Surface Management Regulations under 43 CFR 3809, Surface Occupancy regulations under 43 CFR 3715, and Nevada reclamation regulations under Nevada Administrative Code (NAC) 519A.

The purpose of this proposed Federal action is to seek authorization to construct and operate a major lithium mine, lithium processing plant, and ancillary facilities on public lands to satisfy the Nation's need for lithium, a critical mineral vital to the Nation's security and economic prosperity; and to satisfy the world's growing demand for a constant, dependable supply of quality lithium products, a fundamental component of lithium-ion batteries.

The Reclamation Plan includes measures to be implemented to prevent unnecessary or undue degradation of public lands by operations authorized under the mining laws. LNC intends to develop a premier lithium operation in the United States through an innovative processing approach, engagement with partners, communities and customers, and a commitment to principled entrepreneurship and sustainable development.

The need for the Project is to develop the lithium resources, using an economically viable and sustainable method, in accordance with federal laws and regulations, and to allow LNC to exercise its right to develop mineral resources. The versatile properties of lithium make it a sought-after metal for many applications. Although lithium is commonly used in the manufacture of ceramics, pharmaceuticals, alloys, and lubricants, significant future demand increases are projected because of its widespread use in electric vehicle batteries and stationary energy storage. The only lithium production in the United States in recent years has been from a small brine operation in Nevada.

Due to rapidly rising demand by the uptake in electric vehicles and energy storage, securing lithium supply has become a top priority for battery producers and vehicle manufacturers. Lithium is contained on a list of 35 critical minerals defined by the United State Department of the Interior (83 Federal Register [FR] 23295) pursuant to Executive Order 13817 of December 20, 2017, "A Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals." The executive order includes a policy clause for "streamlining leasing and permitting processes to expedite exploration, production, processing, reprocessing, recycling, and domestic refining of critical minerals."

3.2 Environmental Stewardship and Sustainability

LNC has a strong regard for environmental stewardship and long-term sustainability. LNC is committed to developing a premier lithium operation through an innovative approach to implementing sustainable mining practices involving the environment; resource efficiencies; engagement with partners, communities and customers; safety; and the economy. LNC's initial commitment includes significantly reducing the Project's carbon emissions, reducing water needs by recycling water, and protecting ecologically sensitive areas in the Montana Mountains. Implementing responsible mining practices while also demonstrating leadership in environmental sustainability is central to LNC's business strategy and the development of this Plan.

Emission reductions and water recycling will take place at the process facilities. Steam created in the sulfuric acid plant will be condensed into liquid by all the steam users and recycled within the acid plant and the process facilities. Steam will also be used to create electricity, reducing the need for carbon-based power generation; process water from the lithium process facilities will be recycled and used to slurry solids; and sustainability considerations guided the development of the plant site location and energy infrastructure, as addressed in the accompanying Options Analysis (LNC 2019a).

To avoid potential impacts to ecologically sensitive areas in the Montana Mountains, in 2017 LNC intensified exploration for additional lithium resources specifically at the Thacker Pass area. The objective of the 2017 exploration program was to identify a resource of scale while excluding the known lithium resources in more ecologically sensitive areas. The 2017 and 2018 exploration results revealed additional high-grade and near surface lithium mineralization northwest of the original pit area at Thacker Pass, allowing LNC to develop the current Plan that avoids potential direct impacts to resources within the Montana Mountains.

3.3 Thacker Pass Project

LNC is proposing to incorporate all existing authorizations for exploration (Table 2-3) and mining in this Plan, including all relevant aspects of activities under those authorizations in the reclamation estimate for this Project. The current mine life schedule results in 41 years of commercial mining production with two years of pre-production waste rock removal and stripping concurrent with process facility construction and at least five years of reclamation activities after cessation of mining operations.

3.3.1 Site Access

The proposed Project site will be accessed via three entrance points from SR 293, as shown on Figure 7. The main entrance will connect to SR 293, approximately 21 miles west of the Highway 95 junction, will provide access to the main parking lot for the administration offices and related facilities, battery production complex, and other haul and utilities access road. A dedicated separate entrance for reagent trucks, east of the main entrance, will directly access the process plant and sulfuric acid plant site. The third access point located approximately two miles to the west of the main entrance will provide access to the mine facilities area. These accesses will be constructed in accordance with Nevada Department of Transportation (NDOT) design standards. All access to the Project site will be controlled by new fencing and guard shacks or other control points constructed by the main access roads.

3.3.2 Mine Development (Phase 1 and Phase 2)

The proposed Project layout, as shown on Figure 7, incorporates both Phase 1 and Phase 2. Phase 1 includes mining and processing for the first 4 years of the mine life. Phase 2 is planned to occur from years 5 to 41, after which the Project will enter the reclamation and closure period (for a minimum of five years). Construction of the Project will occur over a period of approximately two years prior to commercial production.

The Phase 1 average mining rate from the pit will be approximately 7.7 million short tons per year (tpy), on a wet basis, to produce an average of approximately 3.1 million tpy of ore, on a wet basis, for an annual production of approximately 33,000 tpy of lithium carbonate equivalent (LCE) end-products. The Phase 2 average mining rate will be approximately 11.0 million tpy, on a wet basis, to produce an average of approximately 6.2 million tpy of ore, on a wet basis, for an annual production of approximately 66,000 tpy of LCE end-products.

Phase 1 LCE end-products will consist of lithium carbonate, lithium hydroxide monohydrate, lithium sulfide, and lithium metal. Additionally, battery and/or battery components will be produced from one or more LCE end-products. The LCE end-products for the Phase 2 expansion will be driven by market conditions but will likely involve additional production capacity of the same LCE end-products produced in Phase 1. Since the lithium market is evolving and the demand for final products is expected to change over the years that the mine is in operation, production will likely evolve to meet market demand.

3.3.3 Mine and process operations will operate 365 days per year, 24 hours per day. Operation Time Frame

Lithium mining and processing will be conducted for a period of approximately 41 years. Operations are planned to run 365 days per year, 24 hours per day except every two years when the sulfuric acid plant is down for maintenance. During the shutdown period, mining operations will continue to take place wherever possible. Additionally, operations staff will continue to operate where needed in the process facilities. These areas include water and air systems operations. Maintenance work will also take place at this time. These activities will keep the Project running on the 365 days per year, 24 hours per day schedule. Pending LNC receiving the required authorizations and permits for the Project, pre-stripping is scheduled to begin in 2021 and ore processing in 2022 (LNC 2018). Phase 1 construction would commence in the first quarter of 2021 with mining activities estimated to commence in late 2021. Phase 2 is planned to occur from years 5 to 41, while recognizing that the development of Phase 2 is contingent and dependent upon several factors including market conditions. LNC will continue with Phase 1 operations until such time as Phase 2 activities are approved and constructed.

LNC will complete mining and processing activities in 2065, after which, reclamation, site closure activities, and post-closure monitoring will occur on-site for a minimum of five years. LNC will initiate concurrent reclamation of areas no longer required for operations at the earliest economically and technically feasible time over the mine life. These time frames are subject to change based on regulatory approvals, market conditions, and other factors.

3.3.4 Proposed Disturbance

A summary of the existing (or authorized) disturbance areas, existing disturbance area to date, and proposed total disturbance areas is presented in Table 3-1. Previously authorized disturbance within the Project area, as discussed in Section 2.4, will be incorporated into the Project. The proposed Project area will encompass approximately 10,468 acres, all on public lands administered by the BLM.

Table 3-1 Proposed Estimated Disturbance Areas

Facility	Authorized Surface Disturbance (acres)	Existing Disturbance to Date (acres)[1]	Proposed Total Disturbance (acres)
Previous Authorizations			
Kings Valley Lithium Exploration Project	75	50.5[2]	(50.5)[2]
Kings Valley Clay Mine	114	4.6	(4.6)
Quinn River Valley Test Wells NOI	3.5	1.5	(1.5)
Far East NOI	1.5	0.2	0.2
Proposed Project			
Mine Pit	0	0	1,099.8
West WRSF	0	0	160.7
East WRSF	0	0	137.2
Mine Facilities, Run-of-Mine Stockpile, Attrition Scrubbing	0	0	48.3
Coarse Gangue Stockpile	0	0	318.3
Processing Facility (Lithium and Sulfuric Acid Plant)	0	0	555.3
Clay Tailings Filter Stack	0	0	1,166.1
Mine Facilities Power Line, Quinn Power Line, and Water Supply	0	0	267.7
Exploration	0	0	150.0
Inter-Facility Disturbance[3]	0	0	1,641.4
Total	194	56.8	5,545.0

Note: [1] Disturbance totals as of December 31, 2018 (with the exception of footnote #2).
[2] The 2019 geotechnical disturbance was permitted under the Kings Valley Lithium Exploration Project Plan of Operations Work Plan #11. Total acreage shown includes 4.6 acres of authorized disturbance for the 2019 geotechnical disturbance; not actual on the ground disturbance. Actual disturbance limits for the 2019 geotechnical disturbance will be provided to the BLM in March 2020 when annual disturbance acreages are submitted for the 2019 year.
[3] Includes haul and secondary roads, growth media stockpiles, stormwater infrastructure (diversions and ponds), septic systems, communication towers, guard shacks, reclaim ponds, weather station, fiber optic line, buffer areas, and fencing.

3.3.5 Workforce

Initial construction of facilities for the Project will employ approximately 1,000 personnel at its peak. Hiring will begin with salaried staff to support project development and operational readiness activities. Mine workforce hiring will start prior to the pre-production timeframe to allow for training before equipment arrives at the Project site. Process plant facilities hiring will occur primarily during the construction phase. Approximately 300 direct employees will be needed to support the operational phase of the Project.

An estimated breakdown of direct employees per major operational area for both Project phases is provided in Table 3-2.

Table 3-2 Expected Project Workforce

Operational Areas	Phase 1	Phase 2
Mining		
Mine Management	4	9
Administration	4	5
Mine Operations[1]	44	105
Maintenance Labor	12	32
Technical Services	5	4
Lithium Processing		
Plant Management	4	4
Plant Operations Labor	23	40
Plant Maintenance Labor	19	22
Engineering	2	2
Laboratory and Quality Control	8	8
Sulfuric Acid Plant		
Plant Operations[1]	22	38
Plant Maintenance	8	11
General and Administrative		
Management	2	2
Health and Safety	6	7
Security	2	2
Human Resources	1	1
Accounting	5	6
Procurement and Warehouse	12	15
Total	183	313

Note: [1] LNC may elect to contract a portion of the mine operations as well as the operation of the sulfuric acid plant.

The Project will provide employment opportunities through mining and processing operations, in addition to reclamation, site closure, and post-closure monitoring activities.

3.4 Open Pit Mining

Mining will be conducted by open pit method throughout the 41-year mine life. LNC proposes to mine ore using either truck loaders, a surface miner, or excavators, then haul the ore to the ROM stockpile located south of the open pit (Figure 7). Estimated acres of disturbance associated with the proposed mine pit are presented in Table 3-1. Waste rock generated during mining activities will be placed primarily in the proposed WRSFs (Figure 7) before being directly placed as backfill material in the pit.

Areas of the open pit will expose basalt outcrops (shown on Figures 7 and 8) that may require occasional blasting. LNC may utilize all or a percentage of the basalt as road base material and construction of mine facilities. For these applications, LNC will stockpile the basalt within the mine pit disturbance area and will use a mobile unit to crush the material prior to using the material for road base and construction of mine facilities. Approximately 230.0 M CY of ore will be mined, and 190.2 M CY of waste rock material will be generated over the mine life.

LNC will conduct mining operations in an open pit potentially using a modified panel mining method. A section along the length of the pit will be mined to the entire width and depth before proceeding to the next section of the pit. Mining will begin in the western side of the proposed pit (West Pit). After the pit is fully developed, mining can proceed easterly by concurrently mining the North Pit and the South Pit (Figure 8). Material handling will be conducted using equipment discussed in Section 3.23.

A detail of the open pit and cross section(s) is shown in Figure 8. The proposed Project pit has a typical bench design consisting of approximately 16-foot mining benches, double-benched to create approximately 33-foot highwalls between catch benches. The catch benches are typically approximately 16 feet wide.

A delineation between soil and bedrock occurs approximately 98 feet deep. The inter-ramp angle for the soil portion is approximately 25 degrees for most areas of the pit. The bedrock pit wall will have overall slopes of approximately 47 degrees for portions less than 295 feet deep and approximately 39 degrees for the deeper portion of the highwall (295 feet to 394 feet deep) depending on material and current safety factors.

3.4.1 Pit Dewatering

A numerical groundwater flow model has been developed to assess potential impacts to local and regional groundwater systems and to predict inflow to the open pit over the period of active mining. Pit dewatering is not expected to be required as part of the Project until mining advances into the southeast portion of the pit area, currently projected to be in 2055. The peak dewatering rate is expected to be approximately 90 gpm when mining occurs in the southeast portion of the mine area, projected to be in 2065. LNC will use sump pumps to dewater and directly fill water trucks for dust suppression. No storage tanks or wells will be needed to support dewatering.

Backfill of the open pit will preclude the formation of a pit lake at cessation of mining (further discussed in Section 3.4.2).

3.4.2 Pit Backfilling

Waste rock material will be placed in the WRSF and coarse gangue material in the coarse gangue stockpile as described in Sections 3.4 and 3.8. By approximately 2026, pit development will have advanced enough to accommodate a portion of the waste rock material to be placed as backfill, with coarse gangue material being used as backfill by 2035. Backfill placement would be completed by approximately 2067. Backfill volumes will steadily increase until pit advancement eventually allows all waste rock and coarse gangue material to be placed back in the pit concurrently with mining operations throughout the remainder of the mine life. Approximately 144.3 M CY of waste rock and 75.2 M CY of coarse gangue material will be placed in the open pit as backfill throughout the operational phase of the Project.

The open pit backfill plan and partial backfill cross-sections are presented in Figure 9. At closure, a slight depression will occur in the pit area as a portion of the highwall will remain exposed. The backfill plan was optimized by contouring the remaining highwall at closure to blend with surrounding topography, promote proper drainage, and avoid ponding.

The proposed backfill approach reduces the interim exposed pit area where impounded waters could form a temporary lake. Final topography of the backfilled pit will induce positive surface water drainage from the west, at an elevation of 5,366 feet amsl, toward the east where the backfill would reach an elevation of approximately 4,880 feet amsl. Planned backfill material will be, on average, approximately 200 feet thick, with the thickest portions of material placed in the central pit area.

Composition of bulk backfill material would be approximately 65 percent waste rock and 35 percent coarse gangue. Waste rock is classified at a lithium cutoff grade of 2,000 ppm and is comprised mainly of Claystone and Ash geochemical units, although small fractions of Basalt, Tuff, and Hot Pot Zone (HPZ) materials will be included. Coarse gangue is separated during the attrition scrubbing process, which mechanically rinses and breaks down claystone ore (further described in Section 3.8). The process of physical scrubbing results in a sand and gravel gangue material which has been double rinsed by water. No leaching or chemical rinsing occurs to gangue material.

Waste rock material has undergone a comprehensive geochemical characterization program in accordance with BLM and NDEP guidance (BLM 2013 and NDEP-BMRR 2018) as described in Section 3.5.1 below. As part of this evaluation, total sulfur and calcium were used to assign an acid generation potential (AGP) and acid neutralization potential (ANP) value as well as a neutralization Potential Ratio (NPR) value to each mine block within the geological block model. From the block model, the bulk geochemical nature of waste rock to be used in backfill was estimated to have an

NPR of approximately 15.7, which is classified as Non-Potentially Acid Generating (Non-PAG). Neutralization potential (NP) is abundant in Claystone and Ash waste rock with a bulk average value of approximately 150 T $CaCO_3$/kT (expression of NP units as tons of calcium carbonate per thousand tons of material). Acid potential (AP) related to the abundance of sulfide minerals, primarily pyrite, is estimated to be approximately 9.5 T $CaCO_3$/kT. Kinetic testing of waste rock materials confirms the lack of acid-generation, although antimony and arsenic are consistently released at concentrations above NRVs through the test's duration. These are common elements associated with volcanic rocks with arsenic abundant in background groundwater. Other constituents were initially flushed from the humidity cell test from weeks 0 to 4 at concentrations above the NRV including fluoride, iron, magnesium, manganese, sulfate, and uranium. However, these constituents equilibrate to lower concentrations below the NRVs after the initial flush. Several non-drinking water regulated constituents such as lithium and molybdenum, also initially have high mass releases but equilibrate to concentrations several orders of magnitude lower.

Coarse gangue by-product would first be used in pit backfill beginning in 2035, approximately 13 years into the Project. Geochemical testing of gangue is ongoing and will continue as mining advances to ensure material used in backfilling meets appropriate criteria. The inclusion of coarse gangue material is not essential to backfill the pit to an elevation of 50-feet above recovered water levels but including the gangue in backfill is more conducive to mining and provides volume to easily construct surface water drainage. Coarse gangue material is subdivided into two geochemical units, oxidized gangue and unoxidized gangue, referring to the oxidization character of the source ore. Geochemical test results are available for nine samples of oxidized gangue generated from bulk ore samples collected from the oxidized portion of the mineral deposit. Twelve samples of unoxidized gangue material derived from split core were also submitted for geochemical testing and the results are pending. Estimated NP and AP determinations made from the ore block model indicate the bulk gangue will be Non-PAG with an NPR of approximately 6.4, assuming no mineral depletion or enrichment occurs during the attrition scrubbing process. Because additional gangue testing is warranted for spatial coverage and given that gangue is not planned to be used as backfill until approximately 13 years into mining, ongoing studies will address the geochemical nature of gangue material.

3.4.3 Explosives Handling

Explosive agents may be required on occasion for removing the basalt waste rock material from the pit but will not be required for operations on a regular basis. Where areas of basalt (Figure 8) are encountered, LNC will rely on a contractor to conduct blasting operations, if needed. The contractor will ensure all explosives are handled in accordance with the Bureau of Alcohol, Tobacco, and Firearms, Department of Homeland Security provisions, and Mine Safety and Health Administration (MSHA) regulations. Should explosives storage be required at the Project site, LNC proposes to store the material on the west and east side of the open pit as shown on Figure 8. The proposed explosives storage areas will be fenced to restrict access.

3.5 Waste Rock Storage Facilities

Up to 45.9 M CY of waste rock material generated from open pit operation will be placed in two proposed WRSFs, located west and east of the pit (Figure 7). Estimated acres of disturbance associated with the proposed WRSFs are presented in Table 3-1. The West WRSF is designed with a storage capacity of approximately 32.7 M CY while the East WRSF will accommodate placement of approximately 13.2 M CY of waste rock material. LNC plans to haul waste rock to either WRSF based on operational requirements such as capacity and haul cycle efficiency.

The waste rock material will be placed in the WRSFs in approximately 50-foot lifts to form overall slopes of 3H:1V (horizontal to vertical) for the West WRSF, and 4H:1V for the East WRSF during the operational phase of the Project. A plan and typical cross-section of the facilities is shown in Figure 10. General design information for the WRSFs is provided in Table 3-3.

Table 3-3 WRSFs General Design (Approximate)

WRSF	Capacity (M CY)	Top Elevation (feet)	Bottom Elevation (feet)	Total Height (feet)	Bench Height (feet)	Bench Width (feet)	Slope (H:V)
West WRSF	32.7	5,252	4,770	482	50	75	3:1
East WRSF	13.2	5,216	5,008	208	50	75	4:1

LNC will remove waste rock material from the pit using an excavator, loader, or surface miner and haul trucks to place the material in the WRSFs until it can start to be backfilled directly into the mined-out panels (after four years of operation). Waste rock will be directly backfilled when possible, but out-of-pit storage may be necessary throughout the mine life. Waste rock material will also be used as construction material for haul roads and the CTFS. LNC may also combine waste rock material in the coarse gangue stockpile to increase pile stability and facilitate haul truck traffic (described in Section 3.9).

The WRSFs surface will be graded to control runoff. LNC will construct stormwater diversion channels at the toe of the proposed WRSFs as shown on Figure 10. The channels will be designed to accommodate the 25-year, 24-hour design storm event. Stormwater and surface runoff from the WRSF area will be collected and directed to sediment ponds (Figure 10).

Growth media within the proposed WRSF footprints will be salvaged (to the best extent possible) and stockpiled for use in future reclamation activities. LNC will conduct concurrent reclamation of the WRSFs over the mine life. LNC will recontour slopes of the lower benches of the WRSFs to 3H:1V overall slope and will place growth media and seed as soon as practicable.

3.5.1 Mine Waste Rock Characterization and Management

Background

The Thacker Pass Project will generate waste rock, coarse gangue and mineral tailings material from the beneficiation of ore. U.S. Department of the Interior – Bureau of Land Management (BLM) Instruction Memorandum NV-2013-046, Nevada Bureau of Land Management Rock Characterization Resources and Water Analysis Guidance for Mining Activities (BLM, September 19, 2013) outlines the rock and water resources data information that needs to be collected under 43 CFR 3809.401(b)(2) and 3809.401(c)(1) for mine plans of operation. Additional guidance on mine waste characterization was issued by the Nevada Division of Environmental Protection – Bureau of Mining Regulation and Reclamation (NDEP) on March 22, 2019 pursuant to the Water Pollution Control Permit (WPCP) program and associated NAC445A regulations. LNC's characterization program to investigate the potential for development of Acid Rock Drainage and Metal Leaching (ARDML) from waste rock, ore, gangue and tailings associated with the proposed action has been developed in accordance with these guidelines.

The Thacker Pass Project (the Project) geochemical characterization program incorporates relevant data collected during several characterization programs conducted over the past eight years. LNC commissioned a geochemical characterization program beginning in 2011 to define the potential for ARDML from ore and waste rock materials associated with the Kings Valley Lithium Mine Project, which was later revised to the Kings Valley Clay Mine Project that was approved in 2014 by the NDEP and BLM. The 2011 characterization program, which was originated by Tetra Tech and completed by SRK, included static as well as kinetic testing. Another sampling and testing program was designed and conducted by SRK in 2018 and 2019 to augment the previous characterization program by: 1) expansion of the dataset to the Project's new pit boundaries using recent exploration samples, and 2) provide characterization data for gangue and tailings material associated with the improved process flow sheet. The 2018/2019 program included a detailed review of the multi-element data from the exploration assay program and additional static and kinetic testing of core samples from the proposed extent of the pit.

Details of the characterization program and preliminary analytical results were submitted to the BLM and NDEP in the Waste Rock and Ore Geochemical Characterization Work Plan (Work Plan) for the Thacker Pass Project (SRK 2019a). Comments were received from both agencies in April 2019, and a response to comments was submitted in June 2019. The results of the characterization program available to date have been summarized in the Waste Rock and Ore Geochemical Characterization Report for the Thacker Pass Project (SRK 2019b, Characterization Report) provided in Appendix B. The characterization program is mostly complete; however, some test work is ongoing including additional static testing on gangue material, a humidity cell test program and additional mineralogical analysis. An update to the Characterization Report will be prepared when the geochemical testing program is completed. A preliminary summary of the characterization program and implications for waste rock and gangue material management are provided in the following sections.

Characterization Program Methods and Approach

The geochemistry data from the 2011 and 2018/2019 characterization programs have been combined into a single comprehensive dataset. The Project geochemical dataset has been incorporated into a Leapfrog model that includes the exploration data and geologic model. This model was used for selection of sample intervals to ensure that the sample distribution is spatially representative of the main waste rock and ore material types that will be encountered in the pit. In addition, the research and development facility in Reno, Nevada generated material that is representative of by-products from the ore beneficiation process, and samples of this material have been included in the characterization program.

The characterization program involved the collection and analysis of a combined total of 246 samples for static geochemical testing representative of waste rock, ore, gangue, and tailings. In addition, 14 representative waste rock/ore samples, 2 gangue samples, 2 tailings samples were submitted for kinetic testing (HCT). Waste rock is classified at a lithium grade of less than 2,000 ppm and most of the waste rock that will be encountered within the Thacker Pass pit will consist of alluvium, ash, claystone, and claystone/ash. A small percentage of basalt, hot pot zone (HPZ) and Tertiary volcanics (Tv) will also be encountered. The material classification is based on lithology alone (i.e., oxidation and alteration are not included). However, the dataset includes waste rock and ore samples that represent the range in total metal concentrations from the extensive database generated by the exploration program. This was done to ensure adequate sampling coverage of the range of mineralogy, oxidation, and alteration for each of the main rock types.

Gangue material consists of coarse material (+75μm) that is separated during the attrition scrubbing and hydrocyclone classification process which mechanically rinses and breaks down claystone ore using water only. The process of physical scrubbing results in a clayey sand and gravel gangue material that is subsequently removed from the clay slurry by hydrocyclone classification. No leaching or chemical rinsing of the ore occurs at this stage of the process and, therefore, gangue material has only been in contact with water. Tailings material included in this characterization program consist of the clay tailings, neutralization solids, and sulfate salts produced during the extraction of lithium. These materials will be co-mingled in the lined tailings impoundment.

The analytical requirements for geochemical characterization of waste rock and ore are established under BLM and NDEP guidance (2013 and 2019, respectively). The NDEP also requires that these analyses be conducted by laboratories accredited to perform Nevada-certified and Nevada-approved methods. The methods used for the characterization program include:

- Acid base accounting (ABA) following the Nevada Modified-Sobek method (NDEP 2019) at a Nevada-approved laboratory to provide an assessment of the balance of acid generating and acid neutralizing minerals.

- Multi-element analysis that includes 4-acid digestion followed by inductively coupled plasma mass spectrometry (ICP-MS) analysis. This method is consistent with the exploration program.

- Mineralogical analyses including X-ray diffraction (XRD) and scanning electron microscopy (SEM) will be completed at a Nevada-approved laboratory to support the modeling efforts.

- Meteoric water mobility procedure (MWMP – E2242-13) at a Nevada-approved laboratory and Profile I and Profile IR analysis at a Nevada-certified laboratory to give an indication of constituent mobility from the mine waste material.

- Kinetic humidity cell tests (HCTs - ASTM D5744-13e1) to define sulfide oxidation rates and metal leaching potential under laboratory-controlled oxygen and water exposure conditions that simulate weathering in the field.

The static test methods used to characterize the tailings are consistent with those used for the waste rock and ore characterization programs, except for MWMP which was conducted using bottle-roll extraction rather than the standard MWMP protocol. Per the 2019 NDEP guidance (NDEP 2019), if the material is fine-grained (e.g., tailings, sludge, etc.) the MWMP Bottle Roll Extraction Option can be used when it is difficult to percolate the lixiviant through fine-grained material. This method was only used on the tailings, neutralization solids and sulfate salts. The number of samples submitted for each method are summarized in Table 3-4 for each material type, including the gangue and tailings materials.

HCT data are available for all the major waste rock material types on site (i.e., claystone, ash and claystone/ash), and geostatistical data show that the HCT samples for these material types represent the range of results for key parameters from the exploration database (i.e., sulfur, calcium, arsenic and antimony) for the entirety of the pit area. For the minor material types; HCT data are available for the basalt and HPZ and MWMP data is available for the TV), to support the characterization program. In addition, HCT data are being generated for samples representative of the gangue and tailings material (i.e., clay tailings and neutralization solids). The results of the geochemical characterization program are described in the following sections for waste rock, ore, gangue, and tailings. A detailed description of the geochemical characterization program results is provided in Appendix B.

Table 3-4 Thacker Pass Project Sample Frequency and Testing Matrix

Material Type			Proportion of Mined Material (%)	Proportion of Pit Wall (%)	Total				
					Multi-Element	ABA	MWMP	Rad Chem	HCT
Core Samples	Alluvium		10.8	6.1	10	13	7	-	1
	Basalt		1.6	2.4	10	13	6	-	1
	Ash	Waste	2.7	5	25	26	9	-	2
		Ore			5	6	2	-	1
	Claystone/ Ash	Waste	20.9	34.1	17	20	6	-	2
		Ore			9	11	5	-	1
	Claystone	Waste	62.7	35.1	33	34	8	-	-
		Ore			66	69	12	-	5
	HPZ		0.5	12.8	11	13	6	-	1
	Tv		0.7	4.5	12	14	7	-	-
Process Samples	Feed Ore		-	-	7	7	5	2	--
	Gangue		-	-	9	9	7	3	2
	Clay Tailings		-	-	6	6	3	1	1
	Neutralization Solids		-	-	4	4	2	1	1
	Sulfate Salts		-	-	1	1	1	1	-
Total			100	100	225	246	86	8	18

Summary of Geochemical Characterization

Waste Rock and Ore

The results of the static testing demonstrate that the Thacker Pass waste rock and ore will be net neutralizing with an average neutralization potential ratio (NPR) greater than three (3) for all material types. This low potential for acid generation was confirmed by the kinetic testing program. Based on the static testing, a minor component (i.e., 2% of the total samples) of the ash, claystone, and mixture of claystone/ash material types shows a higher potential for acid generation and is predicted to be potentially acid generating (PAG) material. Kinetic testing is currently ongoing for a sample of ash material that is predicted to be acid generating based on the ABA results; however, during the time of writing at week eight of testing, neutral conditions were still being maintained.

Even though acidic conditions have not been observed in the kinetic testing program, a conservative estimate of PAG material within the deposit has been developed by LNC geologists using the multi-element data from the exploration program. Total sulfur and calcium were used to assign an AGP and ANP value as well as NPR values to each mine block within the geological block model. Based on an NPR cut-off of 1.2, the material within each block was classified as either PAG or non-PAG. Based on this evaluation, the quantity of PAG material is negligible and estimated to comprise 0.25% of the total waste rock and approximately 1% of the final pit wall surface. Due to the acid neutralization potential of the waste rock and the limited quantity of estimated PAG, segregated waste rock management does not appear to be necessary or recommended for the Project.

Although the excess of neutralizing capacity means that net acid conditions are unlikely to develop, there is still a potential for the Project's material types to leach some constituents of concern under neutral to alkaline conditions. Based on kinetic testing of waste rock, antimony and arsenic are consistently released at concentrations above NRVs through the test's duration. Other constituents were initially flushed from the humidity cell test from weeks 0 to 4 at concentrations above the NRV including fluoride, iron, magnesium, manganese, sulfate, and uranium. However, these constituents equilibrate to lower concentrations below the NRVs after the initial flush. Baseline groundwater quality results for monitoring wells in the area indicate arsenic is naturally elevated in groundwater.

Although low levels of uranium are initially flushed from the waste rock and ore HCTs at concentrations above Profile IR (i.e., 0.03 mg/L), concentrations rapidly decrease to levels below Profile IR NRVs within the first few weeks of testing. Based on groundwater monitoring data, uranium does not occur in groundwater above laboratory detection limits in wells proximal to the site. Radioactive elements (radium 226/radium 228 and thorium) locally present in groundwater but at low concentrations below the Profile IR NRVs.

Following completion of the geochemical testing program, including the conclusion of kinetic testing, an update to the Characterization Report will be prepared which will detail the final results of the geochemical characterization program along with the final recommendations for waste rock management. In connection with preparing the WPCP application and in view of NDEP standards, numerical predictive calculations are being carried out that will predict, in quantitative terms, the possible concentrations of solutes emanating from the waste rock dump and backfilled pit and determine their potential concentrations upon mixing with groundwater. These numerical predictions are being undertaken to finalize LNC's plans for waste rock management and coordination with NDEP regarding the WPCP.

Ore Feed and Gangue

The preferred alternative for closing and reclaiming the Thacker Pass Project is to place gangue material with waste rock in the open pit as backfill material during mining in order to prevent the formation of a permanent, post-closure pit lake and to provide post-closure land use that replicates pre-disturbance conditions. Gangue is not planned to be used as backfill until approximately 13 years into mining, and ongoing studies are being conducted to address the geochemical nature of the gangue material. Static test and kinetic test results are available for seven (7) samples of gangue from bulk ore samples collected from the oxidized portion of the mineral deposit. Twelve (12) samples of unoxidized gangue from split core have also been submitted for geochemical testing, though the results are pending. In addition, the corresponding ore feed samples have been submitted for static testing for comparison purposes.

Preliminary geochemical characterization data show that the ore feed material is net neutralizing with an average NPR value of 17 and a potential to leach arsenic and antimony under neutral to alkaline conditions. Gangue material shows similar results to the ore feed material and is net neutralizing with an average NPR value of 24. Based on preliminary MWMP results, there are notable increases in some of the constituents as a result of the wet attrition process including aluminum, arsenic, antimony, iron and manganese. In addition, calcium, chloride, sodium, sulfate and TDS concentrations decrease indicating these constituents are rinsed from the material during the attrition process.

MWMP leachate from three (3) of the oxidized gangue samples and two (2) of the ore feed samples were submitted for Profile IR analysis that includes analysis of uranium, gross alpha, radium 226/radium 228 and thorium. Preliminary results indicate that uranium, gross alpha, radium 226/radium 228, and thorium are leached from the ore and gangue material at concentrations below the Profile IR NRVs.

Further characterization is being done to assess the range of geochemical properties of gangue material derived from oxidized and unoxidized ore material. Humidity cell testing on one (1) sample of oxidized gangue material is ongoing and will be continued for a minimum of 20 weeks, or until the objectives of the test have been met and BLM and NDEP approval for termination has been obtained. Following completion of the geochemical testing program, an update to the Characterization Report will be prepared which will detail the final results of the geochemical characterization program to help inform LNC's recommendations for the management of gangue material. Geochemical characterization of gangue will continue as mining advances to deeper portions of the deposit and the lithium extraction process is optimized to ensure material used as backfill meets appropriate criteria.

In order to assess the gangue material in relation to groundwater, numerical calculations are being carried out that will predict in quantitative terms the possible concentrations of solutes emanating from the gangue stockpile and backfilled pit and determine their potential concentrations upon mixing with groundwater.

Tailings

Static and kinetic testing has been initiated for six (6) samples of clay tailings, four (4) samples of neutralization solids, and one (1) sample representative of sulfate salts generated at the LNC research and development facility. The preliminary results of the tailings characterization program indicate that the clay tailings do not contain appreciable sulfide sulfur and are unlikely to generate acid from the oxidation of sulfides. However, in the MWMP test, aluminum, arsenic, antimony, beryllium, cadmium, chromium, copper, fluoride, iron, lead, magnesium, mercury, nickel, sulfate, thallium, TDS, and zinc were leached under low pH conditions at concentrations above Profile I NRVs. These results can be attributed to the presence of residual sulfuric acid from the leaching process that is flushed from the material during the MWMP. Samples of neutralization solids and sulfate salts produced circum-neutral to alkaline leachate and constituent concentrations are lower in comparison to the clay tailings.

MWMP leachate from one (1) sample of clay tailings, one (1) sample of neutralization solids and one (1) sample of sulfate salts was submitted for Profile IR analysis that includes uranium, gross alpha, radium 226/radium 228 and thorium. The results of this testing indicate that for the clay tailings sample, uranium, gross alpha and radium 226/radium 228 exceed the Profile IR NRVs. For the neutralization solids and sulfate salts, these radioactive elements are all below Profile IR NRVs.

Following completion of the tailings geochemical testing program, including the conclusion of HCT testing, an update to the Characterization Report will be prepared which will detail the final results of the tailings characterization.

Due to the potential to leach metals and radioactive elements from the tailings at concentrations that exceed Profile IR NRVs, LNC has proposed that tailings material will be constructed as a zero discharge facility, and stored on lined containment and covered with waste rock/growth media at closure; therefore, no degradation to groundwater will occur.

3.6 Mine Facilities

The proposed mine facilities will be located south of the mine pit (Figure 11) and will be accessed via the mine facilities access road from SR 293. LNC will construct and operate the following facilities to support mining operations:

- Parking area for employees and visitors;
- Shop/office/warehouse building including change rooms, meeting rooms, first aid, employee line out area, kitchen, bathrooms, and equipment bays for equipment repair and maintenance;

- Fuel farm consisting of gasoline and diesel tank storage and distribution equipment (fuel types and storage described in Section 3.24.2);
- Equipment wash station for mobile equipment;
- Storage area for spare tires for large mobile equipment, large equipment parts, and various other supply/parts inventory;
- Substation that will feed electrical power to the mine facilities; and,
- Ready line for large mobile equipment parking (end dumps, loaders, water trucks, equipment hauler, and motor graders).

Temporary shop/office facilities will be utilized until the permanent shop/office/warehouse building is constructed. A septic system will be provided for the mine facilities area.

3.7 Run-of-Mine Stockpile

LNC will haul ore from the open pit to the ROM stockpile located south of the pit (Figure 9). The stockpile will be designed to store approximately 494 thousand cubic yards of ROM material. Material will be end-dumped by haul trucks while dozers and motor graders will move the ore material to ensure the facility is built with 3H:1V slopes. The ore will be segregated within the pile based on lithium grade to allow the ore to be blended to meet production requirements. Three dozer trap-type feeder breakers will be located on the south side of the stockpile to feed material onto a common conveyor, which will feed a mineral sizer (crusher). The mineral sizer discharge will be conveyed to the attrition scrubbing process.

During the operational phase of the project, stormwater management for the facility will include diversion channels designed to accommodate the 25-year, 24-hour design storm event per NDEP requirements. LNC will construct sediment ponds to capture stormwater from the stockpile.

3.8 Mineral Processing

LNC proposes to construct and operate mineral processing facilities in the attrition scrubbing and classification areas to separate the lithium-rich, fine clay material from the low-grade, coarse material referred to as coarse gangue. The attrition scrubbers will use high speed agitators to cause slurry particles to impact one another, thereby creating a scrubbing effect between particles. By exploiting differences in breakage characteristics between lithium-rich and low-grade lithium bearing particles, the attrition scrubbers reduce lithium bearing particles to a size fraction less than approximately 100 microns, while harder, low-grade lithium bearing particles remain in a size fraction larger than approximately 100 microns. Up to 40 percent of the ROM material delivered to the attrition scrubbers may be discarded to the coarse gangue stockpile once entrained lithium fines have been removed. The lithium-bearing ore will be pumped in the form of a slurry to the downstream processing plant to be processed into various lithium products. The attrition scrubbing area is located to the east of the ROM stockpile, whereas classification will occur in the process plant facilities area approximately two miles to the east.

Ore will be reclaimed from the ROM stockpile to the attrition scrubbers using dozers, material sizers and a crusher for size reduction, belt conveyors, a storage bin, and belt feeders (Figure 11). Recycle water, raw water make-up, and ore will be combined in the attrition scrubbers where the fine clay particles are “scrubbed” from the coarse gangue particles. Slurry from each train of attrition scrubbers will gravity discharge onto vibrating screens to remove oversize material prior to pumping the undersize slurry to the classification circuit via the interplant pipeline containment channel. The screen oversize will discharge onto a belt conveyor which will report to a stockpile for periodic haulage to one of the WRSFs.

The classification circuit will separate the coarse gangue from the fine clay ore via a series of hydrocyclones. Coarse gangue will be pumped to a dewatering screen prior to conveying the oversize gangue to the coarse gangue stockpile (Figure 12). The fine, lithium-bearing clay in the hydrocyclone overflows report to a thickener from which the underflow reports to the acid leaching circuit and the overflow is recycled to the attrition scrubbing circuit.

The ore feed bins, attrition scrubbers, dust collector system, sampling system, recycle water tank, raw/fire water tank, fire water pump system and all other associated equipment in the attrition scrubbing area will be installed within a concrete containment. All material contained within the area will be captured in a sump and pumped into the attrition scrubbing circuit. Contact water from the ROM stockpile will be contained and will report to the attrition scrubbing circuit via pump or gravity flow.

All equipment associated with classification will be installed within a concrete containment where a sump pump will return all spilled materials to the process.

3.9 Coarse Gangue Stockpile

LNC will convey coarse gangue material produced by the process described in Section 3.8 to the coarse gangue stockpile located east of the open pit (Figure 7). The gangue material will include lithium content whose economic value cannot be extracted at this time with a rate of return meeting LNC’s criteria, using the proposed technique. The stockpile will be designed with a 48.4 M CY storage capacity. LNC will place approximately 26.7 M CY of coarse gangue material in the stockpile. Final coarse gangue volume will depend on the results of the classification circuit. LNC may use remaining stockpile capacity for placement of waste rock material to optimize movement of heavy equipment on the stockpile, when required.

The stockpile will be designed to be a maximum of approximately 200 feet tall with 4H:1V slopes (Figure 12). Should any unsuitable native material be present in the base area within the proposed disturbance footprint, LNC will remove the material and prepare the stripped ground surface to provide a firm foundation. The stockpile will be constructed in 50-foot lifts using trucks and dozers.

After mining operations have been ongoing, LNC will place approximately 75.2 M CY of gangue material in the pit as backfill (combined with waste rock material when and where feasible). Geochemical characterization studies conducted to date to support the Project (discussed in Section 3.5.1, and Appendix B) showed that the coarse gangue material will not be acid-generating.

Stormwater management in the coarse gangue stockpile area will consist of sediment ponds located downstream of the facility. The ponds will capture stormwater runoff from the stockpile and allow sediments to settle.

3.10 Process Plant Site

The layout of the proposed plant site is shown on Figure 13. The process plant site will be accessible by two roads off SR 293. The access to the east will be reserved for reagent deliveries (e.g., sulfur, quicklime, limestone, caustic soda, soda ash) to the facility, while the access to the west will allow access to the main parking lot and other plant facilities. A guard shack will be constructed to regulate access from these two access roads off SR 293.

The major facilities in this area include:

- Guard shack
- Utilities access road
- Battery production complex
- Interplant pipeline containment channel
- Laydown yard
- Main parking lot
- Warehouse, laboratory, and administration offices
- Classification and sulfuric acid leaching
- Emergency pond
- Lithium hydroxide and lithium sulfide production area
- Crystallization and tank farm

- Filtration and neutralization
- Construction laydown area
- Limestone crushing and storage
- Lithium metal production
- Bulk solids and liquids storage and unloading
- Sulfuric acid plant and sulfur/sulfuric acid storage, loading and unloading
- Central maintenance shop
- Helicopter pad
- Process plant stormwater pond
- Septic systems
- Main switchyard
- Substation

Process plant support facilities will consist of the central maintenance shop, warehouse, laboratory, and administration offices. The warehouse, laboratory, and administration offices will be within a common building. The administration offices will house the administrative and management staff, as well as provide space for medical treatment. Administration offices will include a reception area, conference/training rooms, break room, and restrooms.

Heat will be provided by electric forced air furnaces in the office and personnel buildings and propane gas radiant heat may be used in the maintenance bays. Air conditioning will be provided by electrical cooling units.

Mobile equipment maintenance will be performed at the truck shop located at the mine facilities.

The main switchyard and substation will provide connection between the turbogenerator in the sulfuric acid plant and the existing Harney Electric power transmission line located to the south of the plant site (Figure 13). Power supply to the raw water supply wells and booster stations as well as the mine facilities will be distributed from the substation.

Septic systems will be provided for the main process plant area, as well as for the battery production complex and guard shack.

The nearest hospital and emergency department are in Winnemucca, Nevada, approximately 62 miles by highways to the southeast. A helicopter pad will be constructed for emergency medical situations to minimize the travel time to the hospital.

A high-density polyethylene (HDPE)-lined process plant stormwater pond will be constructed to the southwest of the sulfuric acid plant to collect stormwater runoff from the paved areas of the plant site (Figure 13). The collected water will be returned to the process water tank located in the tank farm.

An HDPE-lined emergency pond will be constructed to the east of the classification and acid leaching plant process areas. In the case of an unplanned event in which a chemical slurry is released to secondary containment and the slurry cannot be immediately returned to the process, the excess material from the affected area(s) will be diverted to the lined pond. Under normal conditions, the pond will remain empty as it is only intended to be a temporary storage. All material in the pond will eventually be returned to the process. The pond will be lined and will have a storage capacity of one million gallons. The emergency pond area will be fenced to restrict wildlife access.

3.11 Chemical Processing

The Thacker Pass Block Flow Diagram is shown on Figure 14. The process facility will be designed to produce lithium carbonate, lithium sulfide, lithium hydroxide monohydrate, lithium metal, solid-state lithium batteries, conventional lithium-based batteries, and/or battery components as primary products. Sodium hypochlorite solution (chlorine bleach) will be produced as a co-product with lithium metal.

LNC proposes to produce approximately 33,000 tpy of LCE during Phase 1 that will be distributed among lithium carbonate, lithium sulfide, and lithium hydroxide monohydrate with market conditions determining the blend of finished products. Phase 2 will increase the production of lithium products to approximately 66,000 tpy. The construction of Phase 2 may begin as early as 2.5 years after the commencement of Phase 1. LNC will continue with Phase 1 operations until demand for Phase 2 is identified and until all required permits are issued. The lithium products will be technically and economically evaluated for inclusion during Phase 2 of the Project.

The chemical process plant facilities will primarily consist of the following process areas:

- Acid leaching (with sulfuric acid);
- pH neutralization and filtration;
- Magnesium sulfate crystallization;
- Magnesium removal (precipitation and ion exchange);
- Lithium carbonate production (precipitation/filtration/drying/packaging/loadout);
- Sulfate salts crystallization;
- Causticizing and filtration;
- Lithium hydroxide production (crystallization/drying/packaging/loadout);

- Lithium sulfide production (conversion/packaging/loadout);
- Lithium metal production (electrolysis/distillation/casting/rolling/packaging/loadout); and,
- Battery production (manufacturing/packaging/loadout).

3.11.1 Acid Leaching, Neutralization, and Solution Purification

Fine, lithium-bearing clay ore slurry from the classification process described in Section 3.8 will be combined with concentrated sulfuric acid (90-98 weight percent) in a series of agitated tanks designed to optimally control the amount of the lithium leached. The sulfuric acid will be supplied from the on-site sulfuric acid plant described in Section 3.15. The unleached clay solids and the solids generated during acid leaching, primarily gypsum, will be removed by pressure filtration prior to being conveyed to the CTFS for disposal.

The acidic, lithium-bearing solution from acid leaching will be neutralized in agitated tanks by recycling alkaline solids from the downstream magnesium precipitation and causticizing process areas (Figure 14). Air may be sparged into the tanks to facilitate the precipitation of contaminants. During a plant startup when the recycled alkaline materials are unavailable, limestone and/or quicklime will be used for neutralization. Solids generated during neutralization will be thickened and filtered by pressure filtration prior to being conveyed to the CTFS for disposal.

Most of the magnesium in the lithium-bearing solution from neutralization will be removed via a magnesium sulfate crystallization process. The magnesium sulfate salt generated, otherwise known as Epsom salt, will be centrifuged prior to being conveyed to the CTFS for disposal. Residual magnesium and other divalent cations in the lithium-bearing solution from crystallization will be removed by adding quicklime in a conventional vertical mill lime slaker followed by agitated precipitation tanks, thickening and pressure filtration. The solids from the filter will be recycled to the neutralization process as previously described. Further contaminant removal of the filtered lithium-bearing solution will be done by an ion exchange process. This purified solution will be sent to the lithium carbonate and/or lithium hydroxide processes.

Limestone will be added to the conveyor between the process plant and CTFS on an as-needed basis to enhance structural stability of the cake solids. This conveyor collects the solids from the above-mentioned clay filters, neutralization filters and magnesium sulfate centrifuge, as well as the sulfate salts centrifuge described in the next section.

3.11.2 Lithium Carbonate

Following ion exchange to remove the remaining divalent cations, a portion of the purified lithium sulfate solution will be diverted to the lithium carbonate process. Lithium carbonate will be precipitated out of solution using soda ash, filtered, and dried. The precipitation and filtration system will be engineered to produce consistent, high-quality product that will meet or exceed a variety of industry standards, namely specifications corresponding to lithium ion batteries. The purified lithium carbonate will be dried and packaged in 2,204-pound (lb) bulk bags (1,000 kilograms [kg]) for shipment to customers.

Following lithium carbonate precipitation, the barren lithium solution will be sent to a final crystallization step where sodium and potassium sulfate salts will be produced, and water is recovered. The sodium sulfate and potassium sulfate salts will be blended with the other tailings described in the previous section prior to delivery to the CTFS.

3.11.3 Lithium Hydroxide Monohydrate

Purified lithium sulfate brine not diverted to lithium carbonate production will be diverted to lithium hydroxide monohydrate production. All cations except for sodium, potassium, and lithium will be precipitated from solution using 50 percent caustic soda. Precipitated solids will be removed in a pressure filter and recycled into the neutralization process. The brine from this causticizing process will be evaporated and crystallized in standard industrial equipment. This equipment will continuously produce crystals of lithium hydroxide monohydrate product as a wet cake from a centrifuge. These crystals will be washed and potentially dissolved and re-crystalized in the process to meet the product purity and consistency requirements. The purified lithium hydroxide monohydrate will be dried and packaged in 2,204-lb bulk bags (1,000 kg) for shipment to customers.

The impurity levels in the lithium hydroxide crystallizers will be managed by purging small quantities of liquid to the lithium carbonate process. These impurities are not critical for lithium carbonate product quality and maximizes the yield of lithium to the final products.

3.12 Lithium Metal Production and Products

Approximately 800 tons of lithium metal will be produced annually in Phase 1. Lithium metal is produced via electrolysis by passing a direct electrical current through a molten salt bath consisting of potassium chloride and lithium chloride. The voltage across the cell will be controlled to avoid significant production of potassium metal. The lithium chloride will decompose in the electrical current to form pure lithium metal that floats on the surface of the molten salt bath. Chlorine gas produced from the cell will be removed and used to produce a sodium hypochlorite (bleach) solution.

Potassium chloride will be supplied from external vendors. Lithium chloride will be supplied from other LAC production facilities and electricity will be supplied from on-site generation or from connected power.

3.12.1 Chlorine Handling and Bleach Production

Approximately 21,000 tons per year of 15.3 percent sodium hypochlorite solution will be produced in Phase 1. High purity dry chlorine gas from the metal cells will be compressed to approximately 15 pounds per square inch gage and delivered to fully automated skid-mounted sodium hypochlorite continuous production units. In each continuous production skid, dry chlorine gas is reacted with caustic soda and water to produce sodium hypochlorite solution (chlorine bleach). Caustic soda will be supplied to the site and stored in tanks. The sodium hypochlorite solution will be transferred from storage tanks and transported by truck to the market. Sodium hypochlorite solution may also be transported to a tank car transloading facility where it will be sold to the market via tank car.

3.12.2 Lithium Metal Purification

Molten lithium will be removed from the cells by automated skimming systems that direct the molten lithium to molten metal storage where it will be held at 400 to 750°F. Aluminum powder will be added to the metal to remove any nitrogen containing compounds as aluminum nitride. The solid aluminum nitride will settle to the bottom of the tank prior to being collected in fine mesh stainless steel filters. Periodically, the aluminum nitride will be reacted with water in a pressurized reactor to produce an aluminum hydroxide solution that will be recycled back to the neutralization process. The molten lithium will then be fed to a high-vacuum separation unit. This unit will heat the molten metal to 1,100°F under high vacuum to cause the sodium and potassium metal to evaporate into a condenser for eventual recovery to the sulfate salt crystallizer. The purified lithium metal will be stored in metal tanks.

3.12.3 Lithium Metal Casting

In the casting process, purified lithium metal will be cooled to approximately 900°F where it will be cast into cylindrical shapes. These solidified cylinders will be extruded, and possibly rolled, under high pressure to generate foils. Foils or cylinders will be packaged and will be used in battery manufacturing at the battery production complex and/or sold to the market. Approximately 800 tons of lithium metal will be produced annually.

3.13 Lithium Sulfide Production

Lithium sulfide is intended to be used in next-generation solid-state batteries. Lithium sulfide will be produced in a three-step process that consumes reactants nearly instantaneously without any need for inventory or accumulation of reactants prior to the production of lithium sulfide. The first step (Step 1) in the lithium sulfide production process will require the production of hydrogen gas using a standard water electrolysis cell and purified water. Following production of hydrogen, molten sulfur will react with hydrogen to spontaneously produce high-purity hydrogen sulfide gas (Step 2). In Step 3, hydrogen sulfide gas will react with lithium carbonate or lithium hydroxide to produce lithium sulfide. The reaction can take place in a pressurized reactor in an aqueous solution or in a non-aqueous high temperature reactor operating between 900 and 1,400°F. Lithium sulfide will be packaged in 55-gallon drums and sold to the market and/or consumed internally to produce solid-state batteries. Approximately 3,300 tons of annual lithium sulfide production will be required for internal consumption at the battery production complex.

3.14 Battery Production

The battery production complex represents the production of next-generation all-solid-state batteries (ASSB). ASSBs replace the flammable liquid electrolyte in conventional lithium ion batteries with a highly stable solid ion-conducting material comprised of lithium products produced at the process plant facilities (Section 3.11 and 3.13). ASSBs achieve a substantial increase in battery energy density as compared to conventional lithium ion batteries through the use of lithium metal as the anode material, also produced at the process plant facilities (Section 3.12).

The battery manufacturing process will start with mixing the lithium sulfide electrolyte material produced in the processing plant (Section 3.13) to create a slurry. The slurry will then be fed into a roll-to-roll coater, which deposits the material onto a metal substrate. The coated cathode and separator battery components will be combined with a lithium metal anode, produced at the process plant facilities (Section 3.12), via a lamination step to create a single layer of a battery cell. The layer will then be slit and stacked into the desired battery format. Finally, the cell will be packaged and tested prior to leaving the battery production complex.

The battery manufacturing facility will be sized for 10 Gigawatt hours of annual ASSB production in Phase 1.

3.15 Sulfuric Acid Plant and Energy Production

Concentrated sulfuric acid will be required to leach lithium from the sedimentary clay ore. The production of sulfuric acid is a strongly exothermic process that produces excess heat that is converted to steam and electricity. The process combines water, air, and sulfur to produce sulfuric acid.

The sulfuric acid plant planned for Phase 1 will be capable of producing approximately 2,900 tons per day of sulfuric acid. The Phase 2 sulfuric acid plant will be sized to double LCE production and will be capable of producing an additional 2,900 tons per day of sulfuric acid.

Sulfuric acid will be produced by burning molten sulfur with air to produce sulfur dioxide (SO_2), catalytically converting the SO_2 to sulfur trioxide (SO_3) and absorption of SO_3 in acid while generating a large amount of excess heat. This excess heat will be captured via economizers, a boiler, and a superheater to produce steam which in turn will be used to generate electrical power via the acid plant turbo generator set. Low pressure steam will be extracted from the turbo generator for use in the process plant, primarily the crystallizer evaporators.

Although the primary purpose of LNC's sulfuric acid system is to produce sulfuric acid for lithium processing, it will nevertheless generate electricity by converting excess heat to steam which, in turn, is diverted to a turbo generator to produce electricity for the lithium production process. The sulfuric acid plant will generate electrical power using double contact double absorption technology with an integrated steam turbo generator set. Electricity produced will be either distributed directly to the Project facilities or to the power grid in a buying-selling agreement, such as buy-all, sell all, with a utility authority(ies). The Project is expected to be a net exporter of electricity, not exceeding 15 megawatts (MW) in Phase 1.

The Phase 1 acid plant will have a turbo generator power output of approximately 34.5 MW based on zero steam extraction. Further energy recovery can be realized by installation of an "Alpha System" to recover heat in the form of medium pressure steam from the SO_3 absorption circuit. Installation of Alpha Systems is anticipated in Phase 2 and will allow the turbo generator sets to operate at maximum power output (LNC 2018).

An Elementary Neutralization Unit (ENU) will be constructed to neutralize equipment for maintenance activities or during equipment replacement. The ENU will be approximately 50 feet by 150 feet in size, with a one-foot high curb. Decommissioned sulfuric acid plant equipment will be neutralized with milk-of-lime or diluted caustic. The residue will be captured in a sump and sent to the neutralization circuit.

Should a leak occur within the secondary containment of the sulfuric acid plant, contaminated meteoric water will be stored in tanks until the leak is fixed.

LNC will need to shut down and conduct maintenance to the sulfuric acid plant every two years. The temporary maintenance shutdown will last approximately two weeks. LNC will utilize power from the Harney Electric line to start the sulfuric acid plant following maintenance shutdowns. During the shutdown period, mining operations will continue to take place wherever possible. Additionally, operations staff will continue to operate where needed in the process facilities. These areas include water and air systems operations. Maintenance work will also take place at this time. These activities will keep the Project running on the 365 days per year, 24 hours per day schedule.

3.16 Reagents and Chemicals Storage and Use

Reagents used for ore processing will be stored in the general plant area. Table 3-5 summarizes the annual estimated use and maximum amount stored on site.

Table 3-5 Reagents and Chemicals Storage

Reagents	Annual Estimated Use (tons)	Maximum Amount Stored (tons)
Limestone	169,036	7,165
Quicklime	126,204	1,127
Soda Ash	86,343	1,070
Molten Sulfur	340,247	13,454
SNF Hyperfloc AF-307	144	22
SNF Hyperfloc CP-624	72	22
Caustic Soda	145,668	1,409
Potassium Chloride	4,712	562
Aluminum Powder	0.9	0.9
Lithium Chloride	4,712	562

Reagents for ore processing will be stored within a concrete secondary containment area at the process plant, as appropriate. This containment area will be designed to contain 110 percent of the volume of the largest tank and the 100-year, 24-hour storm event.

Reagents will be transported by licensed vendors to the Project site via U.S. 95 from the north (Boise) and from the south (Winnemucca).

3.17 Clay Tailings Filter Stack

Lithium processing will produce tailings comprised of acid leach filter cake (clay material), neutralization filter cake, magnesium sulfate salt and sodium/potassium sulfate salts, collectively referred to as clay tailings. Limestone will be added on an as-needed basis for structural stability. LNC proposes to place the clay tailings in the CTFS which will be a permanent lined storage facility located east of the process plant (Figure 15). Estimated acres of disturbance associated with the proposed CTFS are presented in Table 3-1. Prior to disposal, the tailings will be dewatered to a wet-basis moisture content of approximately 19-27 percent which is calculated by dividing the weight of water by the weight of the water plus solids. The dewatered tailings will be transported to the CTFS using either conveyors or haul trucks or a combination of the two. Centrifuged mineral salts will be approximately ten percent water by weight before being conveyed to the CTFS. Approximately 353.6 M CY of clay tailings will be placed on the facility over the 41-year mine life.

A plan of the CTFS and cross-section is shown in Figure 15. A dam permit will be obtained from the NDWR if required. General design parameters for the CTFS are presented in Table 3-6.

Table 3-6 Clay Tailings Filter Stack Design Parameters

Design Parameters	Phase 1	Phase 2
Side Slope Angle (H:V)	5:1	5:1
Design Height (feet)	250	250
Tailings Storage Capacity (dry tons)	17 million	300 million
Average Loading rate (dry tons/hour)	500	1,000

LNC will convey tailings material from the tailings filter press located in the filtration and neutralization building at the process plant to the CTFS. The conveyor location from the filter to the CTFS is shown on Figure 15. From there it will be transported using trucks or scrapers and compacted as required to maintain stability. Portable conveyors and/or bulldozer will be used to stack tailings material in conformance with a stacking plan to maintain hydraulic properties and slope stability. The conveyor system will be able to transport an average of 500 dry tons per hour during Phase 1 and 1,000 dry tons per hour during Phase 2.

Stacked tailings will be stabilized with shallow slopes and compacted around the perimeter of the facility forming a structural zone. The interior of the stack will consist of tailings with a lower density (compaction) requirement. The CTFS will be constructed in lifts. The lift thickness will be determined based on test pads during the operations that meet the minimum density requirements. The exterior slopes of the CTFS will be graded to an overall slope of 5H:1V to provide structural stability based on a designed safety factor exceeding 1.4, above the applicable minimum static factor of safety of 1.3. The CTFS will be fully lined with an HDPE geomembrane, underlain with a six-inch liner bedding material. The facility will include an underdrain collection system above the geomembrane to collect drainage from the stack. Drainage from the stack will report to the geomembrane lined reclaim ponds.

Concurrent with construction of each lift, a layer of waste rock material may be placed over the top of the clay tailings to provide a trafficable surface for relocating and operating conveyors. The material will likely be sourced from the pit, delivered using haul trucks, and spread using a bulldozer.

Stormwater runoff will be directed to the perimeter of the CTFS where it will be directed to the reclaim ponds. Location of the proposed reclaim ponds are shown on Figure 15. The reclaim ponds will be double lined with an HDPE geomembrane separated by a layer of geonet. Water collected in the pond will not be discharged as part of the stormwater management. Water in the reclaim ponds will be pumped to the processing plant to be used as make-up water for processing operations or will evaporate. The reclaim ponds will be designed to sustain the 100-year, 24-hour storm event. Approximately 80 million gallons of storage capacity will be required for the CTFS reclaim ponds. LNC will fence (chain-link, 6-8 feet in height) the area surrounding the reclaim ponds to restrict wildlife access.

The construction of an erosion control berm will be required at the CTFS facility crest to direct stormwater flow to constructed terrace channels and chutes. Stormwater runoff will be conveyed from the terrace channels to the CTFS perimeter channel (located at the facility base) and then into a CTFS reclaim pond. LNC will design the runoff collection channels, based off of upstream drainage requirements, which may be lined with either geomembrane or geotextile, and riprap, if required.

Fugitive dust emissions will be controlled by water. A water line may run parallel to the conveyors within the corridor to provide water for dust control, if needed.

3.18 Haul and Secondary Roads

Primary haul roads and secondary roads proposed for the Project are shown on Figure 7. Drainage ditches will be constructed adjacent to the roads for runoff surface water management. Riprap or other appropriate material may be used to minimize erosion. LNC may construct check dams and/or sediment traps in drainage ditches and at culvert locations to control sediment. The ditches and sediment control structures will be routinely inspected and cleaned out as necessary.

LNC will be responsible for the maintenance of all roads within the Project area. Road maintenance will consist of repair of erosion control structures and drainage systems, removal of debris from culverts and diversions, repair and replacement of road surface material, as needed, and snow removal during winter.

3.18.1 Haul Roads and Ramps

LNC will primarily use haul trucks in the Project area for the following activities:

- Movement of ore to the ROM stockpile;
- Movement of waste rock material to the WRSFs (during the first years of operation); and,
- Movement of waste rock and coarse gangue to the pit as backfill material.

The haul road maximum gradient will be less than ten percent with an 80-foot road width. Roads will be sloped away from the centerline and have six to 12 inches of crushed rock. Haul roads in the mine area will be constructed according to MSHA standards. LNC will construct ditches on the side of the road to capture road runoff. Runoff from haul and secondary roads will be collected and routed to stormwater sediment ponds as needed.

Dust control measures used for road grading will include watering before and after grading activities and reduction of equipment speeds during operations, if necessary. A water truck will spray water on the roads and stockpiles, when needed to control dust. Chemical treatment may be used for additional dust suppression.

3.18.2 Secondary Roads

Secondary roads will be approximately 30 feet in width with a 1.5 percent grade from the centerline with three to six inches of crushed rock placed on the road surface.

Plant site roads will be classified as private roads. All site roads will allow for emergency vehicle access minimum requirements. The plant site road layout is designed to support the anticipated site traffic for construction, operations and maintenance requirements of the facility. The design considers anticipated vehicle traffic, equipment turning requirements and clearances and ensures access requirements are met.

An unpaved construction road will be established from the plant to the Quinn Production Well to allow for construction of the 25-kilovolt (kV) power line and water pipeline from the Quinn Production Well to the process plant. The majority of this road will be temporary; however, the segment connecting the Quinn well and the Quinn Back-up well (and the access road to these wells as shown on Figure 7) will be permanent. An existing road that runs along the Harney Electric Cooperative power line will be used in the event of maintenance on the power or water line. The new power line will be constructed per Harney Electric Cooperatives design standards, including establishing a minimum distance from the existing power line. LNC is in communication with Harney Electric Cooperative regarding the construction of the new powerline. LNC will construct permanent short access roads that connect with existing roads to allow for access and maintenance of the booster pump stations and well pump tanks. Short roads constructed for access and maintenance will consist of gravel material. Permanent roads and power and water line configurations are shown on Figure 7.

3.19 Growth Media Stockpiles

Growth media consisting of soils and alluvium will be salvaged from the footprint of proposed disturbances in the Project area as mining progresses. When present, growth media will be stripped and stockpiled for use in future reclamation and closure activities. Growth media will be stockpiled in three stockpiles as shown on Figure 6. Material within the growth media stockpile (Figure 6) is anticipated to be rotated often due to concurrent reclamation practices; fresh growth media will be collected and stockpiled as mining advances into previously undisturbed areas, and previously stockpiled material will be returned to the site during concurrent reclamation starting in Year 5 through Year 41 of mining.

Table 3-7 provides the volume of growth media expected to be salvaged and placed in the stockpiles.

Table 3-7 Growth Media Stockpile Design Capacity

Growth Media Stockpiles	Volume[1] (Cubic Yards)
Stockpile #1	170,000
Stockpile #2	1,236,000
Stockpile #3	5,424,000
Total	**6,830,000**

Note: [1] Salvageable growth media is estimated at depths averaging 12 inches recovered from the footprint of the West Pit, WRSFs, coarse gangue stockpile, mine facilities, and portions of haul road.

Growth media stockpiles will be constructed with slopes no steeper than 3H:1V. LNC will implement measures to mitigate erosion, weathering, and leaching of salts and nutrients during storage of growth media. LNC will seed the growth media stockpiles to create a temporary vegetative cover which binds the soil and limits loss due to wind and water erosion of the stockpile to avoid increased sediment concentration in surface runoff. LNC will use the seed mix that was established for reclamation. This seed mix is designed to grow in the clay soils common at the project site and consists of species that can exist in the northwestern Nevada environment. A detailed breakout of the seed mix is shown in Table 6-2. All stockpile areas will be constructed with toe berms to trap soil and sediment from leaving the stockpile site.

LNC will avoid sodic subsoils (which are deleterious) during salvage operations to ensure the quality of reclamation growth media needed for closure. Reclamation in northern Nevada can be challenging, and the elevated sodium content in local earthen materials will compound these challenges. LNC has developed a special reclamation seed mix for use in clay soils that are slightly elevated in salts (Section 6.4.4) to facilitate reclamation in the Project area.

Industry Best Management Practices (BMPs) and conservative reclamation planning and design will be crucial when attempting to establish vegetation and stabilize reclaimed slopes.

3.20 Stormwater Management

LNC will implement Project-wide BMPs to limit erosion and reduce sediment in precipitation runoff from Project facilities and disturbed areas during construction, operation, and initial stages of reclamation. BMPs are designed to prevent, control, and minimize the general migration and transport of pollutants including sediments to natural drainages to protect surface water and groundwater quality in and adjacent to the Project area.

Project stormwater infrastructure will include construction of diversions and sediment ponds as well as installation of culverts at road crossings (Figure 16). LNC will divert stormwater away from the Project facilities through the construction of drainage structures that convey water around and downstream of the Project area. Stormwater facilities will be sized to withstand runoff generated from a 25-year, 24-hour design storm events during the operational phase of the Project, unless a higher level of protection is required for downstream elements. Stormwater facilities around the plant site area will be sized to accommodate a 100-year, 24-hour storm event. Diversion channels may remain as permanent features after final reclamation and mine closure and will be sized to handle the 500-year, 24-hour design storm event at closure (further discussed in Section 6.5.11).

BMPs will be used strategically to reduce erosion and sedimentation in accordance with the Stormwater Pollution Prevention Plan (SWPPP) (Appendix C). Revegetation of disturbed areas will reduce the potential for wind and water erosion. Following construction activities, areas such as cut-and-fill embankments and growth media stockpiles will be seeded as soon as practical and safe. Concurrent reclamation will be maximized to the extent practicable to accelerate revegetation of disturbed areas. All sediment and erosion control measures will be inspected periodically, and repairs performed as needed.

LNC will implement sediment control measures, as necessary, to reduce soil movement within the site and to minimize offsite effects. These structures will be maintained throughout the life of the

Project. LNC will periodically remove soil collected in these structures and place the material in growth media stockpiles for future reclamation use.

3.20.1 Diversion Channels

Diversion channels will be constructed to intercept and direct water away from the disturbed areas and to capture runoff water downstream of proposed mine infrastructure. Sediment will be removed periodically from the diversion channels throughout the production and post-production periods.

The proposed stormwater diversions will be designed using BMPs. A typical cross-section of the proposed diversions is shown on Figure 16. The diversions may be constructed with 2H:1V side slopes, sized to convey the 25-year, 24-hour storm event (except around the plant area where diversions will be sized to convey the 100-year, 24-hour storm event) and include one foot of freeboard. If necessary, the diversions will be further armored utilizing material such as rock, geotextile blocks, erosion stabilization textiles, plantings, and/or waddles.

3.20.2 Sediment Ponds

LNC will manage stormwater runoff from the Project area through the construction of unlined stormwater sediment ponds. Sediment ponds will be constructed prior to construction of mine facilities.

Sediment ponds will be constructed within the Project area to collect and settle out solids transported by stormwater runoff from disturbed areas. The sediment ponds will be designed to store a minimum two-year, 24-hour storm event and release excess water using a riser pipes or by using pumps over time. Water will also be removed by infiltration and evaporation. Sediment ponds will be designed with an overflow system sized to a minimum 25-year, 24-hour storm event (spillway or overflow pipe). In the event of an overflow, water in the pond would be directed to natural drainage or diversion channels. The sediment ponds will be routinely cleaned out to maintain adequate storage capacity. Sediment removed from the sediment control structures in the CTFS area will be placed on the CTFS; other sediment removal may be placed in the active open pit or along the berm of the pond.

3.20.3 Culverts

Culverts will be installed under haul roads during construction of facilities, as shown on Figure 16, to prevent water from going over the haul roads. Culverts will be sized to accommodate a 25-year, 24-hour storm event. Other minor culverts may be installed under the main and ancillary roads as needed to maintain accessibility.

3.21 Water Use, Supply, and Storage

LNC currently holds 15.5 acre-feet (AF) of water rights (mining and milling use) within the Project area. Additionally, LNC holds approximately 980 AF of water rights (irrigation use) within the Quinn River Valley, Orovada Subarea Hydrographic Basin, with options to purchase approximately 2,717 AF of additional water rights (irrigation use), also within the Quinn River Valley, Orovada Subarea Hydrographic Basin. LNC intends to transfer the water right point of diversion to the existing Quinn Production Well and Quinn Backup Well (Figure 7), and point of use to the plant site. Prior to initiating mining, LNC intends to change the manner of use from agricultural to mining and milling. LNC will perform the transfer of water rights, change in point of diversion, and change in manner of use through coordination with the Nevada Division of Water Resources (NDWR). Prior to the implementation of Phase 2, LNC plans to acquire and transfer additional water rights to the Quinn Production Well for use in the mine and process operation. The consumptive water requirement for Project operations is estimated at 2,600 AF per year during Phase 1, and 5,200 AF per year during Phase 2.

Water from the Quinn Production Well will be piped to a water tank located in the plant area as shown on Figure 7 with the support of two booster pumps and/or a pump tank arrangement. LNC will construct a water pipeline for the Quinn Production Well and Quinn Backup Well to the raw water storage tank located in the plant. The proposed seven-mile underground pipeline will follow the proposed power line corridor (Figure 7). Two booster pumps will be installed along the pipeline or the wells will pump to a storage tank in the well field that will be used to pump water to the plant. Well water will primarily be used in the production of steam and sulfuric acid while recycled process water will be used throughout the production facility to slurry solids. A water storage tank will be in the tank farm area within the process plant (Figure 13).

Water to supply the mine area will be piped from the process plant area via the interplant pipe containment channel (Figure 7).

Water will be provided from the following sources: Quinn Production Well and the Quinn Backup Well, steam condensate, process condensate, and recycled process water.

The nominal capacity of the Quinn Production Well pumping and delivery system will be approximately 1,600 gpm for Phase 1 and approximately 3,200 gpm for Phase 2. The Quinn Backup Well will be located west of the existing Quinn Production Well in the Quinn River Valley as shown on Figure 7. Most of the pipeline and powerline construction corridor will be temporary and will be reclaimed upon construction of the pipeline and powerline. However, portions of the construction corridor providing access to the Quinn Production Well, Quinn Backup Well, and associated water tank will remain permanent and available to access and service the wells and tank. Access to the wells and tank will be via an existing road south of the proposed Quinn Backup Well pad (Figure 7).

Potable water will be supplied by treating water obtained from Quinn Production Well and Quinn Backup Well and stored on site. Drinking water facilities will be provided in two locations: the process plant/admin building area and mine facilities. LNC will secure appropriate permits for an on-site potable water system from the Nevada Bureau of Safe Drinking Water (BSDW).

LNC currently has 15.5 AF of water rights (mining and milling use) associated with the PH-1 well located within the footprint of the mine pit (Figure 17). LNC will continue to pump water from production well PH-1 for use in dust suppression activities. Once mining operations encroach on PH-1, LNC will plug and abandon the well according to the requirements stated in NAC 534.425 through 534.428.

3.22 Transportation

Site roads will be designed for operational and maintenance traffic for the eventual 66,000 tpy production rate.

LNC estimates 60 to 100 one-way truck trips per day, predominantly between the transloading facilities near Winnemucca and the plant, during Phase 1. During Phase 2, between 120 to 200 one-way truck trips per day be required to support the Project through reagent and product shipments.

LNC anticipates that molten sulfur, soda ash, quicklime, caustic soda, and fuels will be transported by rail to the Winnemucca area and transferred to trucks for transportation to the Project site. LNC expects to use the services of a transloading facility operated by a third-party in the Winnemucca area. Other materials and consumables to support the Project such as limestone, equipment, parts and construction materials will be transported to the Project site by truck from other locations. Most materials and consumables will be transported by licensed vendors to the Project site via Interstate 95 from the south (Winnemucca), with a small portion arriving from the north (Boise).

Employees are anticipated to be bused to and from the Project site in company buses from Winnemucca, Orovada, and/or McDermitt areas.

3.23 Mobile Equipment

Mining, ore processing operations, and maintenance activities will require a combination of heavy and light equipment. LNC will install backup alarms on all necessary mine equipment, flags or strobe lights, and fire extinguishers as required by Mining Safety and Health Association (MSHA) or Occupational Safety and Health Administration (OSHA). All mine equipment will conform to MSHA regulations and operators will be MSHA-trained before entering work areas and be aware of workplace hazards. All plant equipment will conform to OSHA regulations and operators will be OSHA-trained before entering work areas and be aware of workplace hazards. Mining and plant equipment will have an alarm or emergency warning system. Per regulatory requirements, alarm or warning methods will be capable of being heard above ambient noise. A list of the anticipated mobile equipment requirements for the proposed mining operation is provided in Table 3-8.

Table 3-8 Mobile Equipment

Equipment	Phase 1	Phase 2
Mine Equipment		
Hydraulic Excavator	2	3
Surface Miner	1	1
End Dump Truck	9	14
Track Dozer	1-3	2-5
Water Truck (5,000 gallons)	1	2
Motor Grader	1	2
Front End Loader	1	1
Service Vehicles	5-7	7-9
Light Vehicles	5-7	8-12
Misc. Support Equipment	7-12	12-16
Exploration Equipment		
Track Dozer	1	1
Hydraulic Excavator	1	1
4-wheel Drive Supervisor Truck	2	2
Drill Rigs	4	4
Pipe Truck or Trailer	4	4
Plant Site Equipment		
Ambulance	1	1
Fire Truck	1	1
Water Truck (5,000 gallons)	1	1
Service Trucks	2	4
Pickup Trucks	5	7
4-Ton Forklifts	6	8
20-Ton Crane	1	1
Carry Deck Crane	1	2
Skid Steer Loaders	2	3
Man Lifts	2	4
Telehandler	1	2
Backhoe	1	1

*Mining Equipment Size and Capacity

The specific equipment procured for the project will be based on an evaluation of vendors' proposals, and equipment size and capacity will depend upon the vendor supplying the equipment. However, the capacity will generally be: End Dump Trucks: 78 - 119 cyds, Hydraulic Excavator: 15–30 cyds, Front End Loader: 15-30 cyds Dozers: 130-850 HP class, Motor Graders: 16-18 ft width moboard class, Surface Miner: 8-14 ft. width, Water Truck: 500-530 HP class, Service Vehicles: 300-330 HP class, Lube: 320 – 375 HP class, Light Vehicles: ½ to 1 ton class, and Miscellaneous Support Equipment: Warehouse forklift, telehandler, light plants, pumps, and trailers.

3.24 Ancillary Facilities

3.24.1 Power Transmission and Distribution

LNC is proposing to connect to the existing 115-kV Harney Electric network with a new substation located south of the sulfuric acid plant (Figure 13). LNC will use power from the Harney Electric power line during startup until the sulfuric acid plant is operating, and during times when the sulfuric acid plant is shut down.

The main 25-kV substation will be installed at the plant site during Phase 1. LNC proposes to construct a seven-mile long 25-kV distribution line from the plant substation to the Quinn Production Well, parallel to the water pipeline (Figure 7), and extending to the Quinn Backup Well. LNC will also construct a new 25-kV distribution line from the plant substation to support the mine area (Figure 7). A substation will be located in the mine facilities area to facilitate power distribution in the mine area, and another substation will be located in the attrition scrubbing area.

Chemical processes in the acid plant will generate large amounts of excess heat, which will be captured as discussed in Section 3.15. LNC will use steam produced by the sulfuric acid plant to generate electricity. Electricity for the mine and plant is expected to be generated locally by the power plant turbo generators; however, electricity also could be sold to the grid. If needed or commercially warranted, Harney Electric could provide all necessary electrical requirements. The amount of electricity produced by the turbo generators that is sold and/or consumed will be determined prior to the startup of Phase 1.

Approval from the Public Utilities Commission of Nevada (PUCN) will be sought to the extent required by the nature of power sale into the grid.

3.24.2 Hydrocarbon and Fuel Storage

Fuel storage will be located in the mine area (shown as "Fuel Farm" on Figure 11) and within the process plant area. LNC will design and construct the facilities in accordance with applicable federal, state, and county regulations. The facilities will consist of above-ground storage tanks, pumps, and connections for loading from vendor trucks and for fueling all mobile equipment on site.

Containment structures will be constructed of concrete, lined earthen berms, or otherwise lined structures that will be located so a spill or release cannot enter the environment. Containment structures will be designed to have the capacity to contain at least 110 percent of the largest tank or vessel within the structure, in accordance with the NAC 445A regulations. The petroleum product tanks are aboveground and typically double-walled. Primary containment will consist of a tank while secondary containment will include the double-wall container, metal or otherwise structured "nests", concrete containment slab and walls, or lined earthen berms.

Spilled diesel fuel would be recovered from secondary containment and disposed of in compliance with regulations. Used oil and coolant would be placed in separate storage tanks that are evacuated on an as needed for offsite disposal.

Antifreeze and hydrocarbon products including lubricants, oils, and used oil will be stored at the mine maintenance area and process plant central maintenance area. These will be transported, stored, and used in accordance with federal, state, and local regulations. Hydrocarbon products will be stored in primary (tanks, tote bins, barrels) and secondary containment to prevent releases to the environment. Used oil and used containers will be disposed or recycled according to federal, state, and local regulations.

Table 3-9 presents the estimated fuel storage volume, delivery rate, and consumption at the Project site.

Table 3-9 Fuel Storage

Fuel	Storage (Gallons)	Anticipated Trucks/Month	Approximate Daily Consumption (Gallons)
Off Road Diesel (mine)	50,000	38	11,300
Off Road Diesel (plant)	42,500	14[1]	14,794[1]
Highway Diesel	8,000	1	68
Gasoline (mine)	3,000	1	182
Gasoline (plant)	1,000	0.2	68
Bulk Tank DEF	330	3	452
Bulk Tank Oil	19,000	2	193
Bulk Tank Coolant	3,000	1	40
Bulk Tank Used Oil	3,000	0.5	-
Bulk Tank Used Coolant	3,000	0.5	-
Bulk Tank Grease	Nine 250-gallon tote	2.5	283
Bulk Solvent	Two 320-gallon tote	0.25	3.3
Propane	Two 350-gallon tanks	0.2	3

Note: [1] Off-road diesel will be used in the package boiler for the sulfuric acid plant. It will operate approximately four times per year for 72 hours each cycle. Consumption during runtime will be an estimated 300 gallons per hour.

3.24.3 Septic Systems and Leach Fields

The Project will have three on-site septic systems for the disposal of domestic sewage and gray water. One septic system will be located at the mine facilities area (Figure 11). The second septic system will be located south of the processing plant, and the third will be located near the guard shack and battery production complex (Figure 13). Each septic system will be sized appropriately for the maximum use.

3.24.4 Communication Facilities

LNC will implement an effective communications network consisting of radios and/or cellular telephones. All vehicles and equipment will be equipped with radios and/or cellular telephones for general operating activities, fire preparedness and prevention, suppression operations, and emergency purposes. All vehicles and equipment will also be equipped with an emergency communication list that will include numbers for the administering agency emergency contact. Additionally, hand-held radios will be available for personnel use.

LNC proposes to install three radio repeater communication towers. One tower (approximately 50 feet tall) will be located along the western area of the Project site (Figure 8). A second tower (approximately 150 feet tall) will be located on the hill behind the mine facilities (Figure 11). A third tower will be located at the sulfuric acid plant. The towers will provide a communication network for the mine and plant sites, as well as Global Positioning System correction data. Wi-Fi will be used on trucks to track hauling and production volumes.

LNC will tie into the existing fiber optic line located south of SR 293, across from the Project's main entrance, as shown on Figure 13. LNC will either trench across the SR 293 or bore under the highway to access the existing fiber optic line. Connections to the fiber optic line and service will be coordinated with Humboldt Telephone Company (Oregon Idaho Utilities). LNC will obtain an encroachment permit from NDOT prior to fiber optic line improvements within the highway right-of-way.

3.24.5 Weather Station

As the pit development progresses, LNC will relocate the existing weather station to the western boundary of the pit (Figure 8).

3.24.6 Fencing and Site Security

LNC will fence the proposed facilities and other areas as required by BLM, NDEP, and NDOW, and as needed. LNC will install barbed wire fencing to exclude cattle, wildlife, and the public around the Project facilities. Fencing will be phased throughout the mine life, increasing as the Project develops to accommodate livestock permittees grazing access to the extent practicable, with ultimate fence build-out for the mine life shown on Figure 7.

LNC will work with area allotment leaseholders to reduce the potential for livestock to be injured or killed by construction and/or mining activity. In the Quinn River Valley, access to the Quinn Production Well and Quinn Backup Well will involve crossing several grazing allotment fences. LNC will work with BLM and livestock ranchers to install cattle guards where needed along existing access roads used to access the Quinn Production Well or Quinn Backup Well.

The southern boundary of the Project area will extend just to the south of SR 293. Portions of the lithium process plant and sulfuric acid plant will be fenced with an eight-foot chain link fence. LNC will fence (chain-link, six to eight feet in height) the area surrounding the reclaim ponds to restrict wildlife access. Mining areas undergoing reclamation will be fenced as necessary to facilitate revegetation.

Site security will be operated on a 24-hour, seven-day a week basis, with the guard buildings or other security measures located at the entrances to the Project site. Handheld radios will be available to all company personnel and check in will be required for all vendors, suppliers, and contractors. The Project will have controlled access and security throughout the mine life.

3.24.7 Emergency Facilities

LNC will perform first response procedures in the event of an emergency. The Project will include a medical facility and an ambulance on site. The first aid clinic will be located within the building hosting the warehouse, laboratory, and administration offices. LNC will construct a helipad by the process plant for medical evacuations (Figure 13).

3.25 Safety and Fire Protection

The mine area will operate in conformance with all MSHA safety regulations (30 CFR 1-199). The chemical plant will operate in conformance with all applicable MSHA and OSHA safety regulations, as appropriate. Site access will be restricted to employees and authorized visitors.

Prior to starting operations, LNC will notify the MSHA Western District Office of the approximate or actual date mine operation will commence. Pursuant to 30 CFR 56.4330(a), LNC will establish emergency firefighting, evacuation, and rescue procedures and coordinate in advance such procedures with available firefighting organizations. Under 30 CFR 56.18014, LNC will also make arrangements in advance for obtaining emergency medical assistance and transportation for injured persons from the mine.

In addition, before the Project commences, LNC will file with Nevada OSHA a Pre-Construction Notification Form in accordance with NAC 618.505 and will provide such related materials as may be warranted including a written safety program for each contractor on the Project, a Project plan for evaluation by Nevada OSHA, the name of the project manager, and the name of the designated safety officer.

The fire water supply for the permanent fire protection will be provided from the raw water tank located within the plant area. The raw water tank will have an active storage volume of approximately 730,000 gallons and will be fed from the proposed water pipeline (Advisian 2018). The fire water supply shall be based on the requirements provided by National Fire Protection Association standards and LNC specifications.

The plant will be equipped with underground firewater distribution mains, ensuring that the water requirements for the fire hydrants and all buildings/facilities requiring fire suppression are effectively met. The fire water mains will be looped and adequately sized to supply the flow requirements.

LNC will establish a fire protection plan, including fire protection equipment, for the Project in accordance with State Fire Marshal standards. Reasonable measures to prevent and suppress fires within the Project area will be taken by employees, contractors, and subcontractors. No open fires will be allowed within the Project area during the mine life.

Smoking will only be permitted in designated areas that are free of flammable materials and only if allowed by state law or federal regulations.

Vehicles and equipment operated on public and private lands and roads will meet proper wildfire preparedness requirements including, but not limited to, being equipped with approved spark arrestors, fire suppression tools, and other appropriate supplies. Power equipment will be equipped with fire extinguishers, buckets, and shovels during the exploration program.

All equipment will be properly muffled and equipped with suitable and necessary fire suppression equipment, such as fire extinguishers and hand tools.

3.26 Solid and Hazardous Waste Disposal

Both domestic and industrial solid waste will be generated during construction and operations of the Project. LNC will either haul solid waste to the existing Humboldt County Landfill, located north of Winnemucca, or dispose of solid waste in an onsite Class III waivered industrial landfill in accordance with NAC 444.731 through 444.737. If an onsite landfill is utilized during operation, it will be located in the WRSF or inside the pit. Construction wastes and wastes generated during closure (e.g., concrete building foundations) may be disposed of in a permitted on-site Class III landfill located within the West WRSF, shown on Figure 8. The construction landfill will cover an area approximately 250 feet by 350 feet. Final cover over all disposal sites will consist of a minimum of 24 inches of compacted soil meeting the requirements of NAC 444.6891.

Hazardous waste will be managed and stored according to state, federal (43 CFR 262) and local regulations. These wastes will be stored on concrete pads and provided with secondary containment until removal and disposal at an authorized facility. Used oil and coolant will also be stored at the truck shops in secondary containment. The materials will be either recycled or disposed in accordance with state, federal, and local regulations. Used coolant and oil will not be mixed. Used containers will be disposed or recycled according to federal, state, and local regulations.

Prior to operation, LNC will institute a waste management plan that will identify the wastes generated at the sites and their appropriate means of disposal. Employees who deal with these wastes will be trained in their proper handling, storage, and emergency procedures relevant to their responsibilities; the firm selected to transport and dispose of these materials will be certified by the NDOT and NDEP, as required. It is anticipated that transport will occur on a regular basis.

If necessary, based on wastes generated and quantities, LNC will obtain a Hazardous Waste Identification Number from the United States Environmental Protection Agency (EPA) for both the mine and plant site.

A training program will be implemented to inform employees of their responsibilities in proper waste disposal procedures.

Hazardous materials will be transported, stored, and used in accordance with federal, state, and local regulations. LNC will store hazardous waste in a designated building located within the process plant area specifically designed for this purpose including venting and within the process plant area. Hazardous waste will be properly labeled and removed from the Project site. LNC will train its employees in the proper transportation, storage, use, and disposal of hazardous materials.

LNC will store petroleum contaminated soils in a designated area near the mine facilities and periodically transport it off site by a licensed contractor for proper disposal. LNC will periodically remove petroleum waste products (i.e., such as used oil, hydraulic fluids, old fuel, etc.) from the Project site and will send the waste to the appropriate recycling center or disposal facility.

3.27 Exploration Operations

LNC will continue to conduct exploration within the Project area. The current exploration program is focused on expanding mineralization in and around the known deposit as well as other targets within the Project area. Exploration around the existing deposits consists of drilling and refining the geological and geochemical models. Other targets in the Project area will require additional geologic mapping, data compilation, and review.

To facilitate further exploration, LNC proposes to create 150 acres of exploration-related disturbance within the Project area (within the 10,468-acre POO Boundary) over the life of the mine. Exploration activities generally involve surface sampling, trenching, bulk sampling, and drilling. Exploration activities may also include geotechnical investigations, geophysical surveys, water exploration, and monitoring well installation, as necessary during the life of the Project. LNC estimates up to 33 acres (600 drill pads; 40 feet by 60 feet) of disturbance associated with the construction of drill pads, 58.2

acres (211,200 linear feet, 12 feet wide) of disturbance associated with construction of access roads, 6.9 acres (50,000 linear feet, 6 feet wide) of disturbance associated with overland travel, and up to 51.9 acres of disturbance associated with monitoring well installation, geotechnical investigations, geophysical surveys, and sampling, trenching, or bulk sampling.

When possible, exploration areas will be accessed using existing roads. If additional access is required, exploration areas will be accessed using either overland travel (creating a travel width of six feet) (estimated 50,000 linear feet), or using improved roads and spurs bladed to an average travel width of 12 feet (estimated 211,200 linear feet).

Up to 600 drill sites are proposed, which are typically graded and stabilized, will be constructed to accommodate a safe working area, and will measure about 40 feet by 60 feet, including reserving side-cast material for future plant growth media. Excavated sumps are used at each drill site to contain drill cuttings and control drilling fluids. A drill site and sump may be used for more than one drill hole.

Drill depths used for mineral exploration are anticipated to average about 600 feet, which generally requires the use of core drill rigs. Depth to water encountered during prior exploration activities varied, but the shallowest encounter was recorded at about 40 feet below ground surface.

Drill holes may be repurposed for monitoring purposes. A Geokon piezometer groundwater monitoring device may be installed at depth in some exploration drill holes prior to plugging the hole. A piezometer device would continuously monitor and record groundwater levels in the area, allowing LNC and the BLM to assess groundwater resources. Exploration holes may also be converted to groundwater monitoring wells. Under this scenario, LNC would first obtain written permission through an Occupancy Permit from the BLM. LNC would also apply for the necessary permits from the Nevada Division of Water Resources (Waiver for Observation or Monitoring Well & Affidavit of Intent to Plug a Well). If drill holes are not repurposed, they will be abandoned per NAC 534.425 through 534.428 prior to the drill rig moving to the next site.

The precise location of exploration drilling activities is unknown at this time. Up to 150 acres of exploration disturbance are proposed to occur anywhere within the Project area. LNC will use a phased approach to minimize adverse environmental impacts and to prevent unnecessary and undue degradation of public lands. LNC also will coordinate with BLM as to the presence of possible cultural resources that may exist in the area at the time drilling activities are planned, as described in Section 4.11. Road usage and locations of construction and drilling activities will be dependent upon the results of each phase of exploration. A work plan describing the activities for the upcoming season (or as often as changes are made to the authorized work plan), including a map showing specific locations of drill sites, road alignments, water conveyance and storage, monitoring locations, or ancillary facilities, will be submitted to the BLM prior to construction of drill sites or access roads.

The need for flexibility of road and drill site placement during the Project is of paramount importance and warranted by the very nature of exploration drilling. LNC expects some deviations in actual site locations and road alignments to minimize surface disturbance and to meet subsurface exploration needs. The order in which the sites will be drilled will be determined based on the lithologic and assay results as the exploration progresses.

Proposed reclamation methods will include the reshaping and recontouring of exploration road and pad disturbances. Side-cast growth media will be replaced during recontouring activities and seeded with the reclamation seed mix (Table 6-2).

3.28 Use and Occupancy

Under 43 CFR 3715.0-5, occupancy means full or part-time residence on the public lands. Occupancy is also interpreted as meaning activities that involve residence; the construction, presence, or maintenance of temporary or permanent structures that may be used for such purposes; or the use of a watchman or caretaker for monitoring activities. Residence or structures include, but are not limited to, barriers to access, fences, tents, motor homes, trailers, cabins, houses, buildings, and storage of equipment or supplies. LNC plans to construct structures for the process facility and the administration/security office, as well as other structures, monitoring wells, and production wells that could be interpreted as occupancy.

The proposed project meets the requirements for use and occupancy as presented in 43 CFR 3715.0-5. LNC will incorporate all previous occupancy from previous BLM permits (N91547, N94510).

3.29 Permits Required

As part of Project development, LNC will acquire the permits and authorizations presented in Table 3-10.

Table 3-10 Major Permits and Authorizations Required

Permit	Regulatory Agency
Mine Plan of Operations/Record of Decision	United States Department of the Interior, Bureau of Land Management (BLM)
Surface Disturbance Permit and Air Quality Permit to Construct/Permit to Operate	Nevada Division of Environmental Protection, Bureau of Air Pollution Control (BAPC)
Water Pollution Control Permit	Nevada Division of Environmental Protection, Bureau of Mining Regulation and Reclamation (BMRR)
Reclamation Permit	Nevada Division of Environmental Protection, Bureau of Mining Regulation and Reclamation (BMRR)
Permit to Appropriate Water	Nevada Division of Water Resources (NDWR)
Industrial Artificial Pond Permit	Nevada Department of Wildlife (NDOW)
Explosives Permit	United States Department of the Treasury, Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF)
General Discharge Permit (Stormwater)	Nevada Division of Environmental Protection, Bureau of Water Pollution Control (BWPC)
Highway Encroachment Permit	Nevada Department of Transportation (NDOT)
Hazardous Materials Storage Permit	Nevada Department of Motor Vehicles and Public Safety, Fire Marshall Division; Fire Protection Licensing Bureau, HAZMAT Office.
Hazardous Waste Identification Number	United States Environmental Protection Agency (EPA)
Liquefied Petroleum Gas License	Nevada Division of Environmental Protection, Bureau of Health Protection Services (BHPS)
Class III Solid Waste Landfill	Nevada Division of Environmental Protection; Bureau of Waste Management (BWM)
Potable Water System Permit	Nevada Division of Environmental Protection, Bureau of Safe Drinking Water (BSDW)
Certificate of Public Convenience and Necessity for Power Generation	Public Utilities Commission of Nevada (PUCN)
Dam Safety Permit	Nevada Division of Water Resources (NDWR)
Energy Projects Fund	Nevada Department of Wildlife (NDOW)
Septic System Permit	Nevada Division of Environmental Protection, Bureau of Water Pollution Control (BWPC)
Working in Waterways	Nevada Division of Environmental Protection, Bureau of Water Pollution Control (BWPC)
Conditional Use Permit	Humboldt County Planning Department
Building Permit	Humboldt County Building Department

4 Environmental Protection Measures

4.1 Air Emissions

LNC will obtain and adhere to air quality permits for the Project from NDEP Bureau of Air Pollution Control (BAPC). As per BAPC regulations, the Project air quality operating permit must be authorized by the BAPC prior to Project commissioning.

Air quality practices will include dust control for mine unit operations that will be described in the Fugitive Dust Control Plan that LNC will develop for the Project. In general, the Fugitive Dust Control Plan will provide for water application on haul roads and other disturbed areas, chemical dust suppressant application (such as magnesium chloride) where appropriate, and other dust control measures as per accepted and reasonable industry practices. LNC will seed disturbed areas to minimize fugitive dust emissions from surfaces, where appropriate.

LNC will control fugitive emissions at the crusher and conveyor drop points using water sprays or baghouses, as necessary, and will install and operate appropriate emission control equipment in accordance with the construction and operating air permits. Where required, pollution control devices installed by equipment manufacturers will control combustion emissions. LNC will install, operate, and maintain in good working order pollution control equipment such as baghouse dust collectors to minimize emissions.

LNC will develop and implement other control measures, if necessary, including:

- Applying surface treatments (chemical stabilization), additional watering and traffic control regulations (such as reduction in speed and traffic volume restrictions on unpaved roads);
- Stabilizing the surface of areas adjoining roads which are fugitive dust sources by vegetating or mulching;
- Restricting travel of unauthorized vehicles on unestablished roads;
- Minimizing the area of disturbed land during ongoing surface mining activities as much as possible and practical;
- Compacting unpaved roads to stabilize the road surface and prompt removal of ore, rock, soil, and other debris from road;
- Minimizing loss of material to wind and spill by watering or treating loaded haul trucks;
- Ensuring prompt revegetation of disturbed lands; and,
- Restricting activities causing fugitive dust during periods of air stagnation whenever possible.

LNC will voluntarily use the Best Available Control Technology (BACT) standard (NAC 445B.028) for the operation of the sulfuric acid plant and the battery production facility. These measures will provide a degree of reduction in the emission of criteria and hazardous air pollutants, minimizing impacts to the ambient air quality. Criteria air pollutants that will be released as tail gas from the sulfuric acid plant will be scrubbed with a soda ash or similar solution, reducing SO_2 and acid mist emissions. Excess sodium from the scrubbing medium will be purged to the lithium process plant.

One hundred percent of chlorine created from lithium metal production will be used to create sodium hypochlorite, resulting in zero chlorine emissions during lithium metal production. While the sodium hypochlorite production facility has no chlorine emissions, the storage tank for sodium hypochlorite solution will vent the vapor phase while the tank is being filled. A caustic soda or similar scrubber may be used to reduce any chlorine emissions released during chemical transfer. Emissions from the battery production facility will be reduced with a catalytic oxidizer and a carbon scrubber, effectively reducing total volatile organic compound emissions.

4.2 Water Resources

LNC will operate the Project as a zero-discharge facility. The CTFS will be designed with a liner system in accordance with the Water Pollution Control Permit (WPCP) criteria.

The SWPPP (Appendix C) identifies more specific control measures to reduce or mitigate potential impacts. The SWPPP also provides monitoring requirements to ensure that the BMPs implemented at the site are functioning as designed during the construction, operation, reclamation phase of the Project.

4.3 Erosion and Sediment Control

LNC will implement BMPs throughout the Project site to limit erosion and reduce sediment loading in precipitation runoff from Project facilities and disturbed areas during construction, operations, and initial stages of reclamation. LNC will develop and implement BMPs to reduce erosion and sedimentation in accordance with the SWPPP (Appendix C). Erosion and sedimentation BMPs may include diversion and routing of stormwater using accepted engineering practices, such as diversion channels, sediment ponds, and placement of erosion control structures. Erosion control devices may include silt fences, check dams, sediment traps, and rock and gravel cover.

Seeding (to promote revegetation) of disturbed areas will reduce the potential for wind and water erosion. Following construction activities, LNC will seed disturbed areas such as embankments and growth media stockpiles as soon as practical. Concurrent reclamation of disturbed areas no longer required for operation will provide vegetative cover and soil binding to help prevent/minimize erosion and sediment loading. LNC will periodically inspect all sediment and erosion control infrastructures and will perform maintenance and repairs as needed.

4.4 Growth Media Salvage

Growth media will be required to reclaim the site after mining in accordance with BLM's regulations set forth in 43 CFR 3809-Surface Management. BMPs and conservative reclamation planning and design will be crucial when attempting to establish vegetation and stabilize reclaimed slopes.

LNC will salvage and stockpile suitable growth media during the development of the Project and during construction of Project facilities. Growth media stockpiles will be located such that they will not be disturbed by mining operations and they will be as near as possible to the source. LNC will shape the surfaces of the stockpiles with slopes no steeper than 3H:1V to reduce erosion.

Any growth media remaining in the stockpile for one or more planting seasons will be seeded with an interim seed mix to stabilize the material to reduce erosion and minimize the establishment of undesirable weeds. LNC will use BMPs (such as silt fences or certified weed-free straw bales), as necessary, to contain sediment resulting from direct precipitation.

4.5 Noxious Weeds

LNC recognizes the environmental impact that can result from the establishment of noxious weeds and is committed to implement a proactive approach to weed control. LNC will implement the Noxious and Invasive Weed Management Plan (Appendix D) during construction and through operations of the Project. The plan contains a risk assessment, management strategies, provisions for annual monitoring and treatment evaluation, and provisions for treatment. Weed control measures may include mechanical removal and/or herbicide application (pending BLM's authorization). LNC will ensure that surface disturbance and removal of existing vegetation will be minimal and will maximize the use of previously disturbed areas for storage and staging.

4.6 Large Wildlife and Livestock Protection

LNC will coordinate with livestock permittees and will fence out livestock and large wildlife species such as deer from the mining and process area to prohibit access and protect the animals. LNC will use a combination of existing four-strand fencing and new six-strand fencing as perimeter fencing to prevent livestock and larger wildlife from entering the site. Larger security fences (six to eight foot chain link or similar) will be constructed around ponds and hazardous equipment to further deter wildlife from hazards. Fencing will be progressively installed over time as the Project develops.

In the Quinn River Valley, access to the Quinn Production Well will involve crossing several grazing allotment pasture fences. LNC will work with BLM and the livestock rancher to install one or more cattle guards along the existing access road at allotment fences. If necessary, LNC will also install cattle guards at the entrance to the plant and mine area. Areas surrounding the plant emergency pond and the CTFS reclaim will be fenced to prohibit wildlife access.

LNC will train operators to monitor the mining and process areas for the presence of livestock or larger wildlife; training will include a reporting requirement in the unlikely event of mortality.

4.7 Wildlife, Avian, and Migratory Birds Protection

LNC sited the Project facilities away and south of the high Montana Mountains area to specifically avoid high-value sage-grouse habitat and protect recreational interests. If possible, LNC will time land clearing and surface disturbance to prevent destruction of active bird nests or young birds during the avian breeding season (May 1 to July 15, annually in accordance with BLM policies), in compliance with the Migratory Bird Treaty Act. If surface disturbing activities are unavoidable during the avian breeding and nesting season, LNC will have a qualified biologist survey area proposed for disturbance to determine the presence of active nests immediately prior to the disturbance. Should active nests be located, or other evidence of nesting be observed (i.e., mating pairs, territorial defense, carrying nesting material, transporting of food, etc.), LNC will avoid the area to prevent destruction or disturbance of nests until the birds are no longer present.

LNC will install raptor anti-perch devices on the proposed 25-kV power poles that are located within the portions of Project area that support sage grouse habitat. Anti-perch devices will also be installed on tall structures (where appropriate) within the mine facilities and plant site (e.g., communication tower, weather station, some areas of the lithium processing plant, and sulfuric acid plant). Anti-perch devices (usually triangle shaped, cone-shaped, or are spike-type structures) are designed to be mounted on utility poles or tall structures to prevent or dissuade raptors from landing or nesting on the structure.

LNC has finalized and will implement a voluntary Bird & Bat Conservation Strategy (BBCS) for the Project (Cedar 2019b). The Project BBCS is a Project-specific document that delineates a program designed to reduce the potential risks of raptor, avian, and bat mortality that may result from the interaction of these species with Project facilities. On-site operations will implement measures as outlined in the BBCS.

LNC will also establish wildlife protection policies that will prohibit the feeding or harassment of wildlife.

4.8 Raven Controls

The objective of raven control is to implement non-lethal measures to deter raven depredation of Greater sage-grouse such that overall numbers of sage-grouse and the recruitment of young sage-grouse into the local breeding population do not decrease due to conditions enabled by the construction and operation of the Project. The common raven is identified as the most frequent predator during nesting season in sage-grouse predator studies conducted in the Great Basin. Subsidized food sources such as landfills and roadkill, elevated nest platforms provided by transmission lines, and landscape alterations such as transitions to annual grasses, can increase raven populations.

Raven control has been shown to be an effective, short-term tool during the early nesting season to gain increased survival through the nesting and early brood life cycle stages when ravens are the limiting factor affecting nest success.

Effective raven management needs to include efforts to reduce food, water, and nesting subsidies. LNC will implement the following raven control measures:

- Roadkill carcass removal: LNC will dispose of any animal road kills occurring within the Project site and along the Quinn River Well access road in self-closing trash bins or another secure method;
- Garbage/waste management: All trash associated with the Project during construction and operation will be contained in secure receptacles to prevent the introduction of subsidized food resources for ravens. LNC will use closed bins during construction for organic waste. To reduce the possibility of ravens from ripping into the bags and exposing the trash, plastic bags containing trash will not be left out for pickup. All trash and food items generated by construction and operation activities will be promptly contained and regularly removed from the Project site to reduce the attractiveness of the area to common ravens;
- Reduce and eliminate artificial hunting perches and nesting substrate: In addition to installing the anti-perching devices (described in Section 4.7) on lands where sage grouse habitat exists, LNC will install the proposed transmission infrastructure such that they are incompatible with the establishment of raven nests. As suggested in Avian Power Line Interaction Committee guidelines, LNC will attach polyvinyl chloride pipe or corrugated drainpipe to the proposed 25-kV distribution line structures to discourage nesting (APLIC 2006). However, ravens are resourceful and, in some cases, have nested around such perch and nest discouraging features. Therefore, LNC will also regularly monitor the usefulness of the deterrence measures and implement different measures if the current effort is

unsuccessful. Even successful nest deterrent materials or measures will require occasional maintenance and replacement.

- Reduce availability of water: Access to standing water on the Project site will be limited during construction and operation. LNC will ensure truck wash areas are kept free of standing water during construction. Water used for dust suppression during construction will be applied at a rate that discourages puddling.
- Structure removal following decommission: Elevated structures including utility poles will be removed from the Project site when decommissioned.

4.9 Visual Resources

The Project boundary falls primarily within the Visual Resource Management (VRM) II classification per the 2015 Record of Decisions and Resource Management Plan for the Winnemucca District Planning Area, with an exception of the Quinn Well, which falls within a VRM III classification. LNC will implement measures to blend the Project with the current landscape. Stockpiles will be sloped and reclaimed to blend with the native terrain. The mining pit will be continuously backfilled to be at or near grade with the current topography. Building paint color will be chosen to blend with the landscape and not draw attention to the eye.

LNC will develop and implement BMPs for the Project to reduce light pollution and impacts to visual resources. BMPs will include implementation of "Dark Sky" practices such as screening light sources, directing light towards intended targets, minimizing new disturbance areas, and utilizing colors found in the natural environment for structures and building. The height and angle of illumination from which floodlights are fixed will be reduced as much as possible while still maintaining the required levels of brightness and safety per operations protocol and MSHA/OSHA regulations. Specific visual BMPs, which will be implemented to the extent practicable and consistent with the setting, are outlined below:

- Long-term nighttime lighting on project features will be limited to the minimum necessary for project security, safety, and compliance with Federal Aviation Administration, MSHA, and OSHA requirements and, where possible, will avoid the use of constant-burn lighting.

- Long-term nighttime lighting will be directed and shielded downward to avoid interference with the navigation of night-migrating birds and to minimize the attraction of insects as well as insectivorous birds and bats to project infrastructure.

- Using lighting that does not attract birds and bats or their prey to project sites including using non-steady burning lights (red, dual red and white strobe, strobe- like flashing lights) to meet Federal

Aviation Administration, MSHA, and OSHA requirements, using motion or heat sensors and switches to reduce the time when lights are illuminated, using appropriate shielding to reduce horizontal or skyward illumination, and avoiding the use of high-intensity lights (e.g., sodium vapor, quartz, and halogen).

4.10 Wildland Fire Protection

LNC and its contractors will comply with all applicable agency and state fire laws and regulations and will implement reasonable measures to prevent and suppress fires within the Project area. LNC will not allow open fires within the Project area during the life of the Project.

LNC will coordinate with the BLM to keep vegetation mowed to serve as a fire break at appropriate locations along the fence line at the base of the Montana Mountains. LNC will immediately contact the appropriate firefighting entity in the event of a fire and report all wildland fires to the BLM Central Nevada Interagency Dispatch Center at (775) 623-3444.

Vehicles and equipment operated on public and private lands and roads will meet appropriate wildfire preparedness requirements. All vehicles would carry fire extinguishers. Vehicle catalytic converters would be inspected regularly and cleaned of brush and grass debris. Depending on the use, vehicles and equipment may also be equipped with approved spark arrestors and other appropriate supplies. Power equipment will be equipped with fire extinguishers, buckets, and shovels.

Crew vehicles and equipment will be equipped with radios and/or cellular telephones for fire preparedness and prevention, suppression operations, and emergency purposes. Crew vehicles and equipment will also be equipped with an emergency communication list that will include numbers for the administering agency emergency contact.

Smoking will only be permitted in designated areas that are free of flammable materials and only if allowed by state law or federal regulations.

4.11 Cultural and Paleontological Resources

BLM's preferred method to prevent impacts to National Register of Historic Places-eligible sites or unevaluated cultural resources is avoidance. Should avoidance to a known site not be feasible due to land disturbance requirements associated with Project development or if adverse effects cannot be prevented, LNC will implement mitigation measures such as data recovery, documentation and reporting at the affected cultural sites. If an unevaluated site cannot be avoided, LNC will gather additional information to evaluate the site. If the site does not meet eligibility criteria, no further cultural survey work will be performed. If the site meets eligibility criteria, LNC will develop a data recovery plan or appropriate mitigation.

LNC will inform Project employees and contractors that knowingly disturbing cultural resources (historic or archaeological) or collecting artifacts is illegal. Project employees and contractors will be informed on how to proceed with chance finds.

If it appears that the undertaking will or may adversely affect historic properties, LNC will support consultation activity initiated by BLM and will coordinate with BLM to develop a programmatic agreement or Memorandum of Agreement to address all cultural resource sites within the Project area.

4.12 Solid and Hazardous Materials Management

LNC will develop and implement a Solid and Hazardous Waste Management Plan that will identify wastes generated at the Project site and their appropriate means of disposal. Employee training will outline appropriate disposal practices, which includes the allowable wastes that can be placed in a landfill, management of used filters, oily rags, fluorescent light bulbs, aerosol cans, and other regulated substances. Used solvent, liquids drained from aerosol cans, accumulations of mercury fluorescent lights, and used antifreeze may be regulated by Resource Conservation and Recovery Act (RCRA).

All solid wastes generated by the mine and process operations will be collected in dumpsters near the point of generation. The roll-off container will be picked up within 90 days (or sooner) of initial waste accumulation and shipped off-site for disposal or disposed of onsite in a Class III Landfill. Hazardous wastes will be properly stored and placed in roll-off containers near their points of generation for no more than 90 days. Hazardous wastes will be picked up and disposed of at a facility licensed to treat, store, and dispose of the wastes. LNC will place appropriate labels on the roll-off containers at the time of delivery.

LNC will place signs in the waste storage area at the accumulation facility to indicate the locations where drums, five-gallon pails, and/or boxes containing various materials are to be placed, including an area for hazardous wastes. Full and labeled drums will be placed in the designated areas on pallets with enough aisle space. Empty drums will be stored in a designated area within the fenced accumulation facility.

LNC will isolate parts-washer contents from the oil/water separator and the general septic systems. These parts washers will be self-contained and will be located in the maintenance shop. The solvent collected in nearby drums will be returned to a certified recycling/disposal firm.

Waste disposal practices for waste streams will include:

- Used antifreeze will be collected and stored in a "Used Antifreeze" tank located at the truck shop in the mine facilities (Figure 11). Used antifreeze will be sent to a licensed recycling facility via a licensed trucking company;
- Used aerosol cans will be emptied using can-puncturing devices. The can puncturing devices will be equipped with closed-top drums to collect the contents of the punctured can. The contents collected in the drum will be shipped off-site for disposal in accordance with RCRA. Empty, punctured cans will be disposed in the landfill or recycled as light scrap steel;
- Used haul truck tires will be recycled or buried in specific surveyed locations within the WRSF for the first five years of operation, and subsequently in the pit area to ensure a deep cover;
- Used fluorescent light bulbs will be collected and sent off-site to a recycling facility;
- Used oil filters will be drained prior to being crushed and recycled;
- Shop wipes will be collected in metal receptacles near the point of use and then disposed in accordance with state and federal regulations;
- Used oil will be collected at the used oil tank at the truck shop and transported off-site using a licensed used oil transporter; and,
- Used containers that held reagents or petroleum products will be drained, rinsed, and recycled.

The reagent containers would be able to be drained and rinsed into the process at the appropriate location to not cause process upsets. For those reagents not able to be drained and rinsed, the containers would be sent to an appropriate external disposal or recycle facility. The petroleum products would not be drained and rinsed; these would be sent to an appropriate external facility for recycle, if suitable, otherwise it will be disposed of appropriately.

LNC will have a trained response team at the site 24 hours per day to manage potential spills of regulated materials at the site. LNC will implement steps described in the Spill Contingency Plan (Appendix E).

4.13 Protection of Survey Monuments

To the extent practicable, LNC will protect all survey monuments, witness corners, reference monuments, bearing trees, and line trees against unnecessary or undue destruction, obliteration, or damage. During operations, if any monuments, corners, or accessories are destroyed, LNC will immediately report the matter to the authorized officer. Prior to obliteration, destruction, or damage during surface disturbing activities, LNC will contact BLM to develop a plan for any necessary restoration or reestablishment activity of the affected monument in accordance with the Manual of Surveying Instructions (DOI 2009). LNC will bear the cost for the restoration or re-establishment activities including the fees for a Nevada Professional Land Surveyor.

4.14 Public Safety and Access

LNC will maintain public safety throughout the life of the Project. All equipment and other facilities will be maintained in a safe and orderly manner. If any existing roads in the Project are severely damaged because of Project activities, LNC will return them as close as possible to their original condition.

5 Operating Plans

5.1 Stormwater Management Plan

The SWPPP (Appendix C) provides information on the BMPs that LNC will implement to manage the flow of stormwater, prevent uncontrolled migration, and minimize erosion and sediment transport from Project facilities and disturbed areas during construction, operations, and initial stages of reclamation. The plan also describes the monitoring program and reporting requirements associated with stormwater management at the Project site. The USACE AJD confirmed that the Survey area (which includes the Project area) does not contain any jurisdictional aquatic resources, wetlands or streams; however, LNC will maintain the SWPPP as an operational plan. This plan is intended to:

- Provide for an effective response to emergency situations;
- Minimize the effect on personnel and surrounding communities;
- Minimize property and equipment losses;
- Coordinate interdepartmental responses;
- Assure the cooperation of outside agencies; and,
- Provide for the release of accurate information to the public.

5.2 Waste Rock Management Plan

Waste rock material will be placed in the WRSF and coarse gangue material in the coarse gangue stockpile as described in Sections 3.5 and 3.9. Once the pit has advanced enough, a portion of the waste rock and gangue material will be backfilled into the pit. As part of the Project's Water Pollution Control Permit (WPCP), LNC will develop a formal Waste Rock Management Plan that will describe handling and reclamation of waste rock and coarse gangue material. The plan will include the analytical protocols and criteria that will be used to identify potential acidic or reactive rock. The Waste Rock Management Plan will describe how the material is identified by testing prior to and during mining, selectively handled, processed, and reclaimed.

A summary of waste rock characterization performed to date is presented in Section 3.5.1. A summary of the pit backfill is described in Section 3.4.2. The results of the characterization program available to date have been summarized in the Waste Rock and Ore Characterization Report (Appendix B).

5.3 Spill Contingency Plan

The Spill Contingency Plan (Appendix E) was developed in accordance with 43 CFR 3809.401(2)(vi) and describes the measures LNC will implement to avoid spills of chemicals or hazardous substances including inspections and maintenance, transport, storage, and handling of material. The purpose of the Spill Contingency Plan is to:

- Identify all pollutant sources that may exist within the Project area; and,
- Identify BMPs to prevent or reduce the quantity of potential pollutants discharged to the surface water or groundwater in order to minimize environmental impacts during the construction, operational, and closure phase of the Project.

The plan defines measures that LNC will implement for emergency response for chemical spills including containment, countermeasures, and cleanup procedures from an accidental release, with reference to the Emergency Response Plan (Appendix F) as warranted. The Spill Contingency Plan also describes procedures for reporting and notification of accidental releases of pollutants, along with training requirements.

5.4 Emergency Response Plan

The Emergency Response Plan (Appendix F) outlines the various systems LNC will implement for emergency preparedness at the Project site in accordance with 29 CFR 1910.38(a). The plan describes emergency response procedures including release response, emergency response action, evacuations plans, training, and reporting requirements.

5.5 Quality Assurance Plan

The Quality Assurance Plan (Appendix G) was developed in accordance with 43 CFR 3809.401(2)(v) and describes measures and protocols that will be implemented at the Project site to ensure that construction is completed safely and in accordance with the applicable drawings, specifications, and standards of workmanship through proper documentation and communication. The plan describes the required documentation to assure that the construction techniques and procedures are followed by the contractor and that the intent of the design is met. The Quality Assurance Plan also describes quality control and inspection measures including notification of inspections, records and reports, and measures to implement in the event of non-conformance.

5.6 Interim and Seasonal Closure Plan

Temporary closure of mining and processing facilities could result from a variety of circumstances. The Interim and Seasonal Closure Plan (Appendix H) has been developed in accordance with 43 CFR 3809.401, NAC 445A.398(5), NAC 445A.444, and NAC 445A.399. The plan describes measures to be implemented to stabilize disturbed areas in the event of a temporary closure period and addresses unplanned seasonal closure protocol due to extremely severe weather conditions. The

Interim and Seasonal Closure Plan provides details on monitoring site conditions during periods of non-operation to ensure that provisions of this Plan and other regulatory requirements would continue to be met during the temporary closure period.

5.7 Monitoring Plan

LNC will monitor the proposed activities in accordance with 43 CFR 3809.401(4) to identify and/or prevent impacts to existing resources. LNC's Monitoring Plan for the Project can be found in Appendix I. The plan provides descriptions of the resources that LNC will monitor during the construction, operation, and reclamation phase of the Project. The Monitoring Plan also describes the type and location of monitoring devices, sampling parameters and frequency, analytical methods that LNC will use for resources monitoring, and reporting procedures.

5.8 Water Management Plans

This section summarizes the Water Management Plans for the Thacker Pass Project, including management of stormwater and site drainage, need for open pit dewatering, process water management, and site water treatment and infrastructure.

Baseline surface and groundwater hydrologic data has been collected for the Project since 2011. This data is summarized in Lithium Nevada Corporation, Thacker Pass Project Baseline Hydrologic Data Collection Report (Piteau 2019b). Figure 4 presents surface water bodies and springs within the Project Boundary.

Stormwater Management

Stormwater management is discussed in Section 3.20 and includes a discussion of Project site diversion channels, sediment ponds, and culverts. LNC has prepared a SWPPP that includes stormwater drainage and the implementation of Nevada best management practices. The SWPPP is discussed further in Section 5.1 and is included as Appendix C. Figure 16 presents the site drainage and the Stormwater Management Plan for the Project site. Project site drainage is also shown in Figure 2 of the SWPPP (Appendix C).

Pit Dewatering

Based on a numerical groundwater flow model developed by Piteau Associates for the Project, pit dewatering is not expected to be required as part of the Project until mining advances into the southeast portion of the pit area, currently projected to be in 2055. The peak dewatering rate is expected to be approximately 90 gpm when mining occurs in the southeast portion of the mine area, projected to be in 2065. Pit dewatering and the management of pumped groundwater is discussed further in Section 3.4.1.

Water Use, Supply, and Storage

The Project's water requirements, water rights, water infrastructure and storage, and water treatment are discussed in Section 3.21 Water Use, Supply, and Storage. The Project's water balance and potential impacts to the local and regional groundwater system is currently being analyzed, and the report is anticipated to be submitted to the BLM in August 2019.

Process Water Management

Water management associated with the initial attrition scrubbing and classification process, which is used to separate the lithium-rich fine clay material from the low-grade coarse gangue material, is discussed in Section 3.8 Mineral Processing. Water management in the process is shown on Figure 13 Block Flow Diagram. Steps taken to recover and recycle water back into the lithium recovery process is discussed in Section 3.11 Chemical Processing. Water management associated with the CTFS is discussed in Section 3.17 Clay Tailings Filter Stack. The CTFS facility will include a seepage collection system between the geomembrane and the clay tailings which will allow water to drain to the reclaim ponds (shown on Figure 15). Stormwater runoff from the CTFS will be directed to the perimeter of the CTFS where it will be directed to the reclaim ponds. Water collected in the pond will not be discharged as part of the stormwater management. Water in the reclaim ponds will be pumped to the processing plant to be used as make-up water for processing operations or will evaporate. Figure 17 identifies all current and proposed water resources monitoring sites in relation to proposed mine and plant facilities.

The Project's water management plan will be revised and expanded prior to initiating operations so that it integrates future Thacker Pass Project permit requirements as identified by BLM, NDEP, and other agencies.

6 Reclamation Plan

Reclamation of disturbed areas resulting from activities associated with the Project and outlined in this Reclamation Plan will be completed in accordance with BLM and NDEP regulations.

The purpose of Subpart 43 CFR 3809 - Surface Management - is to prevent unnecessary or undue degradation of public lands by operations authorized under the mining laws. This regulation establishes procedures and standards to ensure that operators and mining claimants meet this responsibility and provides for the maximum possible coordination with appropriate state agencies to avoid duplication of efforts and to ensure that operators prevent unnecessary or undue degradation of public lands by operations authorized by the mining laws. The State of Nevada requires that a plan be developed for any new mining project and for expansions of existing operations (NAC 519A) meeting requirements to return mined lands to a productive post-mining land use.

6.1 Post-Mining Land Use and Reclamation Goals

Primary objectives for post-mining reclamation of the Project are to:

- Ensure public safety;
- Reduce or eliminate potential environmental impacts;
- Return the site to a condition supporting land uses similar to those in existence prior to mining activities (i.e., livestock forage production, wildlife habitat, recreation, and mineral exploration and development);
- Control infiltration, erosion, sedimentation, and related degradation of existing drainages to minimize offsite impacts; and,
- Employ reclamation practices using proven methods that do not require ongoing maintenance.

With these objectives in mind, reclamation activities are designed to:

- Stabilize the disturbed areas to a safe condition;
- Reduce visual impacts; and,
- Protect both disturbed and undisturbed areas from unnecessary and undue degradation.

This Reclamation Plan is designed to achieve the primary objectives listed above and to remain consistent with BLM's Winnemucca District Resource Management Plan (BLM 2015). Costs to support the financial surety associated with this plan will be submitted for review and are included in the Reclamation Cost Estimate (Appendix J).

6.2 Post Mining Topography

The anticipated site-wide post-reclamation contours and topography are shown on Figure 18.

6.3 Reclamation Schedule

The proposed reclamation schedule outlines major activities for each facility throughout the life of the Project. The schedule is categorized into the following planning periods described below:

- Pre-Production: years prior to commencement of production, Year -2 through Year 0;
- Production: years the mine and processing facilities are active, Year 1 through Year 41;
- Post-Production: years between cessation of mine and processing activities and final bond release. The Post-Production period is further classified into two phases:
    - Closure: years of major reclamation and closure activities, Year 41 and Year 42;
    - Post-Closure: years of site monitoring and maintenance between closure and final bond release (i.e., ending with the release of the reclamation performance bond), Year 41 through Year 46; and,
- Post-Mining: years following final release of the reclamation performance bond.

Post-production reclamation will include recontouring, cover placement, placement of growth media, and seeding activities.

Throughout the Project's operational phase, concurrent reclamation will occur in areas where final configurations are complete. LNC will begin reclamation activities at the earliest practicable time within areas of the Project that are considered inactive, without potential, or completed.

Earthwork and revegetation activities will be limited by the time of year during which they can be effectively implemented. Table 6-1 outlines the anticipated reclamation schedule on a quarterly basis. Site conditions or yearly climatic variations may require that this schedule be modified to achieve revegetation success.

Table 6-1 Proposed Reclamation Schedule

Technique	1st Quarter Jan-Mar	2nd Quarter Apr-Jun	3rd Quarter Jul-Sept	4th Quarter Oct-Dec	Year(s)
Regrading[1]					Within two years of Project completion
Seeding					Within two years of Project completion
Monitoring					Three years beyond regrading and reseeding

Note: [1] Regrading activities could occur year-round depending on weather.

Timing of revegetation activities is critically important to the overall success of reclamation. LNC will schedule seeding activities to take advantage of optimal weather and will coordinate with other reclamation activities. LNC will coordinate reclamation activities with BLM and NDEP as necessary. The proposed reclamation is expected to have a duration of up to approximately one year from the time of commencement of final reclamation activities. Revegetation success is anticipated to take three years after the time of seeding.

6.4 Measures to Prevent Unnecessary or Undue Degradation

Performance methods and standards conveyed in this plan were designed in accordance with regulations established by BLM's Subpart 43 CFR 3809 - Surface Management - and the State of Nevada. Specifically, the Reclamation Plan details earthwork, recontouring, revegetation, stabilization, disposal, and monitoring procedures and operations necessary to thoroughly reclaim disturbed areas. Measures to prevent unnecessary or undue degradation during the design, construction, operation, and closure of the Project include the following:

- Design and construct all regulated facility components to meet BLM, NDEP, NDOW, and NDWR specifications;
- Evaluate the WRSFs, coarse gangue and growth media stockpiles (which do not require engineered containment) for potential to release pollutants;
- Properly abandon mineral exploration and development drill holes, monitoring and observation wells, and production wells pursuant to NAC 534 to prevent potential contamination of water resources;
- Construct roads to the minimum width necessary for safety;
- Manage regulated wastes according to applicable regulations;

- Minimize surface disturbance while optimizing the recovery of mineral resources;
- Control fugitive dust and other air emissions from disturbed and exposed surfaces in accordance with NDEP regulations and permits;
- Comply with applicable federal and state water quality standards, including the Federal Water Pollution Control Act, as amended (30 U.S.C. 1151 et seq.);
- Control surface water drainage by diverting stormwater, isolating facility runoff, and minimizing erosion; and,
- Manage surface soils and alluvium as a growth media resource, where suitable, and replace during reclamation.

6.4.1 Growth Media Salvage and Management

Growth media management will include salvaging and stockpiling soils and suitable growth media within the footprint of proposed surface disturbance areas (Figure 7). LNC will salvage growth media as near to the source as possible to be used for later reclamation. Growth media will be stockpiled near proposed mine infrastructure, to the extent possible, to use for future reclamation, and in a manner that does not disturb mining operations. To reduce erosion, the surfaces of these stockpiles are subsequently shaped, with slopes no steeper than 3H:1V and seeded. Erosion from overland runoff is prevented by the construction berms at the base of these stockpiles, as needed. Furthermore, sediment liberated by direct precipitation will be contained using silt fences or staked weed-free straw bales, as necessary.

LNC conducted growth media surveys within the Project area to generate growth media maps delineating the quality, extent, and depth of soil resources available for use in reclamation (Cedar Creek 2018b, Cedar Creek 2019a). The surveys were designed to define the chemical and physical parameters of desirable materials to achieve reclamation goals and identify adverse properties or features which preclude use in reclamation. Findings of the surveys showed that sufficient volumes of suitable growth media likely exist to reclaim mine infrastructure. Sodic subsoils are deleterious and will be avoided during salvage operations.

Growth media requirements for closure cover at the CTFS assume that growth media will be used in the upper portion of a cover soil layer that will be placed on top of compacted clay. The footprint of other mining facilities will be covered with approximately six to 12 inches of growth media. Salvageable growth media on sites that are currently undisturbed range from six inches to four feet in depth. The majority of salvageable growth media are in a layer ranging from a 12-inch and 18-inch depth (Cedar 2019a). All areas will be seeded after recontouring, regrading, and scarifying activities are completed.

6.4.2 Regrading and Reshaping

Earthwork reclamation will ensure that potential visual impacts resulting from development of the proposed Project are minimized. Regrading and reshaping of disturbed areas will occur on both an interim and concurrent basis using standard mine mobile equipment (i.e., dozers, trucks, loaders). The equipment will be used to blend disturbed areas with the surrounding natural topography and, if necessary, rip compacted surfaces to promote revegetation to ensure long-term slope stability. Post-mining topography and configuration of Project facilities are provided in Figure 18.

6.4.3 Stormwater Control

The Project's surface water infrastructure comprises diversion channels to intercept and divert non-contact stormwater away from facilities and around the site, and un-lined sediment ponds to improve water quality and facilitate infiltration. Any potentially impacted runoff from the proposed CTFS will be managed separately and directed to lined reclaim ponds. At closure, LNC will backfill the sediment ponds and regrade the area.

In accordance with NAC 445A, the permanent stormwater diversions that will remain during the post-closure period will be designed to handle the 500-year, 24-hour design storm event at closure.

Runoff from the WRSF, coarse gangue stockpile, CTFS, and other slopes is anticipated following precipitation events. Regraded slope angles, revegetation (e.g., growth media placement), and BMPs will limit erosion and reduce sediment in runoff. Silt fences, sediment traps, and other BMPs will help prevent migration of eroded material until reclaimed slopes and exposed surfaces have demonstrated erosional stability.

6.4.4 Revegetation

Reclamation of the Project area will include a combination of revegetation practices. LNC will prepare revegetation plans for the Project in accordance with NAC 519A.330. These practices will promote the establishment of diverse plant communities, stabilization of soil cover through minimizing wind and water erosion, and restoration of land to a condition consistent with historical and emerging local patterns. In general, revegetation techniques will involve deep ripping of subgrade, where necessary, to reduce compaction and promote vegetation growth, placement and grading of growth media (approximately six to 12 inches) and seeding.

The proposed reclamation seed mix for the Project (Table 6-2) was developed for the Project location through coordination with the University of Nevada, Reno. The seed mix is especially adapted for the Project site's clay soils. The mix is based on known soil and climatic conditions and was selected to establish a plant community that will support the post-mining land use. The mix is designed to provide species that can exist in the environment of northwestern Nevada, are proven to be robust species for revegetation, or are native species found in the plant communities prior to disturbance. Broadcast seeding will be at a rate of approximately 12.10 pounds of pure live seed per acre. If approved by the BLM, LNC will use this proposed seed mix in conjunction with coated seed technology being developed by Brigham Young University and the Great Basin Sagebrush Restoration Fund at University of Nevada Reno. The coated seed technology improves seed germination and plant establishment efficacy. LNC will coordinate any changes or adjustments to the reclamation seed list or application rate in consultation with, and approval by, BLM and NDEP.

Table 6-2 Proposed Reclamation Seed Mix

Variety	Species	Pure Live Seed (pounds/acre)
Wyoming Big Sagebrush	*Artemisia tridentate spp. Wyomingensis*	1.00
Fourwing Saltbush	*Atriplex canescens*	0.50
Squirreltail	*Elymus elymoides*	2.75
Sandberg's Bluegrass	*Poa secunda*	1.00
Crested Wheatgrass	*Agropyron cristatum*	6.00
Blue Flax	*Linum lewisii*	0.50
Scarlet globemallow	*Sphaeralcea coccinea*	0.25
Western Yarrow	*Achillia millifolium*	0.10
	Total	12.10

Note: [1] Seed mixtures may change from time to time during concurrent and final reclamation. The changes will be based on targeting specific soil/disturbance types and experience gained during concurrent reclamation during the life of the Project, on test plot results, and changes in agency recommendations.

Proposed seed application rates (Table 6-2) will allow adequate revegetation establishment within the semi-arid climate of northern Nevada. Specific seeding procedures and necessary operational equipment will depend on topographic features and soil conditions. For purposes of this Reclamation Plan, slopes steeper than 3H:1V will potentially require hydro seeding; whereas, shallower slopes will require direct drilled or broadcast seeding methods. Additionally, erosion control fabric may be necessary on slopes steeper than 3H:1V, or where surface flow concentrates and exceeds soil erosion thresholds. As currently designed, Project facilities propose reclaimed slopes of 3H:1V or less.

Broadcast seeding methods will be conducted using farm tractors fitted with hydraulic ripping mechanisms such as dam and dike-type equipment, seed boxes (or equivalent equipment) and seeding systems. Other conventional broadcast methods such as tractor herd seeding, and hand cyclone broadcast seeding may be used. Where seed is placed with broadcast methods, placement will include harrowing or other seedbed preparation such as shallow ripping, dozer tracking, raking, or chaining techniques.

Natural soils in the Project area are limited and climatic conditions are such that endemic or even reclaimed desired plant communities must be adapted to these conditions. With that in mind, it has been the experience of area operators that the most favorable seeding conditions for germination, emergence, and establishment includes the presence of light snow cover; such that seed bed preparation and seed application incorporate the available moisture and soil conditions associated with the snow cover. Therefore, seeding activities are planned for fall (October or November) (as shown on Table 6-1) when soil moisture is highest, and temperature is ideal.

Soil treatment methods (only used in areas deemed beneficial and necessary) could include the application of fertilizer, placement of erosion control materials (e.g., straw mulch and erosion control fabric), and periodic use of herbicide to control and ensure noxious weeds and invasive species are not introduced in the Project area. Specific types of fertilizers and mulch will be determined in consultation with BLM.

Modifications to the seed list, application rates, cultivation methods, and techniques may change based on success of reclamation that has been accomplished.

6.4.5 Concurrent Reclamation Activities

LNC plans to initiate reclamation at the earliest economically and technically feasible time on those portions of the disturbed areas that are no longer required for operations. Early initiation of reclamation will stabilize soil, reduce dust and naturalize runoff. Reclamation activities will occur on a concurrent basis starting in Year 5. Generally, activities will include recontouring, regrading, scarifying, placing of growth media, and revegetating disturbed areas, as needed. Facility footprints, roads, stockpile areas, and other miscellaneous surface disturbances will be reclaimed concurrently as the disturbance footprint emerges (e.g., growth media stockpiles) or is no longer required for Project operations (e.g., roads). Additionally, the gradual but permanent reclamation of bench slopes for the CTFS, WRSFs, and coarse gangue stockpile will occur concurrently with the operational phase of the Project.

Interim reclamation will include temporary measures to stabilize disturbance and landforms during the mine operation, with final reclamation activities concluding at the end of mining. This includes measures such as revegetation of temporary growth media stockpiles until the time of their intended use and culminating with reclamation of the stockpile footprint.

Periodic evaluation conducted throughout mine operations will be required in order to improve reclamation techniques and measure concurrent reclamation success.

6.4.6 Closure Facility Covers

Reclamation will include placement of a closure cover over the CTFS in order to promote revegetation and stabilize erosion. Evaporation is much greater than precipitation in the Project area, therefore seepage resulting from precipitation infiltration will be minimal even on uncovered areas.

The conceptual closure cover design for the CTFS consists of a compacted clay soil layer placed over the CTFS surface, overlain with cover soil. The cover soil will consist of growth media salvaged during clearing of the facility disturbance area, mixed with suitable waste rock material, coarse gangue material, or other soils. Figure 19 presents a general plan and cross-section of the closure cover design for the CTFS. LNC will place mulch and seed on the entire surface of the facility using the seed mix presented in Table 6-2. Placement of the cover material over the facility will be conducted using a dozer to spread the material.

6.4.7 Noxious and Invasive Weed Control

LNC recognizes the economic and environmental impact that can result from the establishment of noxious weeds; therefore, LNC has committed to approach weed management proactively. Weed management involves controlling noxious weeds and other non-native invasive plant species until revegetation is determined successful by BLM. The Noxious and Invasive Weed Management Plan (Appendix D) includes a risk assessment, management strategies, annual monitoring and treatment evaluation, and provisions for treatment. Results from annual weed survey monitoring will serve as the basis for updating and developing new treatment programs.

6.4.8 Wildlife Habitat Restoration

Project reclamation is designed to restore wildlife habitat in the area. Areas will be regraded and seeded with a specialized reclamation seed mix to promote a diverse plant community that is beneficial to wildlife.

6.5 Facility Reclamation Practices

In general, facility reclamation practices will include decommissioning, demolition, waste removal, backfilling, regrading, placing growth media, and revegetating Project facility areas. Reclamation efforts will occur on both an interim and, whenever possible, concurrent basis throughout the Project's operational phase. Specific reclamation activities for the main Project infrastructure are further described in the following sections.

6.5.1 Decommissioning of Facilities

A decommissioning plan will be developed to address specific requirements based on the process fluids contacted by each item of material or equipment of the Project. In general, this plan will include, but not be limited to, minimizing the quantities of reagents prior to ending operations, recovering and removing unused reagents/lubricants/coolants/fuels, removing lubricants from equipment components such as gearboxes and oil reservoirs, flushing and draining equipment, washing external surfaces of equipment, decontamination and testing of solids for proper classification prior to disposal. Solid materials classified as non-hazardous waste will be disposed of in the Class III landfill located in the West WRSF (Figure 10), whereas the hazardous waste will be transported to an approved offsite disposal facility. Decommissioning will be executed prior to removal and/or disposal of any materials or equipment, as applicable.

6.5.2 Pit Area

Ore production is slated to last 41 years with open pit mining operations confined to a single ore body. Concurrent reclamation will include backfilling previously mined areas as mining advances; therefore, a final pit lake is not expected to form. Backfill material will consist of a mix of excavated waste rock and coarse gangue material generated during the attrition scrubbing and classification processes to separate the lithium-rich ore from the gangue.

Waste rock material generated during mine operations is not expected to yield acid rock drainage. Therefore, waste rock material can also be used, as appropriate, for reclamation cover material. Geochemistry characterization of the waste rock material and coarse gangue material confirms that neither material is expected to generate acid rock drainage (Appendix B).

LNC anticipates initiating concurrent backfill activities by Year 5 to Year 10 of production. By then, LNC will use waste rock and coarse gangue material generated from each new pit area to backfill a previously mined-out area of the pit. Figure 9 shows a schematic and cross-section of the proposed backfill placement. The proposed backfilling plan will consist of filling a large portion of the Project pit. At closure, a slight depression will occur in the pit area as a portion of the highwall will remain exposed. The backfill plan was optimized and the remaining highwall will be contoured at closure to blend with surrounding topography, promote proper drainage, and avoid ponding of meteoric water.

Suitable growth media will be placed on the surface to approximately six inches thickness and the area will be revegetated using the seed mix presented in Table 6-2. If needed, in order to control access physical barriers (e.g., berms, fencing, or other appropriate barriers) will be installed along the pit area.

6.5.3 Waste Rock Storage Facilities (WRSFs)

Reclamation of the East WRSF and West WRSF will occur on a concurrent basis, whenever possible, and generally include stabilizing slopes, reducing slope erosion, grading and blending surfaces into surrounding topography (i.e., no angular features), and revegetation.

During grading and other reclamation activities, LNC will minimize sediment transport from the WRSFs by implementing erosion and sediment control BMPs. At closure, the exterior slopes of the facilities may be graded to ensure an overall slope no steeper than 3H:1V. LNC will ensure the slopes are stable and graded using dozers to blend with the surrounding topography, to the extent possible.

Reclamation activities include the placement of growth media on the WRSFs. Seeding (using the reclamation seed mix included in Table 6-2) will be completed to promote revegetation. The success of this approach will be based on the ability to achieve sustainable post-mining land uses.

Class III Landfill

Development of a debris disposal area to contain inert demolition debris generated from the removal of Project infrastructure will be constructed within the West WRSF (Figure 10). Additionally, inert sediment (verified through testing) from channel cleanout may also be placed in this disposal area at closure. Final cover over all disposal sites will consist of a minimum of 24 inches of compacted soil meeting the requirements of NAC 444.6891, followed by revegetation efforts using the seed mix presented in Table 6-2.

6.5.4 Mine Facilities

Following mine closure, reclamation of the mine facilities will involve removing all demolition debris, breaking concrete foundations or paved parking areas, ripping these areas to relieve compaction, and regrading. The area will be covered with growth media and seeded using the proposed seed mix presented in Table 6-2 to promote vegetation growth.

6.5.5 Run-of-Mine Stockpile

Following ore stockpile consumption, reclamation activities will include scarification of the footprint and grading to blend with surrounding topography, promote drainage, and minimize potential for erosion. The area will be covered with growth media and seeded using the proposed seed mix presented in Table 6-2 to promote vegetation growth.

6.5.6 Attrition Scrubbing

Equipment in the attrition scrubbing area (Figure 11) will be decommissioned as described in Section 6.5.1. Salvageable equipment will be removed and shipped to a buyer; otherwise, it will be shipped to a recycle facility or approved waste disposal facility.

The building and concrete foundations will be reclaimed as described in Section 6.5.16. The concrete will be disposed of in the West WRSF as the material processed in this area is non-hazardous.

The surface area will be ripped, scarified, and graded to blend with the adjacent topography. The area then will be covered with growth media and seeded using the proposed seed mix presented in Table 6-2 to promote vegetation growth.

6.5.7 Coarse Gangue Stockpile

Reclamation activities do not include the placement of growth media on the coarse gangue stockpile as the underlying material is categorized as suitable growth media. LNC will seed the facility to promote revegetation. The final reclamation slopes for the coarse gangue stockpile will remain at a 4H:1V slope.

6.5.8 Process Plant Facilities

Equipment in the process plant facilities area (Figure 13) will be decommissioned as described in Section 6.5.1. Salvageable equipment will be removed and shipped to a buyer; otherwise, it will be shipped to a recycle facility or approved waste disposal facility.

Buildings and concrete foundations will be reclaimed as described in Section 6.5.16. Subject to BLM's determination of potential post-mining land use, facilities that cannot be converted to other uses will be demolished.

Mobile equipment will be removed from site and transported to buyers, recyclers, or approved waste disposal facilities once it is no longer required for operational or reclamation activities.

Hard surfaces such as roads, parking areas, and the helicopter pad will be evaluated for possible contamination prior to reclamation based on the materials it would have been in contact with throughout the life of the Project. Any affected areas as determined by operational knowledge, visual inspection, lab analysis or other method will be properly treated and disposed of in the appropriate onsite or offsite location as described above.

At the end of mine life, LNC will evaluate the condition of the interplant HDPE pipelines and HDPE-lined containment channel. This material will be reclaimed by either recycling or disposing of the piping and liners in the Class III landfill located in the West WRSF as the material processed through the pipelines is non-hazardous. A final determination will be made upon the evaluation of the material at the end of mine life.

The emergency pond will be emptied prior to ending operations. Any residual solids remaining will be removed and disposed of in the CTFS after any treatment, if required. Removal and disposal of the liners and associated leak detection equipment and piping into the proper location will be in accordance with BMPs and any applicable procedures. The emergency pond will be backfilled, covered with growth media and seeded using the proposed seed mix presented in Table 6-2 to promote vegetation growth.

The surface area of the process plant facilities will be ripped, scarified, and graded to blend with the adjacent topography. The area will be covered with growth media and seeded using the proposed seed mix presented in Table 6-2.

6.5.9 Clay Tailings Filter Stack (CTFS)

Closure methods for the CTFS will be in accordance with NAC 445A.350 through 447 that include the State of Nevada's regulations governing design, construction, operation, and closure of mining operations, and BLM reclamation performance standards outlined in 3809.420 and most recent BLM reclamation or hard rock mining handbooks.

The closure plan for the CTFS is to recontour the slopes to a landform shape that provides long-term stability and generally mimics the surrounding topography. The landform cover will be a layered system consisting of a compacted clay cap overlain by a layer of cover soil as depicted on Figure 19. The thickness of these components will be determined as part of the formal closure planning process. The cover soil will promote the establishment of vegetation, reduce infiltration of meteoric water, and control erosion. After placement of the cover soil, LNC will seed the cover soil surface with the proposed seed mix presented in Table 6-2. This cover design was developed with the goal of replicating pre-mining land use after closure.

The engineering properties required for the cover soil and to manage the estimated infiltration of meteoric waters will be evaluated using one-dimensional seepage analyses. The results from these analyses will be used to engineer and cost the design. Initial drain-down and infiltration solutions will be managed in the geomembrane-lined CTFS reclaim ponds and, if needed, active evaporation will be utilized at the ponds to achieve fluid stabilization. As the flow from the CTFS decreases and the required pond storage volume is reduced, these pond areas will be converted to evaporation cells (E-Cells). Each E-Cell will consist of two zones; an evaporation zone will evaporate water during periods of the year that evaporation exceeds precipitation; an underlying storage zone will to store water when the inflow exceeds the evaporative loss rate. LNC may install a geosynthetic clay liner (GCL) to separate the storage compartment and delay seepage of water from the E-Cell to the storage compartment. Cross-sections of a typical E-Cell are presented on Figure 19.

Following production activities, conveyors will be properly disposed of or will be sold or salvaged for scrap steel, where economically feasible. Prior to conveyor disposal or sale, all conveyors will be disassembled and decontaminated. After demolition, reclamation activities will commence on the tailings conveyor corridor (Figures 13 and 15). This will include ripping conveyor corridors and breaking concrete foundations followed by regrading of the area. Revegetation of these areas will follow and include the use of the seed mix presented in Table 6-2.

6.5.10 Haul and Secondary Roads

Throughout mine operation, reclamation activities will occur concurrently on roads that are no longer needed for access and/or do not possess a defined post-mining use. Following mine closure, and in accordance with BLM guidelines, if possible, pre-1981 existing unpaved or other secondary roads will be left in place or reestablished to provide ongoing access to public lands and for reclamation monitoring needs.

Reclamation of road surfaces will include grading of the surfaces to tie into existing ground contours, ripping to alleviate compaction and allow for root penetration, and revegetation. The road berm and subgrade materials within the road footprints are classified as suitable growth media; therefore, the redistribution of this material is assumed to provide enough growth media for restoration of native plant species in the disturbed areas.

6.5.11 Growth Media Stockpiles

Reclamation of growth media stockpiles will occur on an interim and concurrent basis throughout the operation phase of the Project. Immediately following stockpile construction, interim reclamation activities will include grading and revegetation. These activities will serve to stabilize the area and minimize sediment transport from stockpiles until growth media is removed for final facility reclamation use.

Concurrent reclamation will occur once portions of the growth media stockpiles have been removed for reclamation of other facilities. Concurrent reclamation will involve regrading the borrow cut faces and ripping the disturbed area to loosen compacted material promoting vegetation rooting and regrowth.

Final reclamation will also include regrading the footprint of the growth media stockpiles to match surrounding topography, ripping the disturbed area to loosen compacted material promoting vegetation rooting, and revegetation using the reclamation seed mix presented in Table 6-2.

6.5.12 Stormwater Infrastructure

Many of the erosion and stormwater controls will be removed as permanent closure prescriptions are implemented. Portions of the proposed site-wide stormwater infrastructure will be reconstructed for closure to accommodate a more significant storm event. In accordance with NAC 445A permanent stormwater diversions will be designed and constructed to manage the 500-year, 24-hour design storm event at closure.

Runoff from the WRSFs, CTFS, and other slopes will occur following precipitation events; however, regraded slope angles, revegetation, and BMPs will be used to limit erosion and reduce sediment in runoff. Silt fences, sediment traps, and other BMPs will be used to prevent migration of eroded material until reclaimed slopes and exposed surfaces have demonstrated erosional stability. LNC will periodically remove sediment from the diversion structures until stable post-mining conditions are established.

Groundwater and surface water monitoring will continue for at least five years after cessation of mine, processing, and closure operations. Furthermore, LNC does not anticipate any CTFS seepage; however, if any seepage were to occur, LNC will monitor the quantity and quality of this seepage.

Diversion Channels

Permanent diversion channels will be left in place to minimize the amount of stormwater run-on at some facilities such as the CTFS. Periodic removal of sediment from the diversion channels will be required throughout the production and post-production periods.

Sediment Ponds

At closure, LNC will remove sediments from the sediment ponds, test, and re-use as growth media or dispose of properly. The ponds will be backfilled and regraded prior to revegetation activities.

Culverts

Throughout mine operation, reclamation activities will occur concurrently on roads and culverts that are no longer needed for access and/or do not possess a defined post-mining use. Reclamation of road surfaces will include grading of the surfaces to tie into existing ground contours, ripping to alleviate compaction and allow for root penetration, and revegetation.

At closure, culverts will be removed, and drainage channels restored to their pre-disturbance configuration where feasible or replaced with stable engineered flow paths. Water bars or small berms will be built, as needed, along regraded road surfaces to reduce overland flow. The water bars will also allow flow away from the water bar toward a permanent diversion channel.

6.5.13 Water Supply Facilities and Pipelines

Equipment associated with the water supply (Figures 6 and 7) including two water well pumps, a common water pump tank and pumps, two booster pump stations, and associated interconnecting underground pipelines will be decommissioned as described in Section 6.5.1. Salvageable equipment will be removed and shipped to a buyer; otherwise, it will be shipped to a recycle facility or approved waste disposal facility.

The buildings and concrete foundations will be reclaimed as described in Section 6.5.16. The concrete will be disposed of in the Class III landfill located in the West WRSF as the material processed in this area is non-hazardous.

Wells will be plugged according to NAC 534.425 through 534.428 abandonment statues and procedures.

The underground piping will be abandoned in place. There will be no surface area reclamation along most of the pipeline as it will not have been disturbed since its initial installation and subsequent reclamation. Tie-ins and discharge points will be cut below grade and capped to prevent unwanted ingress and conveyance of water, as well as to prevent wildlife from entering the piping.

Fencing will be disposed of in the appropriate location based on the time of removal as described in Section 6.5.18.

The surface areas will be ripped, scarified, and graded to blend with the adjacent topography. The area then will be covered with growth media and seeded using the proposed seed mix presented in Table 6-2 to promote vegetation growth.

6.5.14 Power and Communication Facilities

Power and communication facilities including electrical switchyard, substation, power transmission lines to water supply facilities and mine facilities and underground fiber optic cable will be removed as part of the reclamation plan, unless a post-mining use is identified. It is possible that components of the power facilities will be owned by a utility company that may have a post-mining use.

The surface areas will be ripped, scarified, and graded to blend with the adjacent topography. The area will be covered with growth media and seeded using the proposed seed mix presented in Table 6-2 to promote vegetation growth.

6.5.15 Fuel Storage Facilities

LNC will decommission the fuel storage facilities once fuel storage at the site is no longer necessary. Stored fuel will be consumed during operations and closure activities, sent back to the supplier or manufacturer for salvage or proper disposal, or pumped and removed by a hydrocarbon recycling contractor.

During facility closure, LNC will complete confirmation sampling and testing of the soils in and around the fuel storage facilities as needed to verify that the area has not been impacted by hydrocarbons or other potentially hazardous substances. In the case where hazardous substances are identified, LNC will remediate the contaminated areas. Reclamation of soil contaminated with petroleum products or other hazardous chemicals encountered during or after demolition activities at the fuel storage facilities will include excavation, appropriate treatment (petroleum soils may be treated on site), and/or proper disposal at offsite locations. All petroleum contaminated soil facilities will be closed according to issued NDEP guidance.

6.5.16 Disposition of Buildings

LNC will demolish buildings associated with the Project and properly dispose of parts offsite. Foundations will be broken and hauled to the Class III debris disposal area located in the West WRSF (Figure 10). LNC will regrade, rip, and seed the building footprint areas with the proposed seed mix (Table 6-2).

Ground surfaces will be inspected for evidence of possible soil contamination prior to removal of the buildings and concrete. Any affected soils as determined by visual inspection, lab analysis, or other method will be excavated and properly treated and disposed of in the appropriate onsite or offsite location.

6.5.17 Septic Systems and Leach Field

A certified contractor will decommission on-site septic systems located in the mine facilities and at the plant site. Activities will include equipment removal once sewage treatment is no longer required to support the Project. Pipes associated with the leach fields will be sealed with cement. Septic tanks will be left in place and backfilled after sewage sludge is pumped out of the tanks.

6.5.18 Fencing

LNC will remove and salvage, if possible, fences surrounding the pit area, CTFS, and process facilities once the vegetation is established on the reclaimed sites and the area has been released from bonding requirements.

6.6 Measures to Minimize Sediment Loading to Surface Waters

Runoff from the WRSF, coarse gangue stockpile, CTFS and other slopes will occur following precipitation events; however, regraded slope angles, revegetation, and BMPs will be used to limit erosion and reduce sediment in runoff. LNC will use silt fences, sediment traps, and other BMPs to prevent migration of eroded material until reclaimed slopes and exposed surfaces have demonstrated erosional stability. LNC will periodically remove sediments from the diversion and control structures until stable post-mining conditions are established.

6.7 Isolation and Control of Acid-Forming, Toxic, or Deleterious Materials

Whole rock analysis, Meteoric Water Mobility Procedure, Acid-Base Accounting, and Humidity Cell Testing have been used and are ongoing for geochemical characterization analyses of all known lithotypes relevant to the Project. The geochemical characterization results demonstrate that mine rock has limited to no potential to generate acidic conditions and ample acid-neutralizing potential exists to prevent acid generation (Appendix B).

During operations, LNC does not anticipate the occurrence of discharge from Project facilities. Project facilities containing process fluids are equipped with secondary containment structures that prevent the escape of process fluids, and seepage from the CTFS will be directed to lined reclaim ponds and pumped back into the processing circuit. Any runoff from mining facilities will be intercepted in sediment ponds and all potential run-on will be diverted or infiltrated before encountering mining facilities.

At closure, LNC will cover the CTFS with a compacted clay cap overlain by a layer of cover soil preventing contact with the underlying material (described in Section 6.5.8).

6.8 Drill Hole Plugging and Water Well Abandonment

In accordance with applicable rules and regulations (NAC 534.425 through 534.428), reclamation of mineral drill holes (i.e., exploration and development) and wells (i.e., monitoring and production) subject to NDWR standards will require proper abandonment methodology. Abandonment of each exploration drill hole will occur upon completion of drilling operations and prior to the removal of the drill rig from the drill site.

Abandonment techniques will include mixing a bentonite and freshwater slurry or cement grout, specifically formulated for well or drill hole abandonment. The mixture will be circulated through the drill pipe and distributed from the bottom of the drill hole in a manner that will assure against the vertical movement of groundwater. The mixture will also be placed in the annular space surrounding any casing left down the hole.

If circulation from the bottom is not possible, drill hole abandonment will entail mixing the slurry or grout at the surface, circulating the mixture through the drill pipe from the bottom of the drill hole under pressure and placed in stages as the drill pipe is retrieved from the drill hole. A cement surface plug, comprised of Portland cement mixed with clean water and aggregates or bagged cement mixed with clean water, will be placed within the top 20 feet of each drill hole. The top of the surface plug will be placed below the ground surface to eliminate physical hazards, to prevent ponding of water directly over the drill hole, allow for placement of growth media, and allow for passage of earthmoving equipment required for reclamation operations. Remaining surface casing will also be removed below the ground surface and the annulus of any casing left down hole is sealed in a manner that assures against the movement of surface water down the drill hole.

Maintenance of monitoring wells around process facilities will continue until LNC is released of this requirement by NDEP. These wells will then be plugged and abandoned according to the requirements stated in NAC 534.425 through 534.428.

6.9 Surface Facilities or Roads Not Subject to Reclamation

As determined by BLM, any roads on public lands suitable for public access or which continue to provide public access consistent with pre-mining conditions will not require reclamation at closure. This includes permitting the use of narrow access roads on large haul roads that have already been reclaimed (i.e., recontoured and seeded).

LNC will place permanent structures such as diversions to assure performance of proper surface flows around reclaimed facilities.

6.10 Post-Reclamation Monitoring and Maintenance

Monitoring and maintenance will be required for all areas reclaimed and revegetated throughout Project operations, including after closure. Activities will entail monitoring of water resources, revegetation, and slope stability. Additional details are provided in the Monitoring Plan (Appendix I). In general, post-reclamation monitoring and maintenance will include the following:

- Conduct berm and sign maintenance, site inspections, and any other necessary monitoring for the period of reclamation responsibility following mine closure;
- Monitor CTFS seepage quantity and quality, if any;
- Conduct post-mining groundwater quality monitoring in accordance with NDEP requirements and the approved water pollution control permit for at least five years;
- Conduct revegetation monitoring for a minimum of three years following implementation of revegetation activities or until revegetation success has been achieved; and,
- Monitor and control noxious weeds for three years following closure.

6.10.1 Water Resources

In accordance with NDEP requirements and the WPCP, and through the implementation of the Final Permanent Closure Plan, the primary goal of conducting post-mining water resources monitoring will be to demonstrate that the Project site poses no potential to degrade groundwater and surface water in the Project area. Consequently, groundwater and surface water monitoring will continue for at least five years after cessation of mine, processing, and closure operations. Furthermore, LNC does not anticipate any CTFS seepage; however, should any seepage occur, LNC will monitor the quantity and quality of this seepage. Water resources (surface water and groundwater) monitoring sites are presented on Figure 17. The Reclamation Cost Estimate (Appendix J) contains costs for at least five years of water resource monitoring.

6.10.2 Revegetation

To ensure stable vegetation growth and ground cover of all reclaimed areas, annual revegetation monitoring (including noxious weed monitoring and abatement), maintenance, and reporting, will continue for at least three years following mine closure, and revegetation activities, or until revegetation success has been achieved. Success of revegetation will be based on seasonal growth patterns, precipitation, and weather conditions.

6.10.3 Slope Stability

Per NDEP requirements, a summary of the geotechnical analysis and results which demonstrate the proposed reclaimed configuration will provide geotechnical stability, erosional stability, and suitability for revegetation purposes must be included in the Plan if reclaimed slope surfaces will be left at a slope greater than 3H:1V. Reclaimed slope surfaces associated with the Project will have slopes of 3H:1V or less.

LNC will use erosion control BMPs during reclamation activities in order to reduce sediment migration from facilities until vegetation can be re-established. Annual monitoring and maintenance of these reclaimed features will continue for at least three years following closure or until vegetation has established. Slope stability monitoring will include visual inspections of the WRSF, coarse gangue stockpile, and CTFS reclaimed slopes. Final stabilization consists of achieving slopes with the absence of substantial and progressive rilling or other signs of erosion and the establishment of a plant community with the absence of noxious weeds. Specifically, LNC will inspect the facilities for any crest deformations, signs of slope failure movement (such as slope bulging), evidence of seepage, and formation of surface cracks. LNC will identify and document erosional features (i.e., vegetation loss, rills, gullies, etc.).

6.11Measures to be Taken During Extended Periods of Non-Operation

LNC does not anticipate unplanned closures of the mine and processing facilities. However, if continuous full-scale production is interrupted, due to economic considerations and/or unforeseen circumstances, care and maintenance reclamation will commence and is outlined below:

- Power lines – regular inspection and maintenance of the power lines, as necessary;
- Roads – maintenance of access roads, as necessary;
- Contractor Equipment - removal of equipment, unless necessary for temporary stabilization, safety, or solution management;
- Security - on-site security maintained by on-site personnel;
- Supplies - reagents, fuels, and lubricants secured or removed;
- Open pit – placement of berms or fences to help restrict access to bench areas;
- Erosion control measures – regular inspection and maintenance of all erosion control measures and BMP structures; and,
- Buildings – determent of public access and maintenance of all building, equipment, and support facilities, as necessary.

The Interim and Seasonal Closure Management Plan, included as Appendix H, provides details on measures that LNC would implement should temporary closure be required.

Per CFR 3809.401(b)(5) and NAC 519A.320(2), LNC will notify BLM and NDEP, in writing, within 90 days after any Project suspension, that suspension is anticipated to last longer than 120 days. LNC will identify the nature and reason for the suspension, the duration of the suspension, and the events expected to result in either resumption of mining or the abandonment of the Project.

6.12 Statement of Effect of Proposed Reclamation of Future Mining

Lithium ore will be mined from the open pit down to the basement rock, with minimal to no lithium ore existing below this level. Site reclamation will have little effect on future mining in the area, although some of the Project facilities will have to be recommissioned or rebuilt if post-reclamation mining were to occur.

6.13 Statement of Effect on Public Safety

LNC is committed to complete reclamation activities as described in the Reclamation Plan to ensure public safety during the post-closure period. Proposed reclamation activities such as open pit backfilling and final grading and revegetation program to stabilize reclaimed areas will ensure minimal risk for public safety.

6.14 Reclamation Cost Estimate

An estimate of the reclamation cost (using the Nevada Standard Reclamation Cost Estimator [SRCE]) for the proposed Project, as described in this Plan, will be submitted under separate cover to NDEP and BLM.

7 Statement of Responsibility

LNC agrees to assume all responsibility for the completion of the reclamation work described within this document on all surface areas affected by the operation of the Project. LNC will obtain the necessary reclamation performance bond for the activities outlined in the Plan, as required by BLM and NDEP.

8 Permit Application Fee

In accordance with NAC 519A.225, the fee for permit for a mining operation is $1.50 for each acre of affected and unreclaimed public land administered by a federal land management agency and included in the POO and Reclamation Plan. A check for the $8,317.50 permit application fee will be submitted ($1.50 x 5,545.0 public land acres = $8,317.50).

9 Acknowledgements

This Reclamation Plan is consistent with the Plan of Operations.

A. It is understood that the operator agrees to accept reclamation responsibility for all surface areas affected by the project as outlined in this Reclamation Plan, and an acceptable surety, pursuant to NAC 519A.350, will be provided in an amount sufficient to ensure reclamation of the entire area affected by the project as required by NAC 519A.360.

B. It is understood that should the nature of the operation change, a modified or supplemental plan of operations and reclamation may be required.

C. It is understood that approval of this Reclamation Plan does not constitute:

(1) Certification of ownership to any person named herein; and

(2) Recognition of the validity of any mining claim herein.

D. It is understood that a bond equivalent to the actual cost of performing the agreed upon reclamation measures will be required prior to Reclamation Plan approval and proposed construction activities. The bond amount required, increased or decreased, will be set on a site-specific basis by the lead agency in coordination with the cooperating agencies.

E. It is understood that approval of this does not relieve the operator of responsibility to comply with all applicable state or federal laws, rules, or regulations.

F. It is understood that any information provided with this Reclamation Plan that is marked confidential will be treated by the agency in accordance with that agency's laws, rules, and regulations.

On behalf of LNC, I have read and agree to comply with all conditions in this Plan, including the Recommended Changes and Reclamation Requirements. I understand that the bond will not be released until the lead agency provides written approval of the reclamation work done and authorizes such release.

LITHIUM NEVADA CORP.

November 1, 2019

Operator (or Authorized Official) Date
Alexi Zawadzki, Chief Executive Officer/Director

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