EXHIBIT 9

TENTATIVE PLAN FOR PERMANENT CLOSURE
(SEPTEMBER 24, 2021)

ATTACHMENT 7
Updated TPPC

Thacker Pass Project

Tentative Plan for Permanent Closure

September 24, 2021

Submitted to:

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List of Acronyms

°F	degrees Fahrenheit
amsl	above mean sea level
BLM	Bureau of Land Management
BMP	Best Management Practice
BMRR	Bureau of Mining Regulation and Reclamation
CFR	Code of Federal Regulations
CTFS	Clay Tailings Filter Stack
EPA	Environmental Protection Agency
ET	evapotranspiration
GCL	geosynthetic clay liner
gpm	gallons per minute
HDPE	high-density polyethylene
Kg	kilogram
kV	kilovolt
Lb	pound
LAC	Lithium Americas Corporation
LNC	Lithium Nevada Corporation
M CY	million cubic yards
MSHA	Mine Safety and Health Administration
MW	Megawatt
NAC	Nevada Administrative Code
NDOW	Nevada Department of Wildlife
NDEP	Nevada Division of Environmental Protection
NDWR	Nevada Division of Water Resources
No.	Number
NP	Neutralization potential
POO	Plan of Operations
ppm	parts per million
Project	Thacker Pass Project
ROM	Run-Of-Mine
SO_2	sulfur dioxide
SO_3	sulfur trioxide
SRCE	Standard Reclamation Cost Estimator
SWCA	SWCA Environmental Consultants
SWPPP	Stormwater Pollution Prevention Plan
U.S.C.	United States Code
WLC	Western Lithium USA Corporation
WPCP	Water Pollution Control Permit
WRC	Wildlife Resource Consultants
WRSF	Waste Rock Storage Facility

1 Introduction

The Tentative Plan for Permanent Closure (TPPC) has been prepared in accordance with Nevada Administrative Code (NAC) 445A.398 for the 10-year mine life as presented in the WPCP. The plan describes the following:

a. Procedures for characterizing spent process materials as they are generated;
b. Procedures to stabilize all process components and all other sources at the facility with an emphasis on stabilizing spent process materials and the estimated cost for procedures;
c. Conceptual closure plans for all sources at the facility with sufficient detail to support an initial estimate of the cost of executing the closure plan for reclamation determined pursuant to NAC 519.360.

This plan assists in the preparation for eventual permanent closure and chemical stabilization of the site. A more detailed, Final Plan for Permanent Closure (FPPC) will be submitted no later than two (2) years prior to the closure of the site.

2 Proposed Operations

The following summarizes proposed operations of the Thacker Pass Project. Each operation will be subject to closure procedures, detailed throughout the TPPC. Figure 01 shows a general layout of the facility.

- Development of an open pit mine;
- Concurrent backfill of the open pit mine using waste rock and coarse gangue material;
- Construction of two Waste Rock Storage Facilities (WRSFs) for permanent storage of excavated mine waste rock;
- Construction and operation of mine facilities;
- Construction of operation 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 (CGS);
- Construction and operation of a lithium processing facility;
- Construction and operation of a sulfuric acid plant;
- Construction and operation of a Clay Tailings Filter Stack (CTFS);

- Construction and maintenance of haul and secondary roads;
- Construction and maintenance of stormwater management infrastructure;
- Construction of three growth media stockpiles;
- Construction of electricity distribution lines and associated facilities;
- Construction of ancillary facilities, such as electricity distribution and septic systems, to support the project.

2.1 Extraction and Recovery Processes

Details of the lithium extraction and recovery processes are provided in the following section. The extraction and process facilities are shown in Figures 04, 05, and 06.

Attrition Scrubbing: The attrition scrubbing process uses recycled water from classification which mechanically rinses and breaks down claystone ore. Slurry from the attrition scrubber is sent to the classification circuit.

Classification: The classification process breaks down the claystone ore using water and mechanical energy. Slurry from classification is sent to the acid leaching process. The coarse grained fraction is sent to the Coarse Gangue Stockpile.

Acid Leaching: Fine, lithium-bearing clay ore slurry from the classification process will be combined with sulfuric acid during the acid leaching process. A series of agitated tanks will separate the lithium from the clay material. The lithium-bearing solution from the acid leaching process will be sent to neutralization and filtration. The un-leached clay solids will be removed by pressure filtration and ultimately be conveyed to the temporary clay tailings stockpile and from there hauled and placed in the structural or non-structural zone of the CTFS.

pH Neutralization and Filtration: The acidic, lithium-bearing solution will be neutralized in agitated tanks by recycling alkaline solids from the downstream magnesium precipitation and causticizing process. After neutralization and filtration, the lithium-bearing solution will be sent to the magnesium sulfate crystallization process. Solids generated during neutralization will be thickened and filtered by pressure filtration. They will ultimately be conveyed to the temporary clay tailings stockpile and from there hauled and placed in the structural or non-structural zone of the CTFS.

Magnesium Sulfate Crystallization: Most of the magnesium in the lithium-bearing solution will be removed through a magnesium sulfate evaporation/crystallization process. After the crystallization process, the lithium-bearing solution will be sent to further magnesium removal (precipitation and ion exchange). The magnesium sulfate salt generated from crystallization will be conveyed to the temporary salt stockpile and from there hauled and placed in the non-structural zone of the CTFS.

Magnesium Removal (Precipitation and Ion Exchange): The remaining magnesium and other divalent cations in the lithium bearing solution will be removed through precipitation and ion exchange. During this process, quicklime will be added in a conventional vertical mill lime slaker followed by agitated precipitation tanks, thickening, and pressure filtration. The purified solution will be sent to lithium carbonate production or sulfate salt crystallization.

Lithium Carbonate Production (Precipitation /Filtration /Drying /Packaging /Loadout): Lithium carbonate will be precipitated out of the lithium-bearing solution using soda ash. It will then be filtered and dried. The dried lithium carbonate will finally be sent to packaging. Lithium carbonate will be packaged into bulk bags for shipment to customers. The solution that remains from final precipitation will be sent to a final crystallization step, producing sodium and potassium salts that will ultimately be conveyed to the temporary salt stockpile and from there hauled and placed in the non-structural zone of the CTFS.

Sulfate Salts Crystallization: Sulfate salts will be evaporated out of the lithium-bearing solution, producing sodium and potassium salts. Salts will be conveyed to the temporary salt stockpile and from there hauled and placed in the non-structural zone of the CTFS. The lithium brine will be sent to the causticizing circuit.

Causticizing: All cations except for sodium, potassium, and lithium will be precipitated using caustic soda. Precipitated solids will be removed in a pressure filter and recycled into the neutralization process. The brine from the causticizing process will be sent to lithium hydroxide production.

Lithium Hydroxide Production (Crystallization/Drying/Packaging/Loadout): The lithium brine will be evaporated through a crystallization process, producing crystals of lithium hydroxide. The crystals will be washed and dried before finally being packaged in bulk bags for shipment to customers.

3 Material Characterization

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 specified 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 NAC 445A 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 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 (BLM 2014). 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) expanding the dataset to the Project's new pit boundaries using recent exploration samples, and 2) adding characterization data for gangue and tailings material associated with an updated process flow sheet. The 2018/2019 program also 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 2019). 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 have been summarized in the Baseline Geochemical Characterization Report for the Thacker Pass Project (SRK 2020a). The geochemical testing program is complete, including the conclusion of kinetic testing, and an update to the Characterization Report has been prepared that details the final results of the geochemical characterization program (SRK 2020a). A summary of the characterization program and implications for waste rock and gangue material management are provided in the following sections.

3.1 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 LNC 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, 4 gangue samples and 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. The characterization program included both oxidized and unoxidized gangue material to capture the range in geochemical properties of the gangue material.

Tailings material included in this characterization program consist of the clay tailings, neutralization solids, and sulfate salts produced during the extraction of lithium. The tailings material will be sent to the geomembrane lined CTFS and placed in either the structural or non-structural zone as described in Section 2.1. A sample of Blended Tailings, consisting of co-mingled salts, clay tailings, and neutralization solids, has been included in the program as part of characterization of the non-structural zone.

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.
- Mineralogical analyses including X-ray diffraction (XRD) and scanning electron microscopy (SEM) at a Nevada-approved laboratory.
- Meteoric water mobility procedure (MWMP – E2242-13) at a Nevada-approved laboratory and Profile I and Profile I-R 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) at a Nevada-approved laboratory and Profile I analysis at a Nevada-certified laboratory to define sulfide oxidation rates and metal leaching potential under laboratory-controlled oxygen and water exposure conditions that simulate weathering in the field.

The characterization program will also include 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. This analysis is considered supplementary to the characterization program and is not performed by a Nevada-certified or approved laboratory.

The static test methods used to characterize the tailings material 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 3-1 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 available 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 SRK 2020a, Characterization Report. A summary technical memorandum of the Baseline Geochemical Characterization is included in Appendix B (SRK 2021b).

Table 3-1 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	1
	Basalt	1.6	2.4	10	13	6	1	1
	Ash	2.7	5	30	32	11	1	3
	Claystone/Ash	20.9	34.1	26	31	11	-	3
	Claystone	62.7	35.1	99	103	21	1	5
	HPZ	0.5	12.8	11	13	6	1	1
	Tv	0.7	4.5	12	14	7	1	-
Process Samples	Oxidized Feed Ore	-	-	7	7	5	2	-
	Oxidized Gangue	-	-	9	9	7	3	2
	Unoxidized Feed Ore	-	-	24	24	0	0	0
	Unoxidized Gangue	-	-	12	12	4	4	2
	Clay Tailings	-	-	6	6	3	1	1
	Neutralization Solids	-	-	4	4	2	1	1
	Sulfate Salts	-	-	1	1	1	1	-
	Blended Tailings	-	-	1	1	1	1	0
	Rinsed Tailings Products	-	-	2	2	2	2	0
Total		**100**	**100**	**264**	**285**	**94**	**21**	**20**

3.2 Summary of Geochemical Characterization

The following presents summary tables of the geochemical testing completed for the project that characterize the major materials that will be mined and processed for the project. Table 3-2 shows the Thacker Pass ABA Summary, Table 3-3 shows the Thacker Pass NAG Summary, Table 3-4 shows the Thacker Pass Radiological Summary, and Table 3-5 shows the Thacker Pass MWMP Summary.

Table 3-2 Thacker Pass ABA Summary

Parameter	Units	Statistic	Waste Rock Dump and Pit Backfill							Ore Feed Stockpile (Operations Only)				Gangue Stockpile Pit Backfill			Tailings Impoundment		
			Alluvium	Ash	Basalt	Claystone	Claystone/ Ash	HPZ	Tv	Ore Feed - ROM – Ox	Ore Feed - ROM - Unox	-1" Ore Feed - Ox	-75um Ore Feed - Unox	+1" Gangue - Ox	+100um Gangue - Ox	+75um Gangue - Unox	Clay Tailings	Neutralization Solids	Sulfate Salts
		N	*13*	*32*	*13*	*103*	*31*	*13*	*14*	*2*	*12*	*5*	*12*	*4*	*5*	*12*	*6*	*4*	*1*
Paste pH	s.u.	Min	7.1	6.2	7.43	6.1	6	5.8	6.05	7.4	7.5	7.3	7.4	7.9	7.7	7.9	1.1	6.3	5.8
		Max	9.08	8.7	9.53	8.67	8.58	8.5	8.8	7.6	8	8	8.1	8.4	8.1	8.2	1.6	8.2	5.8
		Mean	8.1	7.6	8.3	7.8	7.7	7.8	8.1	7.5	7.8	7.7	7.9	8.2	7.9	8.1	1.4	7.6	5.8
Total Sulfur	wt%	Min	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.02	1.22	0.01	0.79	0.005	0.005	1.37	3.81	12.9	14.2
		Max	0.18	2.75	1.01	3.68	3.0	2.29	1.97	0.07	1.83	0.30	1.20	0.05	0.08	2.21	6.50	13.9	14.2
		Mean	0.04	0.90	0.13	0.79	0.70	0.37	0.34	0.05	1.49	0.11	0.98	0.03	0.03	1.83	4.72	13.4	14.2
H_2O Soluble Sulfate	wt%	Min	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.02	0.30	0	0.43	0.005	0.005	0.23	3.81	11.4	13.9
		Max	0.18	1.30	0.31	2.7	3.0	0.70	0.53	0.03	1.16	0.29	0.72	0.05	0.08	1.40	6.48	11.6	13.9
		Mean	0.03	0.32	0.06	0.25	0.41	0.19	0.11	0.03	0.72	0.10	0.58	0.02	0.03	0.46	4.72	11.5	13.9
Pyritic Sulfur	wt%	Min	0	0	0	0	0	0	0	0	0.80	0	0.45	0	0	0.85	0	0	0
		Max	0.06	1.93	0.6	2.89	2.3	1.07	1.26	0.06	1.14	0.05	0.75	0.01	0.01	1.65	0.03	0	0
		Mean	0.0	0.6	0.1	0.5	0.5	0.1	0.2	0.0	1.0	0.0	0.6	0.0	0.0	1.3	0.02	--	--
Reactive Sulfur	wt%	Min	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.02	1.21	0	0.93	0.005	0.005	1.13	3.84	11.5	13.9
		Max	0.07	2.28	0.91	4.11	1.84	1.76	1.79	0.09	2.23	0.31	1.44	0.05	0.08	2.73	6.48	11.6	13.9
		Mean	0.0	0.9	0.2	0.8	0.6	0.3	0.4	0.1	1.7	0.1	1.2	0.0	0.0	1.8	4.7	11.5	13.9
AGP	kg $CaCO_3$ eq/t	Min	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.63	37.8	0.15	29.1	0.16	0.16	35.3	120	358	435
		Max	2.19	71.3	28.4	128	71.0	55.0	55.9	2.81	69.7	9.69	45.0	1.56	2.5	85.3	203	362	435
		Mean	0.6	27.4	3.7	22.5	19.6	8.0	9.6	1.7	52.7	3.7	37.2	0.9	1.0	55.0	148	360	435
ANP	kg $CaCO_3$ eq/t	Min	1.8	9.8	19.5	14.8	3.7	1	5.2	5.3	88.7	5.5	16.4	1.4	4.7	151	0.1	0.8	0.3
		Max	24.9	176	216	566	560	227	382	7.2	292	13.7	262	8.5	38.5	326	0.1	47.3	0.3
		Mean	11.8	64.1	101.0	234.2	132.2	32.3	124.0	6.3	175.3	9.6	80.8	4.9	15.3	214.3	0.1	24.6	0.3
NNP	kg $CaCO_3$ eq/t	Min	1.6	-43	19	-16	-17	-23	-11	2.5	40	0.6	-13	0.5	3.5	105	-202	-357	-435
		Max	23	165	216	549	560	226	366	6.6	222	14	227	7.6	36	271	-120	-313	-435
		Mean	11	37	97	212	113	24	114	4.5	123	5.9	44	4.0	14	159	-148	-336	-435
NPR	--	Min	4.0	0.4	5.9	0.5	0.6	0.05	0.8	1.9	1.7	1.1	0.6	1.5	3.8	2.7	0.0005	0.002	0.0007
		Max	122	444	1382	2234	3584	242	1946	12	6.0	91	7.6	28	120	5.9	0.0008	0.13	0.0007
		Mean	35	63	202	151	290	28	347	6.7	3.4	21	2.2	10	34	4.0	0.0007	0.07	0.0007

- Non-Acid Generating (Non-PAG)
- Uncertain acid generating characteristics
- Potentially Acid Generating (PAG)

Source: SRK 2020a.

Table 3-3 Thacker Pass NAG Summary

Parameter	Units	Statistic	*Waste Rock Dump and Pit Backfill*							*Ore Feed Stockpile (Operations Only)*				*Gangue Stockpile Pit Backfill*			*Tailings Impoundment*		
			Alluvium	Ash	Basalt	Claystone	Claystone/ Ash	HPZ	Tv	Ore Feed - ROM - Ox	Ore Feed - ROM - Unox	-1" Ore Feed - Ox	-75um Ore Feed - Unox	+1" Gangue - Ox	+100um Gangue - Ox	+75um Gangue - Unox	Clay Tailings	Neutralization Solids	Sulfate Salts
		N	*10*	*30*	*10*	*93*	*25*	*11*	*12*	*2*	*12*	*5*	*12*	*4*	*5*	*12*	*6*	*4*	*1*
NAG pH	s.u.	Min	6.16	2.47	7.81	2.83	2.97	2.8	6.49	6.47	7.47	5.89	2.85	5.58	6.32	7.6	2.19	5.59	4.96
		Max	9.3	10.08	9.04	10.21	10.35	10.3	9.27	6.48	10.17	8.93	9.76	6.99	9.29	8.43	2.44	8.25	4.96
		Mean	7.0	7.8	8.4	7.9	7.7	7.0	7.7	6.5	8.6	6.9	6.8	6.0	7.7	8.1	2.3	7.0	5.0
Net Acid Generation	kg H_2SO_4 eq/t	Min	0.2	0.02	0.02	0.02	0.02	0.02	0.02	0.2	0.2	0.2	0.2	0.2	0.2	0.2	68.5	0.2	0.2
		Max	0.2	43.5	0.2	17.1	13.01	22	0.2	0.2	0.2	0.2	21	0.2	0.2	0.2	93.8	0.2	0.2
		Mean	0.2	2.8	0.15	0.3	1.0	2.1	0.16	0.2	0.2	0.2	3.5	0.2	0.2	0.2	77.3	0.2	0.2
Net Acid Generation	kg CaCO3 eq/t	Min	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	69.9	0.2	0.2
		Max	0.2	44.4	0.2	17.5	13.3	22.5	0.2	0.2	0.2	0.2	21.4	0.2	0.2	0.2	95.7	0.2	0.2
		Mean	0.2	2.9	0.2	0.3	1.0	2.1	0.2	0.2	0.2	0.2	3.6	0.2	0.2	0.2	78.9	0.2	0.2

(green)	Non-Acid Generating (Non-PAG)
(yellow)	Potentially Acid Generating (PAG) (Lower Capacity)
(pink)	Potentially Acid Generating (PAG) (Higher Capacity)

Source: SRK 2020a.

Table 3-4 Thacker Pass Radiological Summary

Material Type		Sample ID	Total Dissolved Solids	Uranium		Thorium		Gross Alpha Activity			Gross Beta Activity			Radium 226 Activity			Radium 228 Activity			Radium 226/ Radium 228
		Measurement >>>	*mg/L*	*mg/L*	*ug/L*	*mg/L*	*pCi/L*	*pCi/L*	*Error (+/-)*	*LLD*	*pCi/L*	*Error (+/-)*	*LLD*	*pCi/L*	*Error (+/-)*	*LLD*	*pCi/L*	*Error (+/-)*	*LLD*	*pCi/L*
		NDEP Profile I-R Reference Values >>>	*1000*	*--*	*30*	*--*	*15*	*15*	*--*	*--*	*50*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*5*
Waste Rock Dump and Pit Backfill	Ash	LNC-135 (351.5-365.6)	62	0.002	2	<0.002	<0.001	6.5	2.5	4.6	7.3	3.1	7.3	0.36	0.11	0.28	0.11	0.59	0.61	0.47
	Basalt	WLC-050 (37-67.1)	82	0.0001	0.1	<0.001	<0.0007	0.51	1.2	5.4	1.3	2.5	5.5	0.07	0.19	0.27	0.71	0.68	0.68	0.78
	Claystone	LNC-141 (122.5-131.2)	664	0.027	27	<0.001	<0.0007	27	6.1	10	13	3.6	12	0.64	0.13	0.23	0.71	0.74	0.74	1.35
	HPZ	WLC-040 (186.9-194)	86	0.0012	1.2	<0.001	<0.0007	0.66	1.5	4	1.7	2.6	6.5	0.16	0.17	0.57	0.27	0.68	0.7	0.43
	Alluvium	LNC-131 (0-41.6)	100	0.0002	0.2	<0.002	<0.001	0.69	1.2	4.8	-0.18	2.7	7.3	0.6	0.23	0.24	0.46	1.8	1.9	1.06
	Tv	LNC-096 (112.5-132.2)	<20	<0.0002	<0.2	<0.002	<0.001	0.46	0.85	4.8	0.37	2.4	6.7	0.55	0.25	0.35	-1.6	2.6	2.8	-1.05
Ore Feed Stockpile (Operations Only)	-1" Ore Feed - Ox	9-SWECO-1.0-E22B-348 (1 of 2)	1580	<0.0005	<0.5	<0.005	<0.003	0.01	1.6	9.8	7.8	3.2	12	0.71	0.19	0.26	-0.25	1	1.1	0.46
	-1" Ore Feed - Ox	14-UNSIZE-C11B-68	910	<0.005	<5	<0.001	<0.0007	2.6	2.5	9.8	15	3.8	7.9	0.62	0.18	0.26	0.48	0.99	1	1.10
Gangue Stockpile Pit Backfill	+1" Gangue - Ox	9-SWECO+1.0-E22B-349 (1 of 2)	960	<0.0005	<0.5	<0.005	<0.003	2	1.7	4.6	8.4	2.9	6.5	0.26	0.23	0.35	0.94	2.4	2.5	1.20
	+100um Gangue - Ox	14-PPGANGUE-D02B-79	250	<0.005	<5	0.003	0.002	4.9	3.4	12	52	6.4	12	1.3	0.22	0.22	0.37	1.8	1.9	1.67
	+100um Gangue - Ox	9-CYCUFCOMP-E23B-356	1150	0.0021	<2.1	<0.005	<0.003	3.2	2.4	8.9	36	4.4	7.1	1.5	0.29	0.43	2.5	3.4	3.4	4.00
	+75um Gangue - Unox	SAMPLE GROUP #2 (+) 75UM	820	0.0945	94.5	<0.001	<0.0007	84	11	8.7	35	4.4	5.4	1.8	0.16	0.05	4.3	4.2	11	6.1
	+75um Gangue - Unox	SAMPLE GROUP #4 (+) 75UM	972	0.0522	52.2	<0.001	<0.0007	43	8.2	8.3	28	4.7	10	0.7	0.11	0.07	0.3	3.7	9.7	1.00
	+75um Gangue - Unox	SAMPLE GROUP #11 (+) 75UM	928	0.0133	13.3	<0.001	<0.0007	12	4.4	15	8.8	3.2	12	0.55	0.11	0.09	0.4	8.1	19	0.95
	+75um Gangue - Unox	Sample Group #6 (+) 75 UM	520	0.0137	13.7	<0.001	<0.0007	11	4	7.6	8.5	3	5.3	1	0.25	0.33	1.9	2.4	5.9	2.9
Tailings Impoundment	Neutralization solids	4-NFILTCAKE-E09B-308	37400	0.003	3	<0.02	<0.01	-44	58	230	1700	170	230	0.64	0.3	0.3	0.63	0.67	0.67	1.27
	Clay tailings	4-LFILTCAKE-E05B-314	74700	0.724	724	0.39	0.26	670	340	890	3800	450	580	1.6	0.35	0.53	6.6	0.79	0.55	8.2
	Sulfate Salts	4-NEUTSALTS-E24B-416	378000	<0.02	<20	<0.2	<0.13	0.37	12	60	18000	1000	1100	0.76	0.25	0.66	0.78	1.4	1.5	1.54

Denotes concentration is greater than NDEP Profile I-R reference value

Source: SRK 2020a.

Table 3-5 Thacker Pass MWMP Summary

Parameter	Units	NDEP Profile I Reference Value	NDEP Profile III Reference Value	Statistic	*Waste Rock Dump and Pit Backfill*							*Ore Feed Stockpile (Operations Only)*		*Gangue Stockpile Pit Backfill*			*Tailings Impoundment*		
					Alluvium	Ash	Basalt	Claystone	Claystone/ Ash	HPZ	Tv	Ore Feed - ROM - Ox	-1" Ore Feed - Ox	+1" Gangue - Ox	+100um Gangue - Ox	+75um Gangue - Unox	Clay Tailings	Neutralization Solids	Sulfate Salts
				N	*7*	*11*	*6*	*20*	*11*	*6*	*7*	*2*	*3*	*2*	*5*	*3*	*3*	*2*	*1*
Alkalinity, $CaCO_3$	mg/L	--	--	Min	6.0	-390	12	4.8	11	-230	8.3	20	28	10	28	92	10	10	12
				Max	80	79	110	200	120	38	75	66	100	20	97	160	10	41	12
				Mean	29	-8.6	33	80	52	-18	28	43	53	15	56	121	10	26	12
Aluminum	mg/L	0.2	4.47	Min	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.05	0.05	0.19	0.1	0.05	1050	1.0	10
				Max	3.8	7.1	0.4	4.9	1.8	3.8	0.1	0.1	0.5	0.7	5.0	0.1	5130	10	10
				Mean	0.9	1.3	0.1	0.5	0.3	0.7	0.1	0.1	0.2	0.4	1.8	0.1	2623	5.5	10
Antimony	mg/L	0.006	0.29	Min	0.0008	0.001	0.001	0.003	0.002	0.0009	0.0008	0.003	0.007	0.002	0.009	0.05	0.41	0.014	0.08
				Max	0.0028	0.073	0.031	0.69	0.094	0.0074	0.01	0.011	0.014	0.003	0.026	0.097	0.49	0.02	0.08
				Mean	0.002	0.02	0.007	0.07	0.028	0.003	0.005	0.007	0.009	0.003	0.017	0.07	0.5	0.02	0.08
Arsenic	mg/L	0.01	0.2	Min	0.0056	0.005	0.0063	0.005	0.0025	0.0086	0.0038	0.015	0.096	0.026	0.084	0.035	17	0.01	0.04
				Max	0.042	0.073	0.047	0.45	0.054	0.37	0.14	0.028	0.13	0.026	0.33	0.069	31	0.011	0.04
				Mean	0.02	0.03	0.02	0.08	0.02	0.10	0.03	0.02	0.11	0.03	0.2	0.05	25	0.01	0.04
Barium	mg/L	2	23.1	Min	0.011	0.01	0.01	0.015	0.02	0.007	0.01	0.06	0.06	0.02	0.02	0.03	0.5	0.2	1
				Max	0.26	0.1	0.052	0.067	0.25	0.078	0.02	0.16	0.17	0.1	0.35	0.071	1	0.4	1
				Mean	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.2	0.0	0.7	0.3	1.0
Beryllium	mg/L	0.004	2.83	Min	0.0002	0.0002	0.00008	0.00008	0.0008	0.00008	0.0002	0.00008	0.0004	0.0006	0.0002	0.00008	0.67	0.002	0.02
				Max	0.001	0.016	0.001	0.0084	0.003	0.0061	0.001	0.001	0.001	0.001	0.0055	0.00008	1.3	0.042	0.02
				Mean	0.0009	0.0027	0.0008	0.0018	0.0016	0.0017	0.0009	0.0005	0.0008	0.0008	0.002	0.00008	1.0	0.02	0.02
Bismuth	mg/L	--	--	Min	0.08	0.08	0.04	0.04	0.04	0.04	0.08	0.08	0.08	0.08	0.08	0.04	2	0.8	8
				Max	0.1	0.5	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.08	8	2	8
				Mean	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	4.7	1.4	8.0
Boron	mg/L	--	5	Min	0.06	0.1	0.04	0.1	0.11	0.06	0.04	0.04	0.25	0.15	0.14	0.26	29	19.5	69
				Max	0.39	0.5	0.14	0.94	0.57	0.14	0.25	0.23	0.37	0.2	0.58	0.81	87	109	69
				Mean	0.1	0.2	0.1	0.4	0.3	0.1	0.1	0.1	0.3	0.2	0.3	0.5	50.3	64.3	69.0
Cadmium	mg/L	0.005	0.05	Min	0.0002	0.0002	0.00005	0.00051	0.001	0.00005	0.0001	0.00005	0.0001	0.0003	0.0001	0.00101	0.179	0.001	0.01
				Max	0.001	0.031	0.001	0.009	0.002	0.0051	0.0078	0.001	0.001	0.001	0.0019	0.00129	0.376	0.011	0.01
				Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Calcium	mg/L	--	--	Min	0.95	4.1	1.7	8.3	2.4	0.86	1.6	58.9	17.5	5.3	5.7	141	489	462	140
				Max	54	370	140	350	270	12	98	130	120	33	19	162	620	521	140
				Mean	13.6	93.9	26.4	116.1	109.4	6.3	30.6	94.5	65.8	19.2	11.4	153.3	543.3	491.5	140.0
Chloride	mg/L	400	--	Min	1.4	1	1	2.4	2.4	1	0.7	214	44	12.9	7.2	22	10	6.9	50
				Max	220	25	13	340	62	8.3	16	310	240	31	10.5	37.9	50	50	50
				Mean	47.2	7.6	3.9	65.9	17.9	3.6	5.8	262.0	138.7	22.0	8.8	31.0	30.0	28.5	50.0
Chromium	mg/L	0.1	1	Min	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.01	1.6	0.2	2
				Max	0.02	0.025	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	2	0.5	2
				Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.4	2.0
Cobalt	mg/L	--	--	Min	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.5	0.2	2
				Max	0.02	0.32	0.022	0.12	0.036	0.021	0.02	0.02	0.02	0.02	0.02	0.02	2	0.5	2
				Mean	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.4	2.0
Copper	mg/L	1	0.5	Min	0.02	0.02	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.01	2	0.2	2
				Max	0.05	0.2	0.05	0.05	0.08	0.05	0.05	0.04	0.04	0.04	0.04	0.02	2.2	0.5	2
				Mean	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.4	2.0

Table 3-5 Thacker Pass MWMP Summary

Parameter	Units	NDEP Profile I Reference Value	NDEP Profile III Reference Value	Statistic	Waste Rock Dump and Pit Backfill							Ore Feed Stockpile (Operations Only)		Gangue Stockpile Pit Backfill			Tailings Impoundment		
					Alluvium	Ash	Basalt	Claystone	Claystone/ Ash	HPZ	Tv	Ore Feed - ROM - Ox	-1" Ore Feed - Ox	+1" Gangue - Ox	+100um Gangue - Ox	+75um Gangue - Unox	Clay Tailings	Neutralization Solids	Sulfate Salts
				N	7	11	6	20	11	6	7	2	3	2	5	3	3	2	1
Fluoride	mg/L	4	2	Min	0.11	0.45	0.1	0.38	0.9	0.1	0.1	2.7	2.7	1.2	2.5	4	2000	110	480
				Max	2.1	9.1	1.1	19	9.1	1.2	1.5	3.7	7	2	13	10	56000	178	480
				Mean	0.8	2.9	0.4	5.3	4.4	0.6	0.8	3.2	4.5	1.6	7.3	6.0	20000.0	144.0	480.0
Gallium	mg/L	--	--	Min	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	5	2	20
				Max	0.2	0.5	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	20	5	20
				Mean	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	11.7	3.5	20.0
Iron	mg/L	0.6	--	Min	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.06	0.1	0.23	0.13	0.03	2350	0.6	6
				Max	2.77	300	1.2	40	58	74	4.8	0.1	1.16	0.95	10	0.06	3370	2	6
				Mean	0.6	49.4	0.3	5.4	7.5	12.4	0.9	0.1	0.5	0.6	3.6	0.0	2823.3	1.3	6.0
Lead	mg/L	0.015	0.1	Min	0.0025	0.0009	0.001	0.0004	0.0002	0.0005	0.0019	0.0003	0.0005	0.0014	0.0002	0.0001	0.147	0.002	0.05
				Max	0.0026	0.025	0.0025	0.0025	0.0025	0.023	0.0025	0.0025	0.0025	0.0025	0.0078	0.0002	0.36	0.013	0.05
				Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1
Lithium	mg/L	--	40.3	Min	0.07	0.05	0.029	0.1	0.1	0.03	0.02	0.2	0.35	0.63	0.3	0.056	412	336	4,030
				Max	0.1	3.8	0.66	2.4	1.5	0.1	0.12	0.45	0.98	1	4.91	0.462	1120	1480	4,030
				Mean	0.1	0.7	0.2	0.6	0.5	0.1	0.1	0.3	0.6	0.8	2.0	0.2	677.0	908.0	4030.0
Magnesium	mg/L	150	--	Min	0.5	1.5	0.5	1.2	4.4	0.5	0.4	14.2	13.7	8.9	5.8	35.1	6640	4290	62,600
				Max	16	180	67	370	230	3	26	33	26	9.8	65.2	57.4	10300	13600	62,600
				Mean	5.6	42.5	11.9	78.3	77.5	2.1	8.7	23.6	18.4	9.4	23.5	48.6	8286.7	8945.0	62600.0
Manganese	mg/L	0.1	377	Min	0.005	0.005	0.005	0.005	0.01	0.005	0.005	0.01	0.01	0.01	0.0054	0.13	59.7	10	212
				Max	0.037	18	0.33	7	3.57	0.33	5.5	0.02	0.02	0.02	0.14	0.64	89	81.9	212
				Mean	0.0	4.0	0.1	1.1	1.1	0.1	1.0	0.0	0.0	0.0	0.1	0.3	70.9	46.0	212.0
Mercury	mg/L	0.002	0.01	Min	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.00025	0.0002	0.0002	0.018	0.0003	0.0008
				Max	0.00025	0.0079	0.0004	0.0016	0.01	0.0018	0.00025	0.00025	0.0013	0.0005	0.0022	0.0002	0.065	0.0004	0.0008
				Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Molybdenu m	mg/L	--	0.6	Min	0.01	0.02	0.01	0.01	0.02	0.02	0.02	0.028	0.04	0.022	0.04	7.8	2	0.5	4
				Max	0.05	11	2.7	17	17	0.062	0.25	0.04	0.22	0.04	0.51	9.37	10	1	4
				Mean	0.0	1.9	0.5	4.9	4.3	0.0	0.1	0.0	0.1	0.0	0.2	8.8	5.0	0.8	4.0
Nickel	mg/L	--	171	Min	0.01	0.01	0.008	0.008	0.01	0.008	0.01	0.02	0.02	0.02	0.02	0.008	0.4	0.2	2
				Max	0.03	0.19	0.03	0.092	0.082	0.034	0.03	0.03	0.03	0.03	0.03	0.02	3	0.4	2
				Mean	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.3	2.0
Nitrogen, Total as N	mg/L	10	100	Min	0.02	0.02	0.02	0.02	0.07	0.02	0.02	0.45	0.05	0.02	0.02	0.02	0.06	0.09	0.23
				Max	1.15	2.5	0.61	2.5	2.5	0.61	1.4	1.9	2.5	0.61	0.61	0.02	0.08	0.15	0.23
				Mean	0.7	0.9	0.4	1.2	1.0	0.4	0.6	1.2	1.0	0.3	0.2	0.0	0.1	0.1	0.2
pH	s.u.	6.5 - 8.5	6.5 - 8.5	Min	6.61	4.38	7	5.12	6.03	3.18	6.47	7.5	7.3	7	7.3	8	0.8	5.8	5.9
				Max	8.43	8.09	8	8.1	8.09	7.8	7.95	7.95	7.97	7.37	8.2	8.2	1.6	7.4	5.9
				Mean	7.4	6.8	7.4	7.4	7.2	6.6	7.3	7.7	7.7	7.2	7.8	8.1	1.2	6.6	5.9
Phosphorus	mg/L	--	--	Min	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.5	0.1	20	2	20
				Max	0.73	2.5	0.5	0.58	1	0.5	0.5	0.5	0.5	0.5	0.7	0.2	29	5	20
				Mean	0.5	0.7	0.4	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.6	0.1	23.0	3.5	20.0
Potassium	mg/L	--	--	Min	0.5	1	0.5	1.3	2	0.5	0.4	8	6.1	5.6	3	4.1	2940	3340	18,000
				Max	7.9	12	9.9	19	14	2.1	2.8	11	15	6	33.4	16.3	10200	6490	18,000
				Mean	2.5	4.6	2.5	7.5	7.3	1.6	1.3	9.5	10.0	5.8	13.9	8.7	5836.7	4915.0	18000.0

Table 3-5 Thacker Pass MWMP Summary

Parameter	Units	NDEP Profile I Reference Value	NDEP Profile III Reference Value	Statistic	*Waste Rock Dump and Pit Backfill*							*Ore Feed Stockpile (Operations Only)*		*Gangue Stockpile Pit Backfill*			*Tailings Impoundment*		
					Alluvium	Ash	Basalt	Claystone	Claystone/ Ash	HPZ	Tv	Ore Feed - ROM - Ox	-1" Ore Feed - Ox	+1" Gangue - Ox	+100um Gangue - Ox	+75um Gangue - Unox	Clay Tailings	Neutralization Solids	Sulfate Salts
				N	*7*	*11*	*6*	*20*	*11*	*6*	*7*	*2*	*3*	*2*	*5*	*3*	*3*	*2*	*1*
Scandium	mg/L	--	--	Min	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	5	2	20
				Max	0.2	0.5	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	20	5	20
				Mean	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	11.7	3.5	20.0
Selenium	mg/L	0.05	0.05	Min	0.0002	0.0002	0.0002	0.005	0.0033	0.0002	0.0002	0.0022	0.0007	0.0005	0.0003	0.0016	0.01	0.003	0.02
				Max	0.0073	0.015	0.045	0.03	0.026	0.005	0.01	0.0096	0.01	0.005	0.005	0.0021	0.02	0.005	0.02
				Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Silver	mg/L	0.1	--	Min	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.01	0.5	0.2	2
				Max	0.02	0.05	0.05	0.05	0.05	0.05	0.02	0.02	0.02	0.02	0.02	0.02	2	0.5	2
				Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.4	2.0
Sodium	mg/L	--	2000	Min	3.5	1.5	2	2.8	8.9	1.1	0.5	57.4	45.8	5.9	15.9	10.5	180	54	230
				Max	81	42	77	270	120	22	40	100	110	24	45.2	27	2380	270	230
				Mean	42.6	17.7	16.7	77.6	51.2	10.4	11.4	78.7	67.7	15.0	27.6	16.3	1073.3	162.0	230.0
Strontium	mg/L	--	1127	Min	0.02	0.05	0.06	0.1	0.1	0.042	0.02	0.32	0.19	0.04	0.04	1	2.2	0.4	2
				Max	0.37	2.5	1.2	4.5	7.3	0.1	0.48	0.7	0.72	0.19	0.16	1.45	5	2.2	2
				Mean	0.1	0.8	0.3	1.5	2.1	0.1	0.2	0.5	0.4	0.1	0.1	1.2	3.2	1.3	2.0
Sulfate	mg/L	500	--	Min	1	3.6	1.9	17	6.2	1	1	23	69	5	16	425	49400	26200	255,000
				Max	220	2400	660	2500	1300	230	310	180	210	100	33	465	103000	76700	255,000
				Mean	46.0	481.5	111.9	617.3	547.4	50.6	100.7	101.5	123.0	52.5	24.9	442.0	73767	51450	255000
Thallium	mg/L	0.002	0.032	Min	0.0002	0.0002	0.0001	0.0003	0.0003	0.0001	0.0002	0.0003	0.0002	0.0005	0.0003	0.0002	0.17	0.056	0.7
				Max	0.001	0.005	0.001	0.0015	0.0021	0.019	0.005	0.001	0.001	0.001	0.001	0.0002	0.28	0.19	0.7
				Mean	0.0009	0.0016	0.0009	0.0010	0.0011	0.0039	0.0015	0.0007	0.0006	0.0008	0.0007	0.0002	0.2	0.1	0.7
Tin	mg/L	--	29.2	Min	0.08	0.08	0.04	0.04	0.04	0.04	0.08	0.08	0.08	0.08	0.08	0.04	2	0.8	8
				Max	0.2	0.5	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.08	8	2	8
				Mean	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	4.7	1.4	8.0
Titanium	mg/L	--	--	Min	0.09	0.01	0.018	0.006	0.008	0.005	0.01	0.01	0.02	0.08	0.02	0.008	85.7	0.1	1
				Max	0.1	0.5	0.1	0.1	0.27	0.1	0.1	0.1	0.22	0.1	0.81	0.01	298	0.3	1
				Mean	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.0	166.9	0.2	1.0
TDS	mg/L	1000	7000	Min	20	62	10	54	180	10	10	552	284	260	150	820	74700	37400	378,000
				Max	540	3500	1200	4000	2300	350	500	980	1580	960	1150	972	137000	95200	378,000
				Mean	216.3	779.5	230.8	1174.2	945.1	118.8	210.9	766.0	924.7	610.0	452.0	906.7	102633	66300	378000
Uranium	mg/L	0.03	6.995	Min	0.0002	0.002	0.0001	0.005	0.0004	0.0012	0.0002	0.0002	0.0002	0.0005	0.0013	0.0133	0.37	0.003	0.02
				Max	0.01	0.15	0.13	0.069	0.024	0.011	0.01	0.005	0.005	0.005	0.005	0.0945	0.724	0.005	0.02
				Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	0.0	0.0
Vanadium	mg/L	--	0.1	Min	0.01	0.01	0.01	0.005	0.005	0.005	0.01	0.01	0.01	0.01	0.01	0.013	7.2	0.1	1
				Max	0.1	0.088	0.068	0.4	0.081	0.01	0.045	0.01	0.05	0.01	0.09	0.02	19	0.3	1
				Mean	0.040	0.028	0.025	0.079	0.026	0.009	0.018	0.01	0.03	0.01	0.049	0.018	11.6	0.2	1.0
Zinc	mg/L	5	25	Min	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.01	8.3	0.2	2
				Max	0.03	16	0.042	3.5	0.38	2	0.55	0.02	0.02	0.02	0.09	0.04	16	1.4	2
				Mean	0.02	2.2	0.02	0.31	0.09	0.35	0.13	0.02	0.02	0.02	0.04	0.02	11	0.80	2.00

Denotes concentration is greater than NDEP Profile I reference value

Denotes concentration is greater than NDEP Profile III reference value

Denotes concentration is greater than NDEP Profile I and Profile III reference values

(source: SRK 2020a)

3.2.1 *Waste Rock and Ore*

Groundwater modelling and analyses have indicated that no adverse impacts to groundwater are anticipated from either PAG material or neutral leachate from the 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 of a sample of ash material predicted to be acid generating based on an NPR cut-off of 1.2 did not generate acidic conditions for the duration of the test (62 weeks). These results indicate the ABA test may over predict acid generation potential.

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 geologic 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 to preclude acid generation does not appear to be necessary or recommended for the Project (SRK 2020a).

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 were found to be released at concentrations above Profile I 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 Profile I NRV including fluoride, iron, magnesium, manganese, and sulfate. However, these constituents equilibrate to lower concentrations after the initial flush. Baseline groundwater quality results for monitoring wells in the area indicate arsenic is naturally elevated in groundwater.

Low levels of uranium are initially flushed from the waste rock and ore HCTs at concentrations above Profile I-R (i.e., 0.03 mg/L); however, concentrations rapidly decrease to levels below Profile I-R 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. Additional information is presented in SRK Technical Memo, Thacker Pass Project Uranium Geochemistry (SRK 2020b). Based on monitoring done as part of the monitoring program for WPCP NEV2015108 for the Kings Valley Lithium Exploration Project, radiological elements (radium 226/radium 228 and thorium) are locally present in groundwater but are at low concentrations below the Profile IR NRVs.

Table 3-6 Average Uranium

Well ID	Uranium, Dissolved (pCi/L)
Nevada Reference Values	**0.03**
MW18-01	0.0025
MW18-02	0.0025
MW18-03	0.003133333
MW18-04	0.0025
PH-1	0.003125
TW18-02	0.0025
WSH-03	0.003
WSH-11	0.003333333
WSH-13	0.003947368
WSH-14	0.003125
WSH-17	0.004375

*Data collected in conjunction with NEV2015108 Water Pollution Control Permit, Profile 1-R quarterly monitoring 2016-2018.

Table 3-7 Average Gross Alpha, Radium 226, Radium 228

Well ID	Gross Alpha Activity (pCi/L)	Gross Alpha MDC (pCi/L)	Radium 226 Activity (pCi/L)	Radium 226 MDC (pCi/L)	Radium 228 Activity (pCi/L)	Radium 228 MDC (pCi/L)
Nevada Reference Values	**15**	**15**	**5**	**5**	**5**	**5**
WSH-13	0.2	1.332	0.25	0.4772	0.30625	8.415
WSH-17	0.2	1.5275	0.125	0.387	0.283333333	18.8625

*Data collected in conjunction with NEV2015108 Water Pollution Control Permit, Profile 1-R quarterly monitoring 2016-2018.

The waste rock management approach was described in the Waste Rock and Gangue Management Plan (WRGMP) for the Thacker Pass Project (SRK 2021c). The WRGMP has been updated as appropriate to incorporate outcomes from the Project's Water Pollution Control Permit application process. A summary technical memorandum of the WRGMP is included in Appendix A (SRK 2021a).

Based on the current mine plan and modeling results, LNC proposes to place waste rock in the compacted low hydraulic conductivity soil layer (LHCSL) lined WRSF or in the open pit above the 4825 feet elevation (which is above the groundwater level) as backfill material. A LHCSL will also be constructed in the pit to a design slope that will ultimately drain to a sump which will be converted to an ET-Cell. The LHCSL will be constructed on native ground and backfilled waste rock to promote positive drainage towards the final pit sump location. The LHCSL will be continuously constructed during the pit backfill process from the upper elevations on the west side of the pit and continuing downgradient to the east where the pit sump is located. Once constructed, seepage (if any) from waste rock placed above it will drain down to the pit sump. It is anticipated that multiple pit sumps may be constructed over the 10-year mine plan on multiple levels to manage stormwater as the benches are mined out. The locations will vary and depend on the mining plan at the time but in general will be located at the low point of an active mining area. The final pit sump in the low point of the pit will be converted to an ET-cell.

In order to determine the potential for waste rock from the Thacker Pass Project to degrade groundwater, numerical predictive calculations have been carried out to predict, in quantitative terms, the possible concentrations of solutes emanating from the WRSF and backfilled pit and to determine their potential concentrations upon mixing with groundwater. These numerical predictions were undertaken by Piteau (2020a) to inform the proposed waste rock management activities for the Thacker Pass Project. The results of the numerical modeling indicate that no new exceedances of NDEP Profile I reference values will occur within the West and East WRSF footprints (Piteau 2020a). The only exceedance of NDEP Profile I reference values that was expected to occur for an unlined WRSF is for arsenic, which is the result of elevated background concentrations rather than infiltration from the WRSFs (Piteau, 2020a). With a lined facility, no exceedances are predicted at the downgradient monitoring locations. The LHCSL provides a barrier that will direct and manage infiltration through engineered containment; even under previous infiltration and sensitivity analyses, without considering application of the LHCSL, no groundwater impacts were anticipated outside the WRSF footprints using conservative assumptions (increasing infiltration or reducing groundwater flow by a factor of 3.5 to 4 times) (Piteau 2020a).

3.2.2 Ore Feed and Gangue

Coarse gangue will be placed on a compacted LHCSL lined pad located north of the process plant. The CGS sediment pond will be single lined with 80-mil textured geomembrane with a sump and pump to convey water from the pond into the process plant circuit. Static test and kinetic test results are available for nine (9) samples of oxidized gangue from bulk ore samples collected from the oxidized portion of the mineral deposit and twelve (12) samples of unoxidized gangue from split core. In addition, the corresponding ore feed samples have been submitted for static testing for comparison purposes.

Geochemical characterization data show that the oxidized ore feed material is net neutralizing with an average NPR value of 17. Oxidized gangue material shows similar results to the ore feed material and is net neutralizing with an average NPR value of 24. Acid base accounting results for the unoxidized ore feed and gangue samples show that they are generally comparable to the oxidized ore feed and are mainly non-acid generating with a few samples exhibiting uncertain acid generation potential resulting in an average NPR value of 4.

The MWMP leachates are consistently neutral for all oxidized and unoxidized gangue samples, with pH values around 8 s.u. A comparison of MWMP leachate chemistry to Profile I NRVs shows that the majority of constituents are below their respective NRVs with the exception of antimony, arsenic, fluoride, and manganese. Based on MWMP results, there are increases in some of the constituents as a result of the wet attrition process including aluminum, arsenic, antimony, iron and manganese. This is attributed to the breakdown of mineral grains during the attrition process and the enrichment of these constituents in the coarse gangue fraction. 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 oxidized ore feed samples were submitted for Profile I-R analysis that includes analysis of uranium, gross alpha, radium 226/radium 228 and thorium. Results indicate that these radionuclides are leached from the oxidized ore feed and gangue material at concentrations below the Profile I-R NRVs. MWMP leachate was also submitted for Profile I-R analysis for three of the unoxidized gangue samples. These results show that the majority of radionuclides are leached from the unoxidized gangue samples at concentrations below Profile I-R NRVs. The exceptions to this include uranium, which is elevated in two out of four of the unoxidized gangue samples along with gross alpha. Radium 226/Radium 228 is elevated in one out of four unoxidized gangue samples (SRK 2020b).

Two samples of oxidized gangue and two samples of unoxidized gangue material have undergone humidity cell testing. Results from the humidity cell test program confirm the oxidized and unoxidized gangue material is non-acid generating and there is a low potential to leach metals and sulfate under alkaline conditions. However, under the alkaline conditions, there is a potential to leach aluminum, arsenic and antimony from the oxidized and unoxidized gangue at concentrations greater than the Profile I NRVs. Arsenic is consistently released from both the oxidized and unoxidized gangue at concentrations above the Profile I NRV throughout the test. For the unoxidized gangue material antimony concentrations remain above the Profile I NRV and aluminum remains below the NRV throughout the test. Manganese is also leached from the unoxidized gangue at concentrations above the Profile I NRV during the first flush. For the oxidized gangue material, antimony and aluminum release decreases to concentrations below the Profile I NRV midway through the test.

In order to determine the potential for gangue material to degrade groundwater, numerical calculations have been carried out by (Piteau 2020a) that predict in quantitative terms the possible concentrations of solutes emanating from the coarse gangue stockpile and determine their potential concentrations upon mixing with groundwater. As with the WRSFs, even without the LHCSL the results of the numerical modeling for the coarse gangue stockpile indicate that no new exceedances of NDEP Profile I reference values would occur at the downgradient monitoring locations (Piteau, 2020a). The only exceedance of NDEP Profile I reference values that is expected to continue to occur is for arsenic, which is the result of elevated background concentrations rather than infiltration from the stockpile (Piteau 2020a). Even though the results indicate no new exceedances, the LHCSL will be constructed as a conservative measure to satisfy the request from NDEP. With a clay lined facility and geomembrane lined sediment pond the potential for any adverse impact to the groundwater is eliminated. 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. Upon closure, the 80-mil HDPE geomembrane liner in the sediment pond will be cut and placed in the bottom of the pond and buried. The pond area will be backfilled to promote positive drainage into the natural drainages and covered with growth media and seeded.

3.2.3 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 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. This has been confirmed by mineralogical analysis. However, the clay tailings contain residual sulfuric acid from the lithium extraction process that was flushed from the material resulting in the generation of low pH values in the ABA and NAG tests. In addition, 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 in the MWMP test. 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 I-R 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 I-R NRVs. For the neutralization solids and sulfate salts, these radionuclides are all below Profile I-R NRVs.

One sample of clay tailings and one sample of neutralization solids were selected for humidity cell testing. The HCT of clay tailings has generated acidic leachate with a pH of 1.6 that increased to 3.6 throughout 58 weeks of testing. As expected with low pH solutions, the majority of parameters were initially elevated at concentrations greater than the Profile I NRVs. However, all metals showed a decreasing trend throughout the test and decreased to concentrations below the Profile I NRVs, with the exception of antimony, arsenic, iron and fluoride. The trends in this cell are not related to the generation of acidic leachate from the oxidation of sulfides; rather, the trends can be attributed to the long-term flushing of residual sulfuric acid and associated sulfate salts.

The sample of neutralization solids generated slightly alkaline pH throughout 54 weeks of testing, which is consistent with the NAG static test results that predict this sample will be non-acid generating. Sulfate and antimony were consistently leached from the neutralization solids at concentrations above the Profile I NRV. Arsenic, lead and magnesium were also elevated above the Profile I NRVs, but only during the initial flush.

Due to the potential to leach metals and radioactive elements from the tailings at concentrations that exceed Profile I and Profile I-R NRVs, LNC has proposed that the CTFS will be constructed as a zero discharge facility, stored on geomembrane lined containment and covered with waste rock/growth media at closure; therefore, no degradation to groundwater will occur. In addition, because the CTFS will be a dry-stack facility, there is limited potential of ponded water on the surface during operations. The reclaim pond for the CTFS is a double lined pond with leak detection that will be converted to ET-Cell at closure to passively evaporate any seepage however minimal from the CTFS.

4 Proposed Stabilization and Closure Procedures

Appropriate decontamination and closure procedures are listed below for each operational component of the Project. Only non-hazardous material, including clean concrete, will be disposed of on-site. If material is disposed of on-site, a Class III Landfill Waiver will be obtained through Nevada Division of Environmental Protection, Bureau of Sustainable Materials Management (NDEP-BSMM). If process components are disposed of off-site, LNC will provide manifests. If components are sold to an operation in Nevada, LNC will provide the name of the operation. Otherwise, LNC will indicate if process components are sold out-of-state.

4.1 Pit Area

Ore production is slated for the life of the mine with the majority of the open pit mining operations confined to a single ore body. Concurrent backfill and reclamation activities are anticipated to begin by year four of production. Reclamation will include backfilling previously mined areas as mining advances. Initial mining operations will remain above the groundwater level. Backfill material will consist of excavated waste rock.

Figure 02 shows a plan view of the pit and proposed backfill placement. The proposed backfilling plan will consist of filling a large portion of the Project pit. At closure, a portion of the highwall will remain exposed. An LHCSL will be constructed in the pit that will ultimately drain to a sump which will be converted to an ET-Cell. The LHCSL will be constructed on native ground and waste rock backfill material to promote positive drainage towards the final pit sump location. The LHCSL will be placed in accordance with the latest Earthworks Specifications for the project which currently state that the LHCSL is to be placed in two six (6) inch thick compacted lifts to form a minimum twelve (12) inch thick compacted layer. Each lift shall be compacted to a minimum of ninety-five (95) percent of maximum dry density (as determined by ASTM D1557) and moisture content between two percent below optimum moisture content and three percent above optimum moisture content as determined by ASTM D1557 unless otherwise approved by the Engineer to achieve a permeability no greater than 1×10^{-6} cm/sec as determined by ASTM D5084.

The LHCSL will be covered with LHCSL Cover material as the LHCSL is placed. The LHCSL Cover material shall be placed in accordance with the latest Earthworks Specifications for the project which currently state that it shall be placed in minimum two feet thick lifts with no moisture or compaction specification. The purpose of the cover material is to keep the LHCSL from drying out or freezing. The LHCSL will be continuously constructed during the pit backfill process from the upper elevations on the west side of the pit and continuing downgradient to the east where the pit sump is located.

Once constructed, seepage from waste rock placed above it will drain down to the pit sump. It is anticipated that multiple pit sumps will be constructed over the 10-year mine plan as the pit deepens with the final pit sump being converted to an ET-cell. The backfill plan was optimized and the remaining highwall will be contoured where reasonably possible at closure to blend with surrounding topography, promote proper drainage, and avoid ponding of meteoric water.

4.2 East and West Waste Rock Storage Facilities (WRSFs)

The footprint of the East and West WRSFs will be lined with one-foot of compacted LHCSL. The LHCSL will be placed in accordance with the latest Earthworks Specifications for the project which currently state that the LHCSL is to be placed in two six (6) inch thick compacted lifts to form a minimum twelve (12) inch thick compacted layer. Each lift shall be compacted to a minimum of ninety-five (95) percent of maximum dry density (as determined by ASTM D1557) and moisture content between two percent below optimum moisture content and three percent above optimum moisture content as determined by ASTM D1557 unless otherwise approved by the Engineer to achieve a permeability no greater than 1×10^{-6} cm/sec as determined by ASTM D5084.

The LHCSL will be covered with LHCSL Cover material as the LHCSL is placed. The LHCSL Cover material shall be placed in accordance with the latest Earthworks Specifications for the project which currently state that it shall be placed in minimum two feet thick lifts with no moisture or compaction specification. The purpose of the cover material is to keep the LHCSL from drying out or freezing.

The major valleys have a perforated pipe with two feet of overliner mounded above it which are designed to promote stormwater drainage to a single HDPE geomembrane lined sediment pond for each facility. Runoff collected in the single lined sediment pond will be pumped for use into the process circuit or if the water meets Profile 1 water quality requirements then it could be discharged to the natural drainage. Closure of the East and West WRSF, shown in Figure 03, will consist of concurrent reclamation whenever possible, and generally include stabilizing slopes, reducing slope erosion, grading, blending surfaces into surrounding topography, placement of growth media and revegetation.

At closure, the exterior slope of the East and West WRSFs will be graded to an overall slope of 3.5H:1V. Vegetative covers stabilize the soil and reduce the amount of meteoric water infiltrating into the ground. The sediment ponds will no longer be needed once a vegetative cover is established over the WRSFs. The sediments from the sediment pond will be tested, and if suitable re-used as growth media. If unsuitable the sediments will be placed in either the structural or non-structural zone of the CTFS. The geomembrane in the sediment ponds will be cut and folded at the toe of the pond slope and buried. The pond area will be backfilled to promote positive drainage into the natural drainages and covered with growth media and seeded.

4.3 Mine Facilities

Following mine closure, reclamation of the mine facilities will involve rinsing contaminants from secondary containment and support structures and flushing pipelines and storage tanks. The rinse water will be pumped to the CTFS for passive evaporation or pumped to a water truck for placement on the tailings surface for dust suppression. All opened reagents and chemicals will be removed by a chemical cleanup company. The costs for this have been included in the reclamation bond. The sediments in the bottom of the tanks will be removed and placed in the structural or non-structural zone of the CTFS. Appendix C provides the volume calculation for the sediments that need to be removed from the tanks. After cleaning all structures will be demolished and concrete foundations will be broken. Only clean concrete is allowed in the Class III landfill so any contaminated concrete will need to be hauled off site or buried in an approved contained facility such as the CTFS. A Class III Landfill Waiver will be obtained through NDEP-BSMM for any clean, non-hazardous solid waste that will be buried onsite. The surface will be regraded to promote positive drainage and then covered with growth media, ripped and seeded to promote revegetation. For all the Mine Facility Sediment Ponds, the sediments from the sediment pond will be tested, and if suitable re-used as growth media. If unsuitable the sediments will be placed in either the structural or non-structural zone of the CTFS. The geomembrane in the Facility Sediment Pond #2 will be cut and folded at the toe of the pond slope and buried. Facility Sediment Pond #1, Mine Sediment Pond #1 and Facility Sediment Pond #2 will be backfilled to promote positive drainage into the natural drainages and covered with growth media and seeded. Figure 04 shows a layout of the Mine Facilities.

4.4 Run-of-Mine (ROM) Stockpile

The ROM Stockpile has a one-foot-thick compacted LHCSL base layer. The LHCSL will be placed in accordance with the latest Earthworks Specifications for the project which currently state that the LHCSL is to be placed in two six (6) inch thick compacted lifts to form a minimum twelve (12) inch thick compacted layer. Each lift shall be compacted to a minimum of ninety-five (95) percent of maximum dry density (as determined by ASTM D1557) and moisture content between two percent below optimum moisture content and three percent above optimum moisture content as determined by ASTM D1557 unless otherwise approved by the Engineer to achieve a permeability no greater than 1×10^{-6} cm/sec as determined by ASTM D5084.

The LHCSL will be covered with two feet of Overliner material as the LHCSL is placed. The Overliner material shall be placed in accordance with the latest Earthworks Specifications for the project which currently state that it shall be placed in minimum two feet thick lifts with no moisture or compaction specification. The purpose of the overliner material is to keep the LHCSL from drying out or freezing and facility drainage over the active pad.

Runoff from the stockpile will drain to the single geomembrane lined Facility Sediment Pond #2 where it is pumped for use in the process circuit or if the water meets Profile 1 water quality requirements then it could be discharged to the natural drainage. At closure, any ore remaining on the stockpile will be hauled for use as cover material at the CTFS or other approved location. The footprint will be covered with growth media, ripped and seeded for revegetation. Vegetative covers stabilize the soil and reduce the amount of meteoric water infiltrating into the ground. The sediments from the sediment pond will be tested, and if suitable re-used as growth media. If unsuitable, the sediments will be placed in the structural or non-structural zone of the CTFS. The geomembrane in the Facility Sediment Pond #2 will be cut and folded at the toe of the pond slope and buried. The pond area will be backfilled to promote positive drainage into the natural drainages and covered with growth media and seeded. ROM stockpile platform slopes will be graded to an overall slope no steeper than 2.5H:1V and blended with the surrounding topography. The area will be covered with growth media and seeded to promote vegetation growth. The ROM stockpile is shown on Figure 04.

4.5 Attrition Scrubbing Area

Upon closure, equipment from the attrition scrubbing area, shown in Figure 04, will be triple rinsed to decontaminate. The rinse water will be pumped to the CTFS for passive evaporation or pumped to a water truck for placement on the tailings surface for dust suppression. Following confirmatory decontaminant testing, 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 broken and disposed of in the CGS or West WRSF as the material processed in this area is non-hazardous. A Class III Landfill Waiver will be obtained through NDEP-BSMM for any non-hazardous solid waste that will be buried onsite.

The surface area will be ripped, scarified, and graded to blend with the adjacent topography. The area will then be covered with growth media and seeded to promote vegetation growth.

4.6 Coarse Gangue Stockpile (CGS)

The CGS will have a one-foot-thick compacted LHCSL base layer which the waste rock material will be stacked on. The LHCSL will be placed in accordance with the latest Earthworks Specifications for the project which currently state that the LHCSL is to be placed in two six (6) inch thick compacted lifts to form a minimum twelve (12) inch thick compacted layer. Each lift shall be compacted to a minimum of ninety-five (95) percent of maximum dry density (as determined by ASTM D1557) and moisture content between two percent below optimum moisture content and three percent above optimum moisture content as determined by ASTM D1557 unless otherwise approved by the Engineer to achieve a permeability no greater than 1 x 10^{-6} cm/sec as determined by ASTM D5084.

The LHCSL will be covered with Overliner material as the LHCSL is placed. The Overliner material shall be placed in accordance with the latest Earthworks Specifications for the project which currently state that it shall be placed in minimum two feet thick lifts with no moisture or compaction specification. The purpose of the Overliner material is to keep the LHCSL from drying out or freezing.

Runoff from the facility will drain to the single geomembrane lined sediment pond where it is pumped for use into the process circuit or if the water meets Profile 1 water quality requirements then it could be discharged to the natural drainage. Closure of the East and West WRSF, shown in Figure 03, will consist of concurrent reclamation whenever possible, and generally include stabilizing slopes, reducing slope erosion, grading, blending surfaces into surrounding topography, placement of growth media and revegetation.

At closure, the exterior slope of the CGS will be graded to an overall slope of 5.5H:1V with inter-bench slopes of 4H:1V. Vegetative covers stabilize the soil and reduce the amount of meteoric water infiltrating into the ground. The sediment ponds will no longer be needed once a vegetative cover is established over the CGS. The sediments from the sediment pond will be tested, and if suitable re-used as growth media. If unsuitable the sediments will be placed in either the structural or non-structural zone of the CTFS. The geomembrane in the sediment pond will be cut and folded at the toe of the pond slope and buried. The pond area will be backfilled to promote positive drainage into the natural drainages and covered with growth media and seeded.

4.7 Lithium Process Facility and Sulfuric Acid Plant

Following mine closure, reclamation of the plant facilities will involve rinsing contaminants from secondary containment and support structures and flushing pipelines and storage tanks. The rinse water will be pumped to the CTFS for passive evaporation or pumped to a water truck for placement on the tailings surface for dust suppression. All opened reagents and chemicals will be removed by a chemical cleanup company such as Clean Harbors or other similar company. The chemicals will be removed from their dosing tanks or containers and shipped to cleanup company's facility for proper disposal. All unopened reagents and chemicals would be shipped back to their respective supplier as arranged by the chemical clean up company. Table 4-1 shows the quantity of chemicals and reagents being sent back to the supplier and to the cleanup company facility.

Table 4-1 Reagents and Chemicals Storage

Reagents, Chemicals and Byproducts	Annual Estimated Use (tons)	Daily Estimated Use (tons)[2]	Maximum Amount Stored (tons)[1]	Amount Shipped Back to Suppliers (tons)[3]
Limestone	169,036	463	7,165	6,702
Quicklime	126,204	346	1,127	781
Soda Ash	86,343	237	1,070	833
Molten Sulfur	340,247	932	13,454	12,522
SNF Hyperfloc AF-307	144	0.4	22	22
SNF Hyperfloc CP-624	72	0.2	22	22
Sulfuric Acid[4]			14,550	
Caustic Soda	145,668	399	1,409	1,010
Potassium Chloride	4,712	13	562	549
Aluminum Powder	0.9	0.002	0.9	0.898
Lithium Chloride	4,712	13	562	549
Sodium Hypochlorite[4]			254	

[1] Maximum quantity of the reagents listed that would be on-site at any one time.

[2] Quantity of opened containers that would be sent to the cleanup company disposal facility.

[3] Quantity of unopened reagents and chemical containers that would be shipped back to suppliers.

[4] These are byproducts and commodity chemicals and will likely be sold to other mines in Northern Nevada.

Closure procedures of the Lithium Process Facility and Sulfuric Acid Plant area, shown in Figures 05 and 06, are listed below:

General: In the event of an of a sudden or unforeseen plant closure, any rinse water, reagents or chemicals would be disposed of according to state and Federal regulations. Additional costs have been included in the RCE to dispose of any unused rinse water, reagents, and/or remaining chemicals on site in the event of a sudden or unforeseen plant closure. It is estimated that there will be two feet of sediments at the bottom of each tank in the process facility which totals to 3,900 cubic yards. The latest list of tanks and volume calculation is included in Appendix C. The cost to remove these sediments is included in the reclamation bond cost estimate.

Classification: Upon closure, the classification area will be triple rinsed to decontaminate. Water may be placed in the CTFS or taken offsite. Salvageable equipment will be removed and shipped to a buyer; otherwise, it will be shipped to a recycle facility or approved waste disposal facility.

Acid Leaching (Sulfuric Acid Areas): Upon closure, the acid leaching and sulfuric acid areas will be neutralized to remove acid materials once all of the process materials are either consumed for removed. In the sulfuric acid plant, the equipment will be purged and cleaned. The converter catalyst will be removed and recovered by a specialized vendor. Materials that are not salvageable, such as acid or refractory brick (tile), will be collected, removed, and disposed of offsite.

pH Neutralization and Filtration: The pH Neutralization and Filtration Area will be required to be cleaned through methods such as washing heating, mechanical cleaning, water blasting, and treatment through the usage of other chemicals to an acceptable level. All wash water will be collected and recycled within the facility. Once equipment is deemed decontaminated, it will be removed for disposal.

Magnesium Sulfate Crystallization: The magnesium sulfate area will be cleaned by the removal of all salts in the system and further decontaminated through methods such as washing, mechanical cleaning, and water blasting to an acceptable level. Once clean, it can be further decommissioned by removal or reuse by another vendor.

Magnesium Removal (Precipitation and Ion Exchange): In the magnesium precipitation equipment, all process materials will be removed and the equipment will be decontaminated using steam, water, and air drying. Once the equipment is purged and cleaned, it may be considered for dismantling and disposal. All ion exchange resins must be removed and either sent for future regeneration or disposal.

Lithium Carbonate Production (Precipitation /Filtration /Drying /Packaging /Loadout): The lithium carbonate equipment and process area must be cleaned through methods such as vacuum removal, washing, heating, mechanical cleaning, water blasting, and treatment through the usage of other chemicals to an acceptable level. Once equipment is deemed decontaminated, it can be removed for disposal.

Sulfate Salts Crystallization: Once the equipment is emptied, it will be cleaned through methods such as washing, heating, mechanical cleaning, and water blasting. Once equipment is deemed decontaminated, it can be removed for disposal off site at an approved facility.

Causticizing and Filtration: In the causticizing and filtration area, the primary decontamination is the removal of caustic containing materials and liquids along with anything in the process filter media.

Once the system has had a primary removal of material, further decontamination can take place. Further decontamination may consist of vacuum removal, washing, heating, mechanical cleaning, water blasting, and treatment through the usage of other chemicals to an acceptable level. Once equipment is deemed decontaminated, it can be removed for disposal.

Lithium Hydroxide Production (Crystallization/Drying/Packaging/Loadout): The lithium sulfide equipment and process area must be cleaned through methods such as vacuum removal, washing, heating, mechanical cleaning, water blasting, and treatment through the usage of other chemicals to an acceptable level. Once equipment is deemed decontaminated, it can be removed for disposal.

The Process Plant Sediment Pond low flow drainage pipe will be removed prior to the pond being backfilled to promote positive drainage into the natural drainages and covered with growth media and seeded.

4.8 Clay Tailings Filter Stack (CTFS)

The CTFS is comprised of filtered clay tailings that will be compacted to form a stable structural fill. The in-place permeability of the clay tailings will be low and is currently estimated to be on the order of 1.2×10^{-6} cm/sec when compacted to 95 percent of the modified maximum dry density (ASTM D1557). The overall mass of clay tailings consists of low permeability material and will maintain field moisture content therefore, infiltration will be minimal. Long-term is close to zero infiltration (<0.5% MAP) (Piteau 2021a).

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 as shown on Figure 08. The current plan is to place the clay tailings in one-foot-thick lifts so no major re-grading is required, or in a lift thickness as determined to be acceptable by the Engineer after testing trials are completed at the start of operations. Concurrent with construction of each lift, a layer of waste rock material may be placed in select areas (roadways/travel lanes) on the clay tailings to provide a trafficable surface for relocating and operating vehicles and conveyors. The thickness of the waste rock layer will depend on the quality of the materials, the maximum particle size, and the construction equipment used, but typically it will be around one foot thick. The waste should be considered a contingency and will be placed on an as needed basis to provide a working surface for vehicles and conveyors. The material will likely be sourced from the pit, delivered using haul trucks, and spread using a bulldozer.

Any waste rock placed within the tailings stack will add some nominal strength to the material. Any waste rock placed within the tailings stack will not impact the meteoric water infiltration since the waste rock will be sandwiched between layers of low permeability compacted tailings. The overall vertical permeability of the stack will not be impacted by isolated roadways of rock.

The slopes of the CTFS will be track walked with a dozer as part of operations to reduce erosion and again prior to placing the cover soil if necessary. The landform cover will be a layered system consisting of a compacted clay cap overlain by a layer of cover soil. The thickness of these components will be determined as part of the formal closure planning process but for the purposes of the Reclamation Cost Estimate (RCE), included as part of the WPCP package, we have assumed two feet of cover thickness. 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 to promote revegetation. This cover design was developed with the goal of replicating pre-mining land use after closure. Test plots will be constructed during operations and evaluated to determine the thickness of the cover layers and type of cover soils that allow for closure of the facility.

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 pond and, if needed, active evaporation will be utilized at the ponds to achieve fluid stabilization. As the flow from the CTFS decreases because of concurrent reclamation and the required pond storage volume is reduced, the pond area will be converted to an evapotranspiration cell (ET-Cell). The ET-Cell will consist of two zones; an evaporation/evapotranspiration zone will evaporate water during periods of the year that evaporation exceeds precipitation and allow plants to remove water through evapotranspiration, and an underlying storage zone will store water when the inflow exceeds the evaporative loss rate. The conceptual plan for the ET-Cell is shown on Figure 11. The storage zone will consist of a coarse-grained material, possibly even coarse gangue, and the evaporation/evapotranspiration zone will consist of a one-foot-thick layer of growth media. The surface will be seeded to promote revegetation and evapotranspiration. If required, LNC will implement a long-term trust to support the ET-Cell as may be requested by the State and consistent with the State's guidance.

Following production activities, conveyors will be properly disposed of or will be sold or salvaged for scrap steel, where economically feasible. Resale or salvage costs have not been considered in the RCE. Prior to conveyor disposal or sale, all conveyors will be disassembled and decontaminated by rinsing or other means. After demolition, reclamation activities will commence on the tailings conveyor corridor. This will include ripping conveyor corridor ground and breaking concrete foundations followed by regrading of the area. Three feet of cover material will be placed over all broken slabs and the area will be scarified and seeded. Revegetation of these areas will follow and include the use of the seed mix.

4.9 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 contain 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 significant CTFS seepage; however, if any seepage were to occur, LNC will monitor the quantity and quality of this seepage.

4.9.1 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. Currently the only permanent diversion channel that is planned to be lined with riprap during construction/operations period is the CTFS West Diversion Channel which is sized to contain the runoff from a 500-year, 24-hour storm event. The CTFS North Diversion Channel can contain a 500-year, 24-hour storm event but will not have riprap placed until closure as the water velocities are so low it is not required during operational storm events. The cost to add riprap during closure has been included in the reclamation bond cost estimate.

4.9.2 *Sediment Ponds*

At closure, LNC will remove sediments from the sediment ponds, test, and re-use as growth media or dispose of properly in the CTFS or other approved facility. Geomembrane lined sediment ponds will have the liner cut, placed in the bottom of the pond and buried. The ponds will be backfilled and regraded to have positive drainage prior to revegetation activities. The low flow drainage pipe in the sediment dam will be removed. The sediment pond area will then be covered with 6-12 inches of growth media and seeded to promote vegetation growth. Sediment ponds are shown in Figure 09.

4.9.3 *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, all culverts will be removed, and drainage channels restored to their pre-disturbance configuration where feasible or replaced with stable engineered flow paths.

4.10Growth Media Stockpiles

Stripped topsoil during initial and expansion construction stripping of all disturbed areas will be placed in the growth media stockpiles which will later be used to reclaim all the facilities on site. The growth media stockpiles are positioned in various locations around the site as shown on Figure 10.

After the growth media has been removed the footprint surface shall be ripped and seeded.

4.11 Ancillary Facilities

4.11.1 *Water Supply Facilities and Pipelines*

Equipment associated with the water supply, shown in Figures 01 and 07, including water well pumps, a common water pump tank and pumps, booster pump stations, and associated interconnecting underground pipelines will be properly decommissioned. 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: The concrete will be disposed of by burying in place or disposing in the Class III landfill located in a WRSF or the CGS as the raw water pumped from Quinn River Production Wells is non-hazardous. If concrete is buried in place, a Class III landfill waiver to bury solid waste on the property will be obtained through NDEP-BSMM.

Wells (that are not associated with on-going monitoring) will be plugged according to NAC 534.425 through 534.428 abandonment statues and procedures.

The underground raw water 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.

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

4.11.2 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. The fuel storage area is shown on Figure 04.

LNC plans to properly dispose of PCS materials off-site. Upon closure, LNC will conduct confirmatory sampling of the fuel storage facilities. If sampling data indicates contamination, LNC will submit a Sampling and Analysis Plan to NDEP-BMRR. Secondary containment will be constructed to mitigate any potential for contamination. A description of the secondary containment is below:

Fuel storage facilities, including the fuel island and lube system, will be placed in secondary containment. The fuel island containment will be constructed of concrete and will hold 110% of the volume of the largest tank. The lube system containment will consist of steel pans and hold 110% of the volume of the largest tank.

The equipment wash bay facility will have a number of concrete sumps that will collect the wash water and allow solids to settle. An oil/water separator will also be part of the wash bay system to collect any oil and grease. Any hydrocarbon spills in the field or shop will be contained using spill kits and absorbent material. Contaminated material and any absorbent material will properly be disposed of off-site.

4.11.3 Buildings

LNC will clean all hazardous contaminants prior to demolishing buildings associated with the Project and properly dispose of parts in approved onsite or offsite facilities. Foundations will be broken and hauled to the Class III debris disposal area located in the WRSF's. The building footprint areas will be regraded to promote positive drainage and covered with 6-12 inches of growth media, ripped and seeded.

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.

4.11.4 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.

5 Measures to Prevent Degradation to Waters of the State

Performance methods and standards conveyed in this plan were designed in accordance with agency regulations and detail earthwork, recontouring, revegetation, stabilization, disposal, and monitoring procedures and operations necessary to thoroughly close and 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, ROM Stockpile and growth media stockpiles for potential to release pollutants;
- Design appropriate containment measures based on discussions with NDEP for CGS, CTFS and ROM Stockpile;

- 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;
- 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;
- 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.

5.1 Monitoring Plan

Monitoring piezometers and wells will be installed around the site downstream of the major permanent facilities to evaluate the quality of the groundwater. The piezometers and wells will be installed before or during operations as set forth in Piteau 2021b Tables 2 and 5 and as shown in Piteau 2021b Figures 2, 3, 4, and 5. Based on the mining schedule, Monitoring Well MW-02 and Piezometer PZ-03 associated with west sub-pit would be installed in the first year of operations (over ten years before minimal water is encountered). MW-01 is scheduled to be installed south of the west subpit in 2035. Monitoring locations are shown in Piteau 2021b Figures 2, 3, 4, and 5. Installation of these wells will be reviewed upon mining and as site conditions are further understood, with the objective of installation in appropriate areas as operations progress. The monitoring well locations were chosen based on downgradient locations from facilities.

Additional details regarding site groundwater monitoring can be found in the following document: Technical Memorandum (TM 20-05) Applicant Committed Thacker Pass Project Mitigation and Monitoring Plan for Water Resources, prepared by Piteau Associates USA Ltd. June 16, 2021 (Piteau 2021b).

5.2 Mitigation Plan

Mitigation plans have been prepared in the event that impacts occur and such impacts are determined by the BLM to be detrimental to stakeholders. Although some impacts are unlikely to occur, in an abundance of caution, they have been identified and disclosed. These mitigation options, and others, will be further studied for their efficacy. Mitigation plans to be implemented by LNC for potentially affected water resources are described below:

Montana Mountain Springs. Three potential mitigation plans are proposed. Two projects consider near-term rehabilitation of riparian areas in the Montana Mountains to offset any potential affected areas to future habitat. An additional mitigation option is to rehabilitate springs themselves.

Springs in Lower Pole Creek. The potential mitigation plan to supplement seasonal flow in Lower Pole Creek, used for stock water, is to provide an alternate and constant source of water.

Quinn River Valley stock water mitigation. This resource's mitigation plan is to provide an alternate source of water or supplement wells to stock water users in Quinn River Valley. LNC proposes to provide an alternate and constant source of water to wildlife and livestock within portions of the Pole Creek and Crowley Creek grazing allotments.

Burns Field mitigation. This resource is located primarily on private land holdings down-gradient of the alluvial fan of Crowley Creek. If an impact is identified (i.e., through the use of piezometer data and in concert with the BLM's technical advisory group), mitigation would include augmenting the land by offering similar or better forage production for livestock through enhanced reseeding techniques, or compensation in proportion to the affected production area.

Additional details regarding mitigation can be found in the following document: Technical Memorandum (TM 20-05) Applicant Committed Thacker Pass Project Mitigation and Monitoring Plan for Water Resources, prepared by Piteau Associates USA Ltd. June 16, 2021 (Piteau 2021b).

5.3 Monitoring and Mitigation Summary

Technical Memorandum (TM 20-05) Applicant Committed Thacker Pass Project Mitigation and Monitoring Plan for Water Resources (Piteau 2021b), summarizes near and long-term water related potential impacts that reflect monitoring and mitigation plans for the 41-year mine plan and continuing studies aligned with the ROD to optimize closure design. Aspects of TM 20-05 that address potential impacts and controls relating to mining below the water table are not applicable to the initial period of 'dry' operations, which what this TPPC is based upon. Table 5-1, the Water Monitoring and Mitigation Rubric (below), summarizes the Monitoring and Mitigation Plan.

Table 5-1 Water Monitoring and Mitigation Rubric

Resource	Impact Type	Monitoring	Mitigation
Springs in the Montana Mountains	Quantity	Piezometric monitoring, Seep and spring monitoring	Riparian area re-habilitation projects for Riser and Washburn Creek areas. Spring re-habilitation.
Lower Pole Creek	Quantity	Piezometric monitoring, Seep and spring monitoring	Provide alternate and constant source of water for wildlife and livestock.
Quinn River Stock Wells	Quantity	Piezometric monitoring	Provide alternate and constant source of water for wildlife and livestock. Potential deepening of pumps in existing wells.
Burns Field	Quantity	Crowley Creek monitoring, Piezometric monitoring	Reseeding of affected acreage with equivalent or better forage production seed mix. Potential compensation in proportion to affected acres. Replacement water source for livestock.
Saturated Backfill Pore Water	Quality	Water quality and source monitoring	None is anticipated during the "dry operations" period. Further closure optimization study will be undertaken for source control.

6 Measures to Minimize Sediment Loading to Surface Waters

Runoff from the WRSFs, coarse gangue stockpile, ROM Stockpile, CTFS and other slopes will occur following precipitation events; however, regraded slope angles, revegetation, sediment ponds and BMPs will be used to limit erosion and reduce suspended solids in runoff water. LNC will use silt fences, waddles, sediment traps, sediment ponds 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.

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.

During operations, LNC does not anticipate hazardous discharge from Project facilities. Project facilities containing process fluids are equipped with secondary containment structures that prevent the escape of process fluids. Seepage from the CTFS will be directed to the lined reclaim pond and evaporated or 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.

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 prevent vertical movement of groundwater. The mixture will also be placed in the annular space surrounding any casing left in 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 in each drill hole, and plugged according to appropriate guidelines. 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 in the hole will be 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.

9 Post-Closure 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 and the RCE, included in the WPCP. In general, post-reclamation monitoring and maintenance will include the following:

- Monitor CTFS, East and West WRSF, CGS and ROM Stockpile 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;

9.1 Water Resources

In accordance with NDEP requirements, the WPCP, and through the implementation of the FPPC, 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 significant CTFS seepage; however, should any occur, LNC will monitor the quantity and quality of this seepage. LNC also does not expect a high contaminant migration potential of groundwater downgradient of the pit. LNC will monitor this potential and implement proper treatment or mitigation if required.

9.2 Revegetation

To ensure stable vegetation growth and ground cover of all reclaimed areas, annual revegetation monitoring, 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. Revegetation stabilizes soil and significantly reduces the meteoric water infiltration into the soil matrix beneath the root system as determined during the unsaturated groundwater modeling evaluation (Piteau 2021a).

9.3 Slope Stability

All facility slopes will be regraded to a stable configuration and meet the minimum factors of safety for long term closure.

Slope stability monitoring will include visual inspections of the East and West WRSF, CGS, and CTFS reclaimed slopes. Final stabilization consists of achieving slopes with the absence of substantial and progressive rilling and establishment of a vegetated cover. Specifically, the facilities will be inspected for any crest deformations, signs of slope failure or movement (such as slope bulging), evidence of seepage, and formation of surface cracks.

10 Measures 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 in the WPCP application, 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.

11 References

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Piteau, 2020a. Piteau Thacker Pass Project Water Quantity and Quality Impacts Report. Prepared by Piteau Associates USA Ltd. for Lithium Nevada Corporation. May 2020.

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______2021b. Piteau Technical Report TM20-05 Piteau Associates USA Ltd., 2021. Applicant Committed Thacker Pass Project Mitigation and Monitoring Plan for Water Resources – Revision 2. Prepared by Tyler Cluff, Piteau Associates USA Ltd dated June 16, 2021.

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_____2020a. Baseline Geochemical Characterization Report for the Thacker Pass Project. Report Prepared for Lithium Nevada. January 10, 2020 (Revised December 2020).

_____2020b. Technical Memo. Thacker Pass Project Uranium Geochemistry. Prepared by Amy Prestia, Alex Bailey, SRK Consulting, (U.S.); Prepared for Catherine Clark, Lithium Nevada Corp. September 14, 2020.

______2021a. Technical Memo. Summary of the Waste Rock and Gangue Management Plan for the Thacker Pass Project – Revision 1. May 26, 2021 (Revised September 23, 2021).

_____2021b. Technical Memo. Summary of the Baseline Geochemical Characterization for the Thacker Pass Project. May 26, 2021.

_____2021c. SRK Consulting, (U.S.), Inc. Waste Rock and Gangue Management Plan for the Thacker Pass Project . June 2021 (Revised September 2021).

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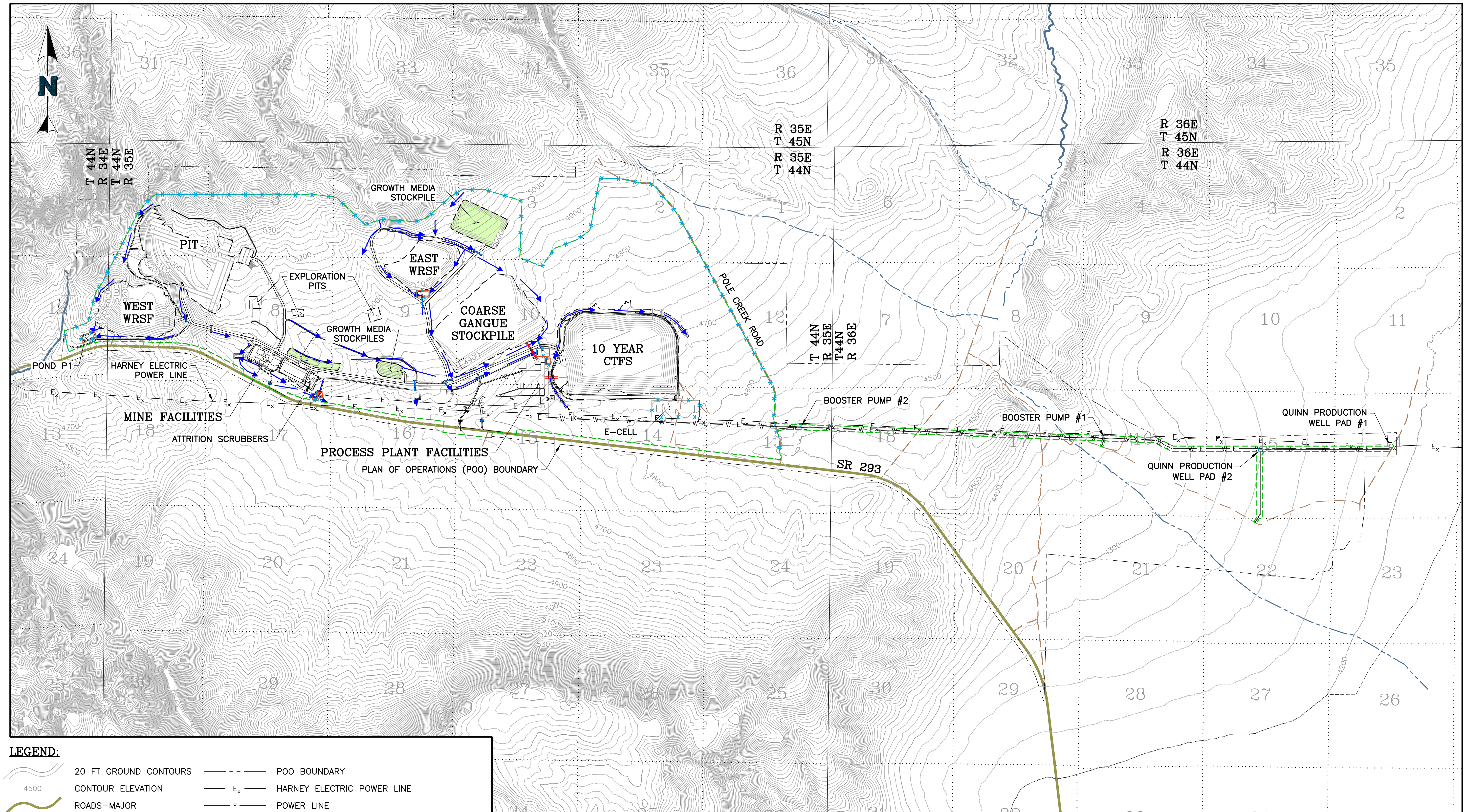
U.S. Department of Interior, Bureau of Land Management (BLM); Nevada Department of Wildlife, Cooperating Agency, 2009a. Decision and Finding of No Significant Impact Kings Valley Lithium Exploration Project Environmental Assessment DOI-BLM-NV-W010-2010-0001-EA Kings Valley Lithium Exploration Project. December 31, 2009.

_____2014. Kings Valley Clay Mine Plan of Operations and Reclamation Permit Application, BLM File Serial Number N91547. Revised March.



0 2000 4000 FEET

LEGEND:

- 20 FT GROUND CONTOURS
- 4500 CONTOUR ELEVATION
- ROADS–MAJOR
- ROADS/TRAILS
- DRAINAGES
- EPHEMERAL CREEKS
- PERENNIAL STREAMS
- SECTION LINES
- 20 SECTION NUMBER
- R 34E RANGE 34 EAST
- T 44N TOWNSHIP 44 NORTH
- RANGE/TOWNSHIP LINE
- POO BOUNDARY
- E_x HARNEY ELECTRIC POWER LINE
- E POWER LINE
- W WATER LINE
- FO FIBER OPTIC LINE
- FENCE TO BE REMOVED
- MAJOR STORMWATER DRAINAGE PATH
- CULVERT
- CULVERT TO BE REMOVED
- GROWTH MEDIA STOCKPILE
- DISTURBANCE AREA BOUNDARY

NOTES:

1. ALL LINEWORK IS PROPOSED UNLESS CALLED OUT AS EXISTING.

LithiumNevada

CLIENT: LITHIUM NEVADA CORP.

PROJECT: THACKER PASS 10YR FACILITY SRCE MODEL

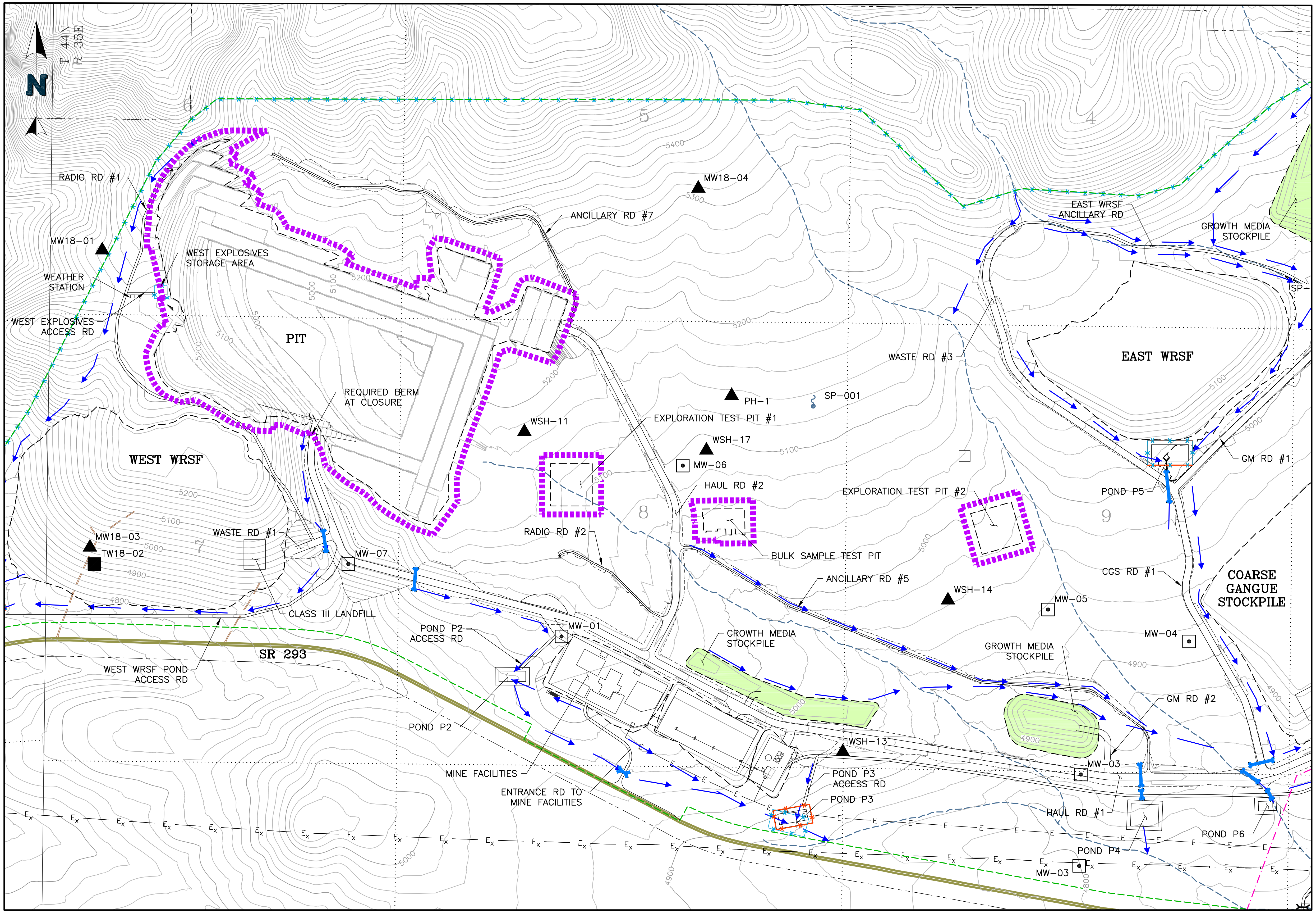
TITLE: GENERAL ARRANGEMENT

FILENAME: 0385.000.102F

FIGURE NO.: 01

REVISION: C

P:\Projects\0385.000 Lithium Nevada Thacker Pass Project\A-CAD\FIG\0385.000.102F.dwg-7/7/2021 4:41 PM



0 600 1200 FEET

LEGEND:

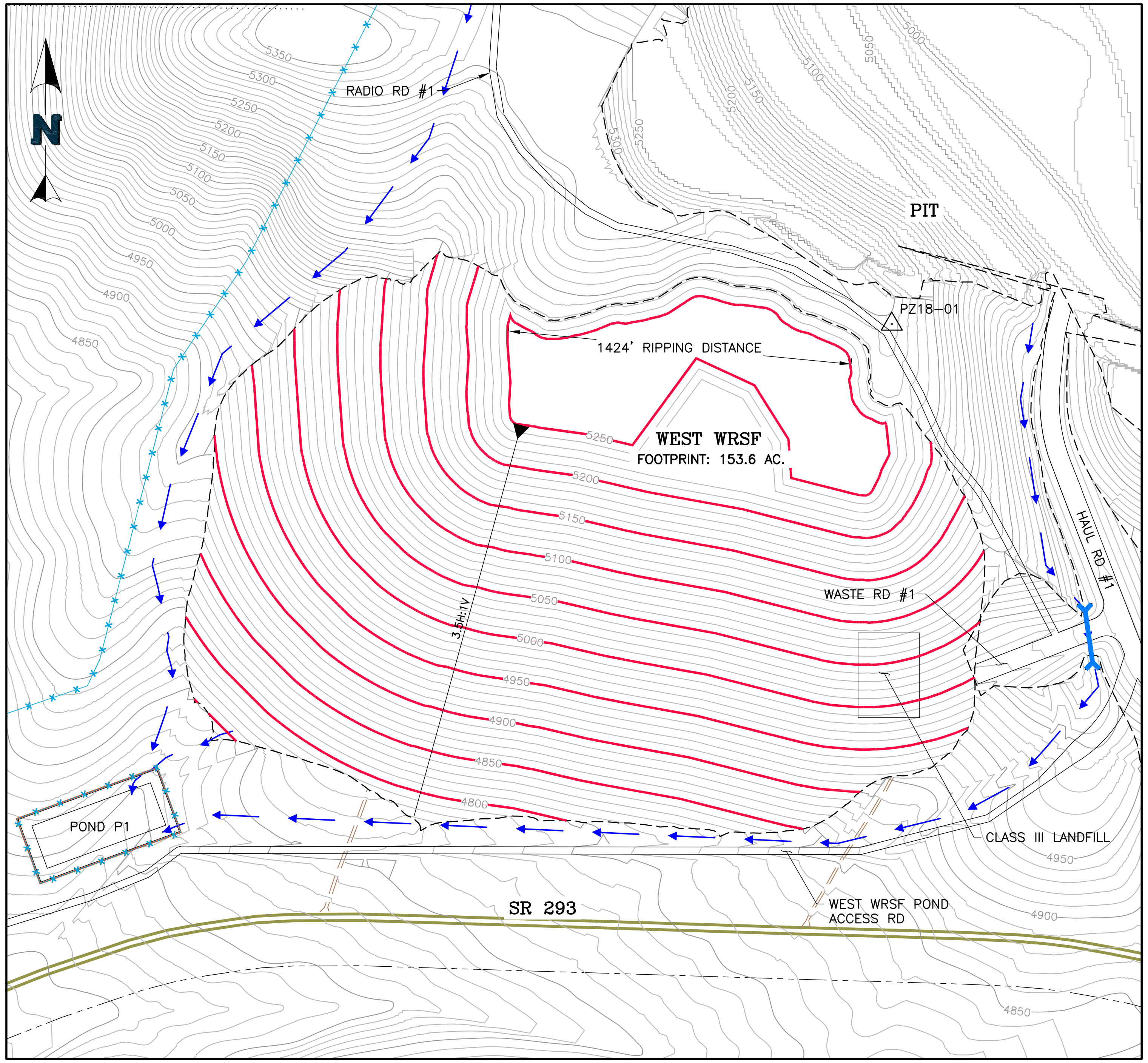
- 20 FT GROUND CONTOURS
- 4500 CONTOUR ELEVATION
- ROADS-MAJOR
- ROADS/TRAILS
- DRAINAGES
- SECTION LINES
- 20 SECTION NUMBER
- POO BOUNDARY
- E_x HARNEY ELECTRIC POWER LINE
- E POWER LINE
- FENCE TO BE REMOVED
- MAJOR STORMWATER DRAINAGE PATH
- CULVERT TO BE REMOVED
- REQUIRED BERM AT CLOSURE
- GROWTH MEDIA STOCKPILE
- EXISTING MONITORING WELL
- MONITORING WELL

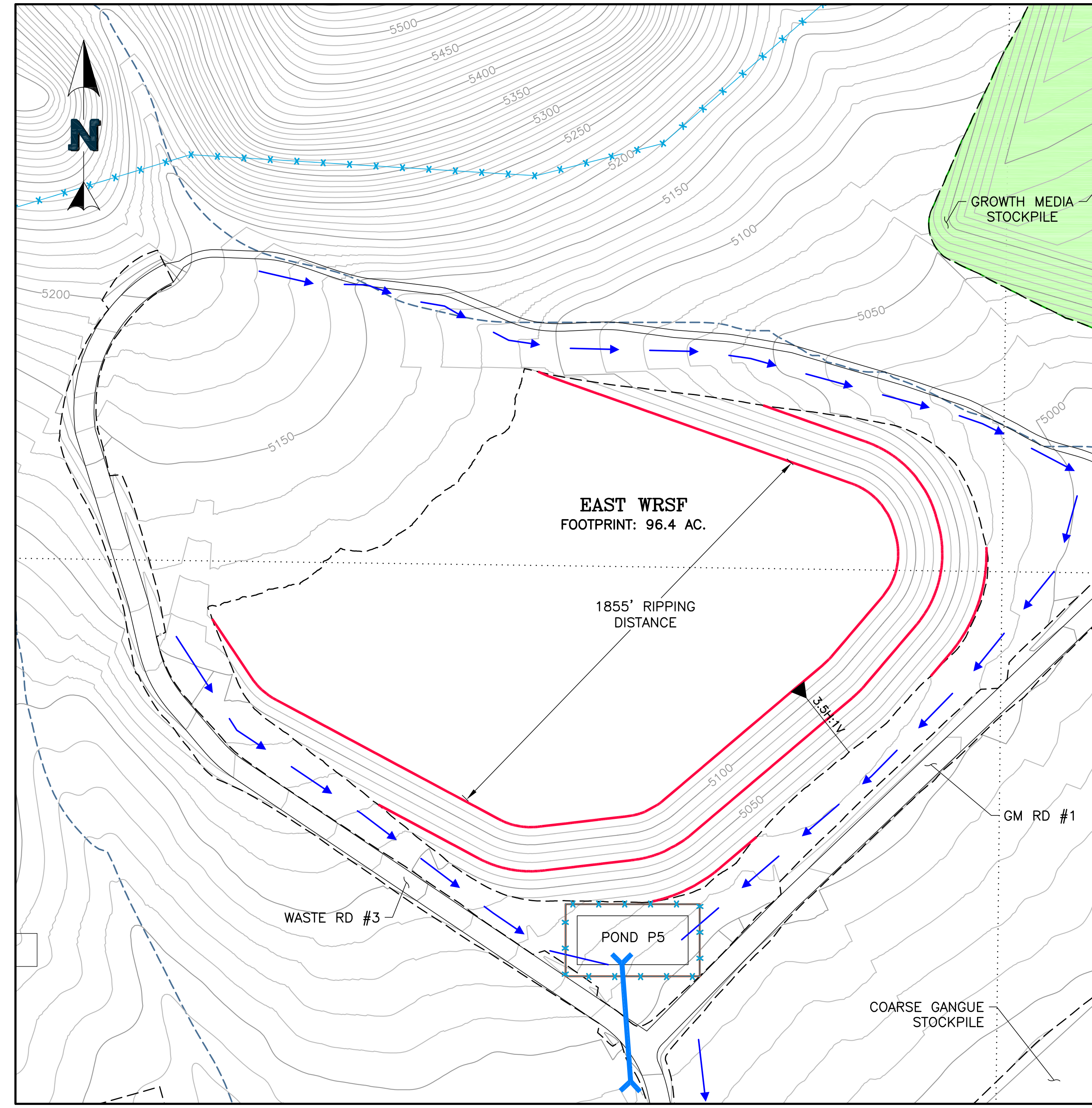
NOTES:

1. ALL LINEWORK IS PROPOSED UNLESS CALLED OUT AS EXISTING.

LithiumNevada	CLIENT: LITHIUM NEVADA CORP.
PROJECT: THACKER PASS 10YR FACILITY SRCE MODEL	
TITLE: PIT	FILENAME: 0385.000.103F; FIGURE NO.: 02; REVISION: D

P:\Projects\0385.000 Lithium Nevada Thacker Pass Project\A-CAD\FIG\0385.000.103F.dwg-7/8/2021 9:15 PM





0 300 600 FEET

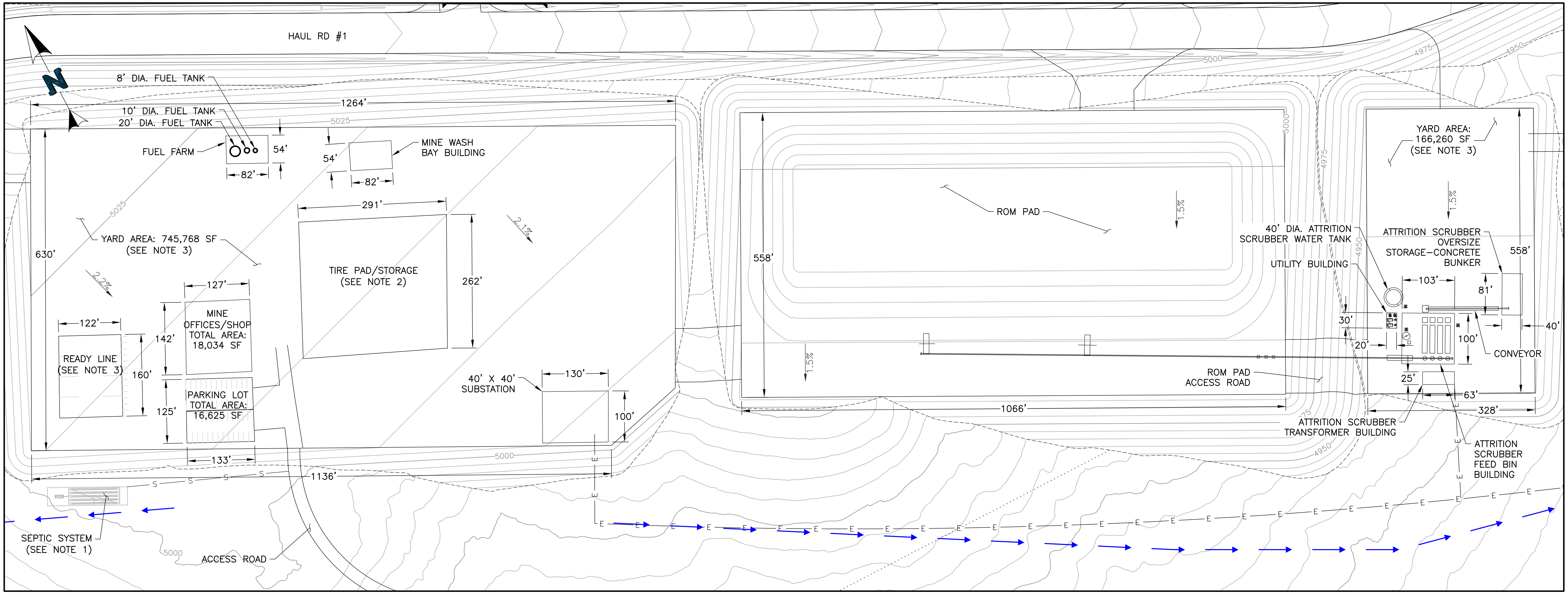
LEGEND:

10 FT GROUND CONTOURS
4500 CONTOUR ELEVATION
ROADS–MAJOR
ROADS/TRAILS
DRAINAGES
SECTION LINES
20 SECTION NUMBER
POO BOUNDARY
MID BENCH LENGTH
FENCE TO BE REMOVED
MAJOR STORMWATER DRAINAGE PATH
CULVERT TO BE REMOVED
GROWTH MEDIA STOCKPILE
PIEZOMETER

NOTES:

1. ALL LINEWORK IS PROPOSED UNLESS CALLED OUT AS EXISTING.

LithiumNevada	CLIENT: LITHIUM NEVADA CORP.
PROJECT	THACKER PASS 10YR FACILITY SRCE MODEL
TITLE: WASTE ROCK STORAGE FACILITIES	FILENAME 0385.000.104F; FIGURE NO. 03; REVISION D



MINE FACILITIES

0 100 200 FEET

LEGEND:

5 FT GROUND CONTOURS

4500 CONTOUR ELEVATION

SECTION LINES

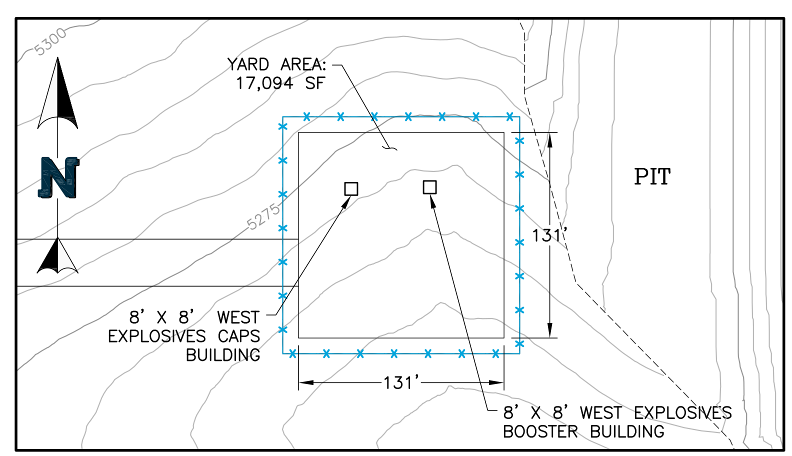
20 SECTION NUMBER

E POWER LINE

S SEPTIC LINE

FENCE TO BE REMOVED

MAJOR STORMWATER DRAINAGE PATH



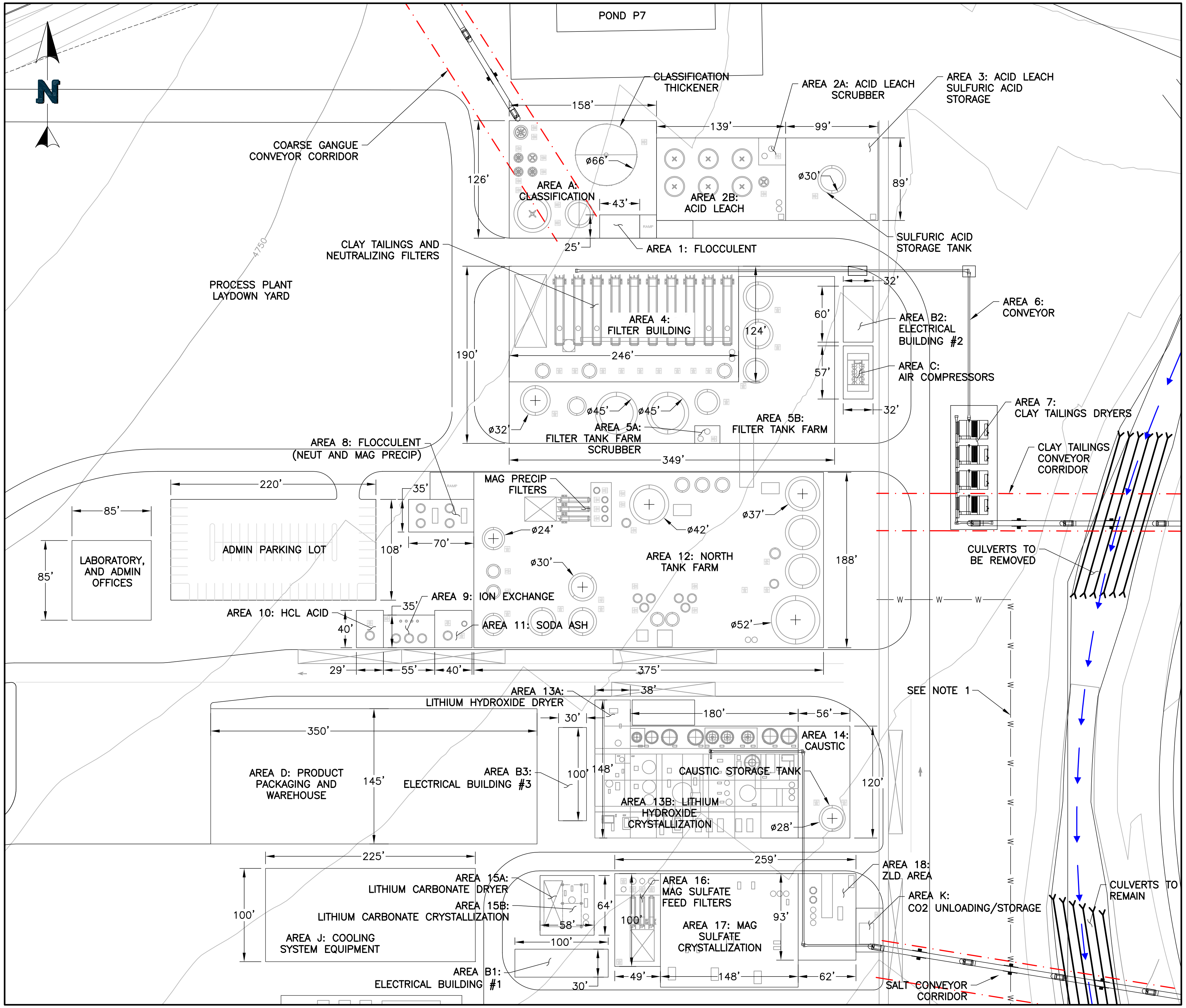
WEST EXPLOSIVES STORAGE AREA

0 60 120 FEET

NOTES:

1. SEPTIC SYSTEM TO BE BURIED IN PLACE AT CLOSURE.
2. TIRE PAD, READY LINE, ROM PAD, AND INTER-FACILITY AREAS TO BE COUNTED AS "LAYDOWN" OR "YARD AREA."
3. THE MINE OFFICE, FUEL FARM, ATTRITION SCRUBBER, FIRE WATER BUILDING, WASH BAY AREA AND SUBSTATION WERE SUBTRACTED FROM SURROUNDING YARD AREA AND ARE INCLUDED UNDER FOUNDATIONS AND BUILDINGS TAB.
4. ALL LINEWORK IS PROPOSED UNLESS CALLED OUT AS EXISTING.

LithiumNevada	CLIENT LITHIUM NEVADA CORP.
PROJECT	THACKER PASS 10YR FACILITY SRCE MODEL
TITLE STRUCTURES AND YARDS (1 OF 4)	FILENAME 0385.000.105F; FIGURE NO. 04; REVISION B



PROCESS FACILITIES BUILDINGS NORTH AREA

LEGEND:

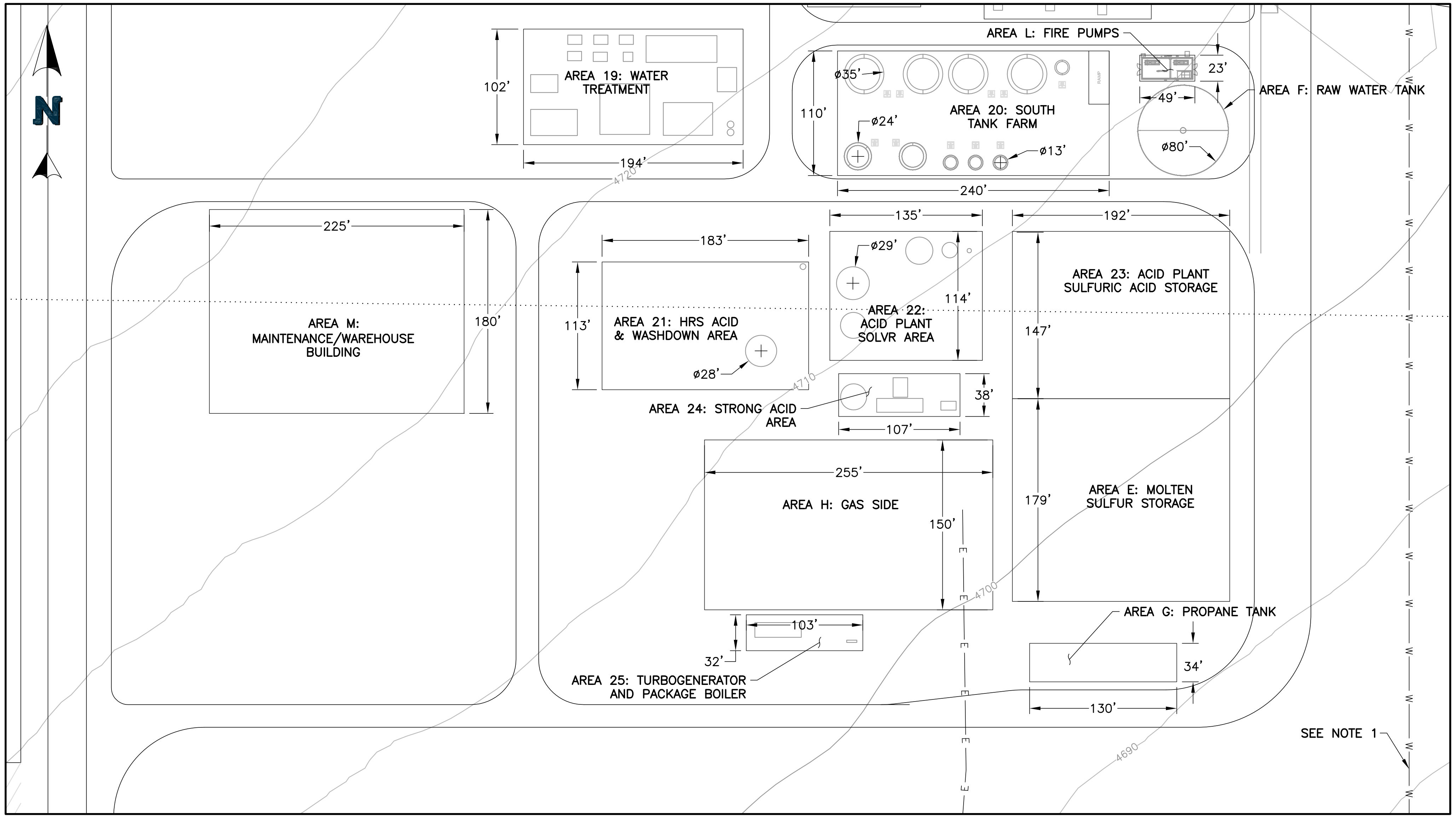
- 10 FT GROUND CONTOURS
- 4500 CONTOUR ELEVATION
- E POWER LINE
- W WATER LINE
- STORMWATER DIVERSION CHANNEL
- CULVERT

0 100 200 FEET

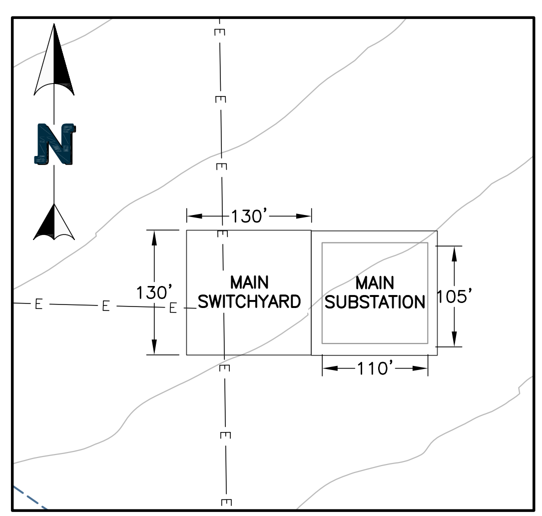
NOTES:

1. WATER PIPELINE TO REMAIN BURIED IN PLACE.
2. PROCESS PLANT AREA NUMBERS ARE REFERENCED IN THE SRCE COST ESTIMATE AS WELL AS THE KIEWIT CONCRETE CONTAINMENT DRAWINGS.
3. ALL LINEWORK IS PROPOSED UNLESS CALLED OUT AS EXISTING.

LithiumNevada	CLIENT LITHIUM NEVADA CORP.
PROJECT	THACKER PASS 10YR FACILITY SRCE MODEL
TITLE STRUCTURES AND YARDS (2 OF 4)	FILENAME 0385.000.106F FIGURE NO. 05 REVISION B



PROCESS FACILITIES BUILDINGS SOUTH AREA



LITHIUM PRODUCTION, SWITCHYARD AND SUBSTATION

LEGEND:

- 10 FT GROUND CONTOURS
- 4500 CONTOUR ELEVATION
- SECTION LINES
- E POWER LINE
- W WATER LINE
- S SEPTIC LINE

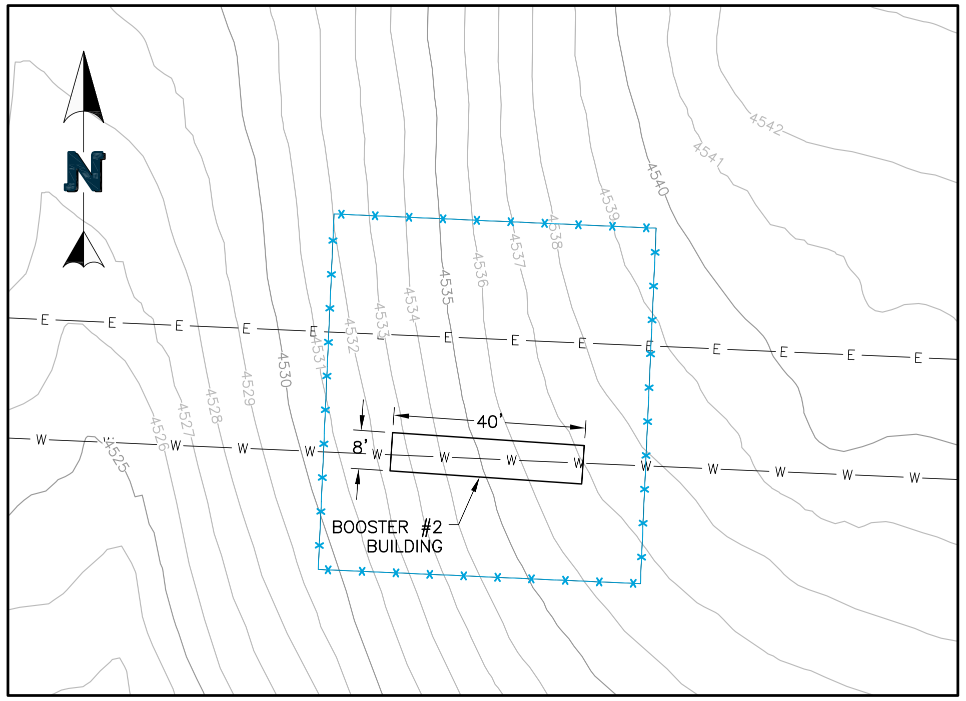
0 100 200 FEET

NOTES:

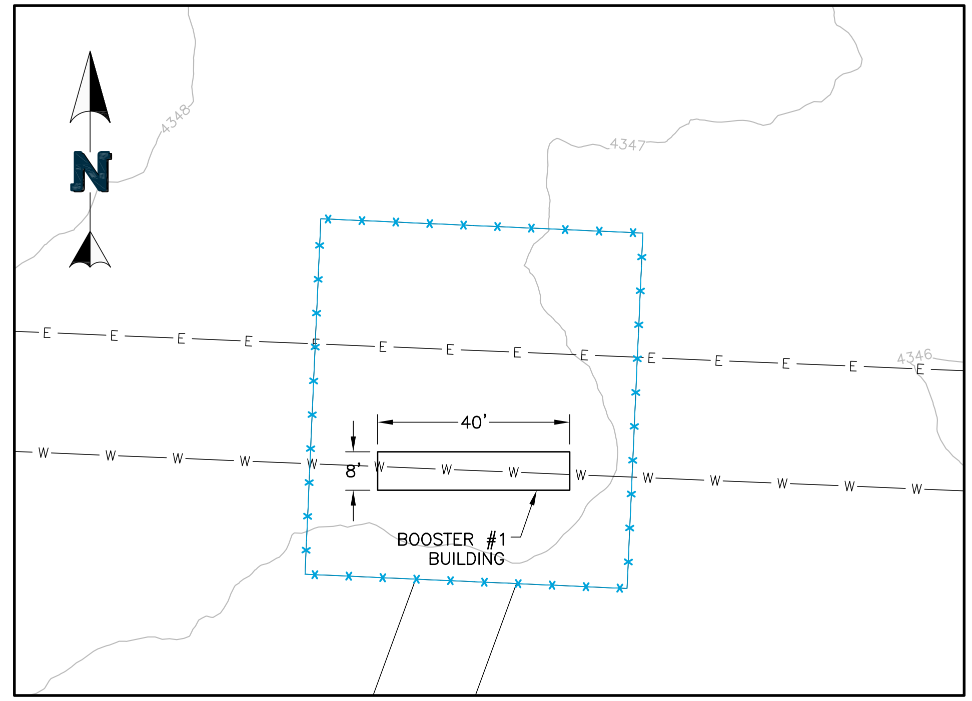
1. WATER PIPELINE TO REMAIN BURIED IN PLACE.
2. PROCESS PLANT AREA NUMBERS ARE REFERENCED IN THE SRCE COST ESTIMATE AS WELL AS THE KIEWIT CONCRETE CONTAINMENT DRAWINGS.
3. ALL LINEWORK IS PROPOSED UNLESS CALLED OUT AS EXISTING.

LithiumNevada	CLIENT: LITHIUM NEVADA CORP.
PROJECT	THACKER PASS 10YR FACILITY SRCE MODEL
TITLE: STRUCTURES AND YARDS (3 OF 4)	FILENAME: 0385.000.111F; FIGURE NO.: 06; REVISION: B

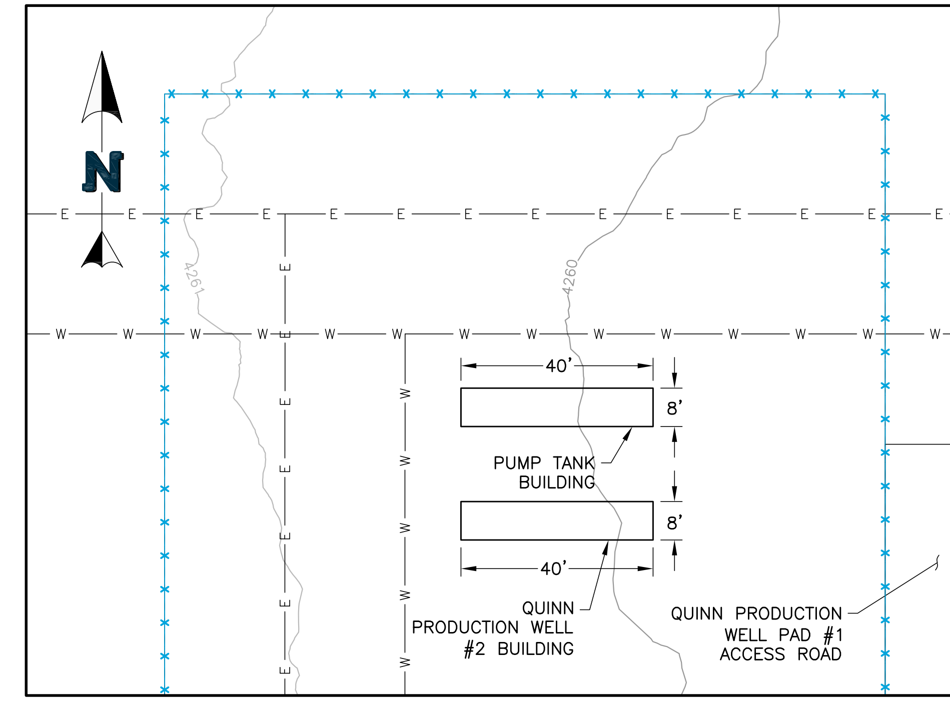
P:\Projects\0385.000 Lithium Nevada Thacker Pass Project\A-CAD\FIG\0385.000.111F.dwg–10/21/2020 4:29 PM



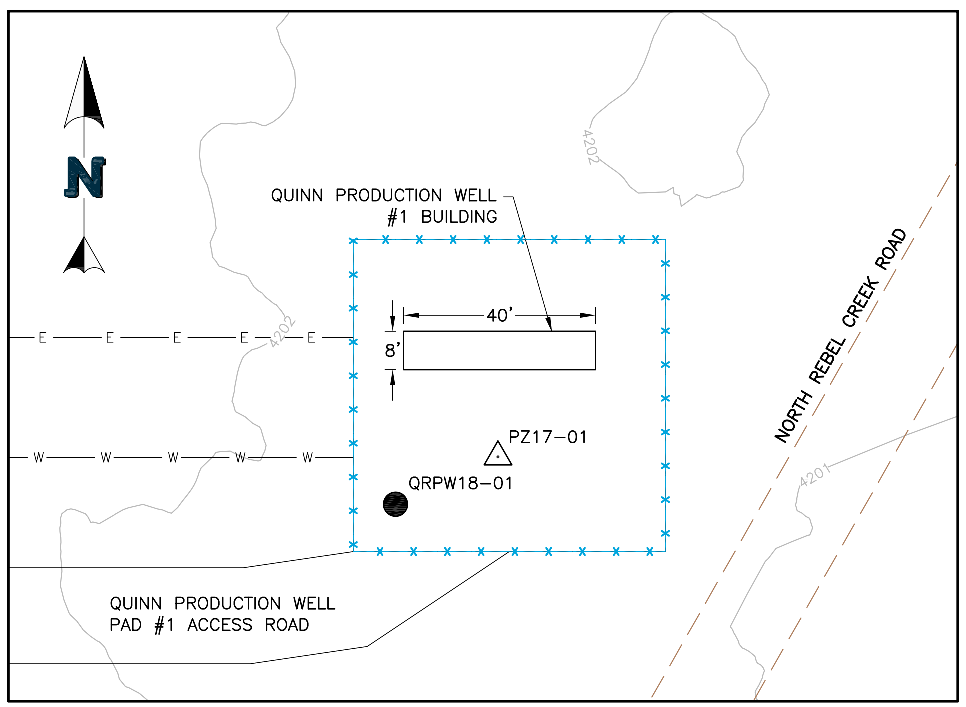
BOOSTER #2 BUILDING



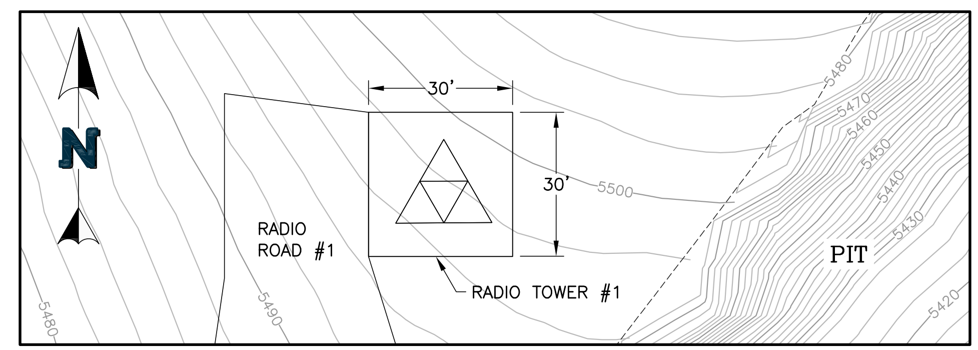
BOOSTER #1 BUILDING



QUINN PRODUCTION WELL #2 AND PUMP TANK BUILDINGS



QUINN PRODUCTION WELL #1 BUILDING



RADIO TOWER #1

LEGEND:

- 1 FT GROUND CONTOURS
- 4500 CONTOUR ELEVATION
- EXISTING ROADS/TRAILS
- E POWER LINE
- W WATER LINE
- FENCE TO BE REMOVED
- PRODUCTION WELL
- PIEZOMETER

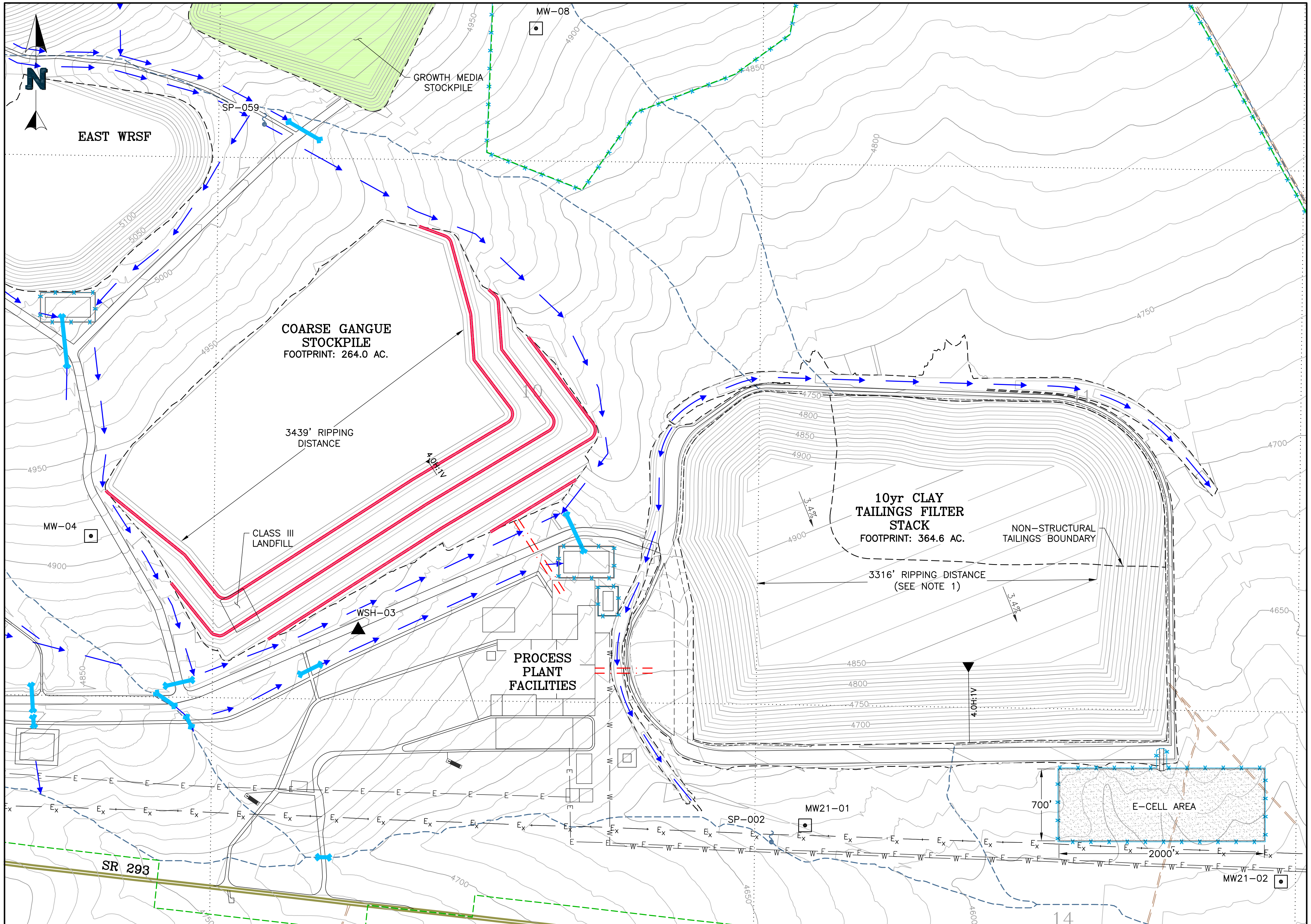
0 20 40 FEET

NOTES:

1. ALL LINEWORK IS PROPOSED UNLESS CALLED OUT AS EXISTING.

LithiumNevada	CLIENT LITHIUM NEVADA CORP.
PROJECT	THACKER PASS 10YR FACILITY SRCE MODEL
TITLE STRUCTURES AND YARDS (4 OF 4)	FILENAME 0385.000.107F; FIGURE NO. 07; REVISION B

P:\Projects\0385.000 Lithium Nevada Thacker Pass Project\A-CAD\FIG\0385.000.107F.dwg-2/6/2021 2:03 PM



0 500 1000 FEET

LEGEND:

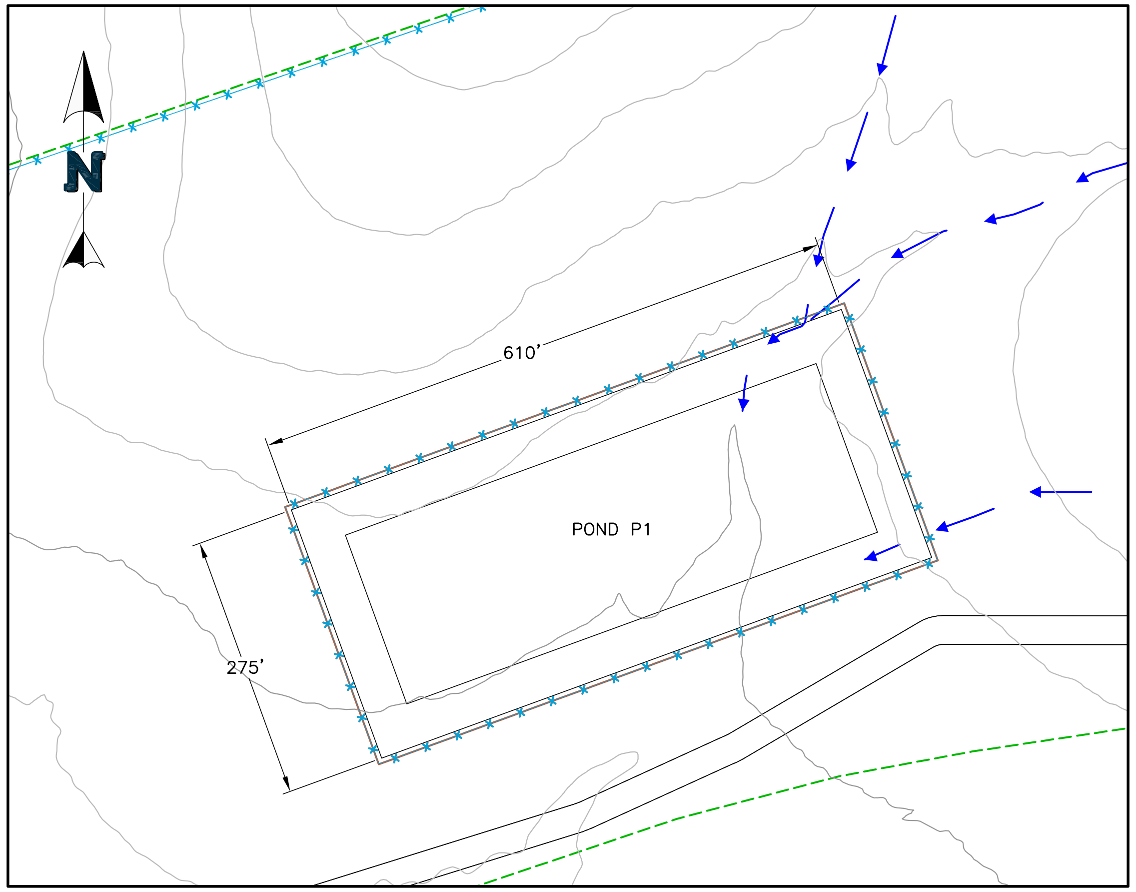
- 10 FT GROUND CONTOURS
- 4500 CONTOUR ELEVATION
- ROADS–MAJOR
- ROADS/TRAILS
- DRAINAGES
- EPHEMERAL CREEKS
- SECTION LINES
- 20 SECTION NUMBER
- POO BOUNDARY
- E_x HARNEY ELECTRIC POWER LINE
- E POWER LINE
- W WATER LINE
- FO FIBER OPTIC LINE
- FENCE TO BE REMOVED
- MID BENCH LENGTHS
- MAJOR STORMWATER DRAINAGE PATH
- CULVERT TO REMAIN
- CULVERT TO BE REMOVED
- GROWTH MEDIA STOCKPILE
- SPRING
- MONITORING WELL

NOTES:

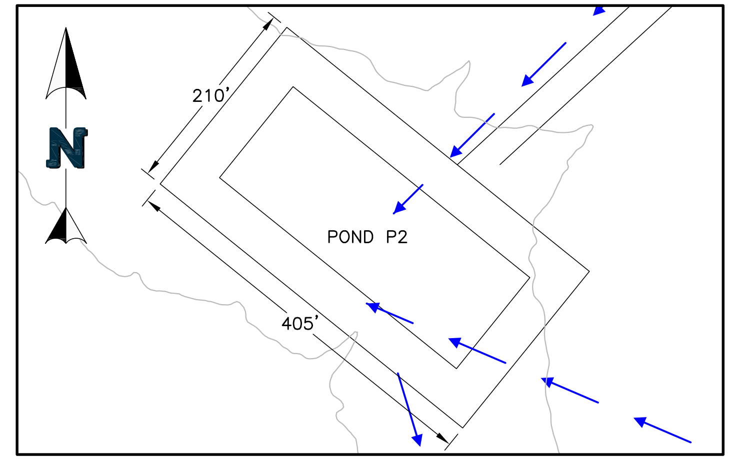
1. THE CTFS MATERIAL WILL BE PLACED IN 1 FT THICK LIFTS AND THE SLOPES WILL BE GRADED TO A 4:1 AS THE STACK IS CONSTRUCTED. THERE WILL BE NO NEED FOR REGRADING DURING RECLAMATION.
2. ALL LINEWORK IS PROPOSED UNLESS CALLED OUT AS EXISTING.

LithiumNevada	CLIENT: LITHIUM NEVADA CORP.
PROJECT: THACKER PASS 10YR FACILITY SRCE MODEL	
TITLE: COARSE GANGUE STOCKPILE AND CLAY TAILINGS FILTER STACK	FILENAME: 0385.000.108F; FIGURE NO.: 08; REVISION: C

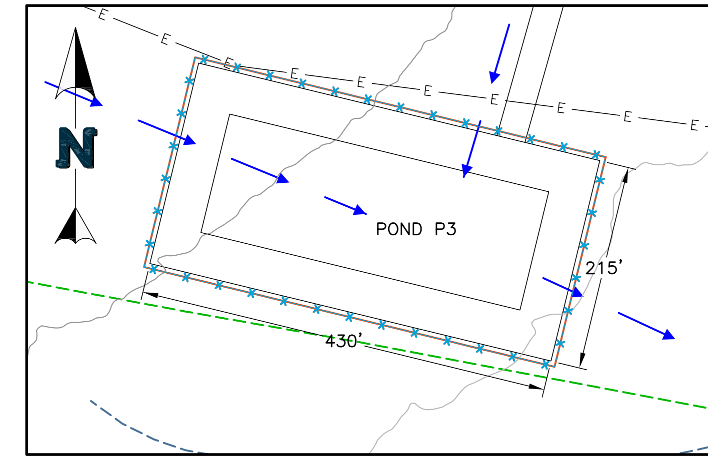
P:\Projects\0385.000 Lithium Nevada Thacker Pass Project\A-CAD\FIG\0385.000.108F.dwg-7/29/2021 9:09 AM



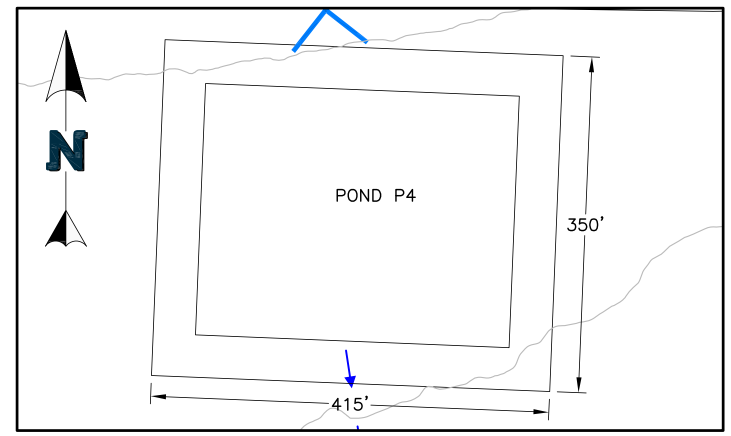
SEDIMENT POND P1



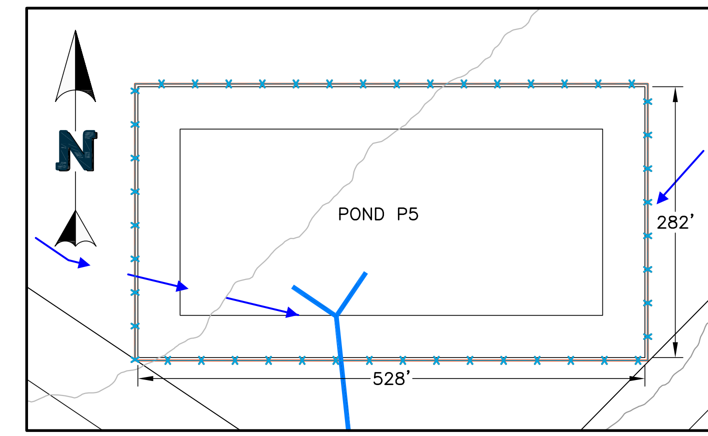
SEDIMENT POND P2



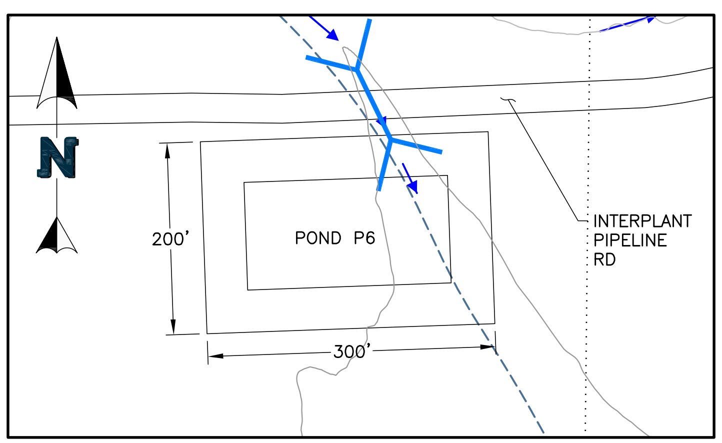
SEDIMENT POND P3



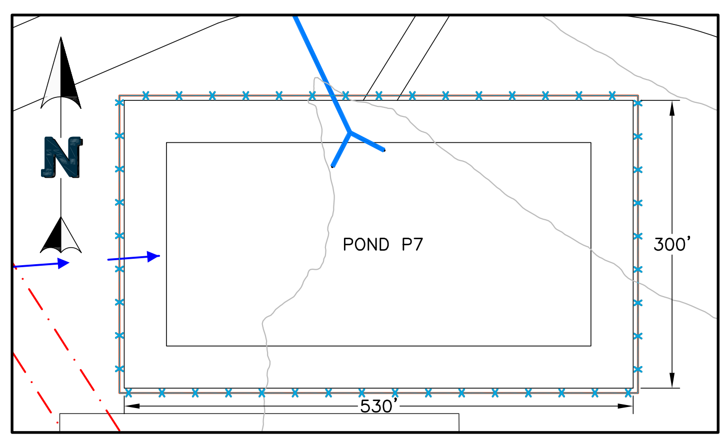
SEDIMENT POND P4



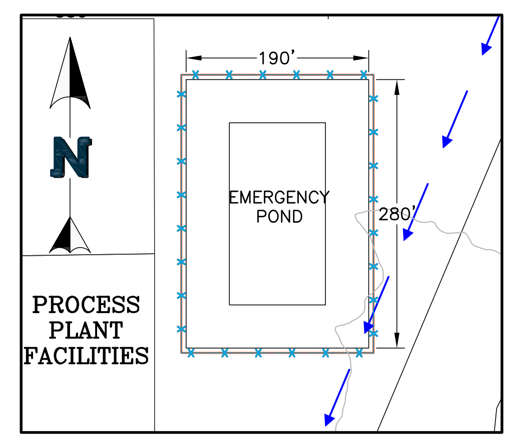
SEDIMENT POND P5



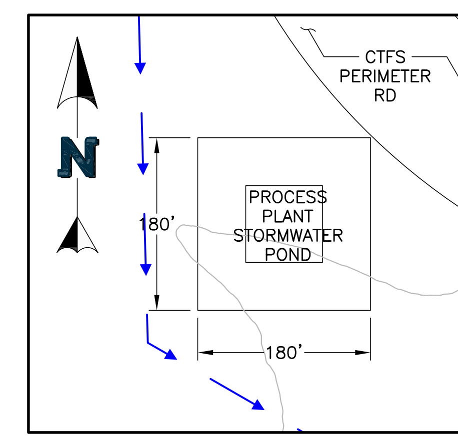
SEDIMENT POND P6



SEDIMENT POND P7



EMERGENCY POND



PROCESS PLANT STORMWATER POND

LEGEND:

- 20 FT GROUND CONTOURS
- 4500 CONTOUR ELEVATION
- DRAINAGES
- ROADS—MAJOR
- ROADS/TRAILS
- SECTION LINES
- FENCE TO BE REMOVED
- STORMWATER DIVERSION CHANNEL
- CONVEYOR CORRIDOR
- CULVERT TO BE REMOVED

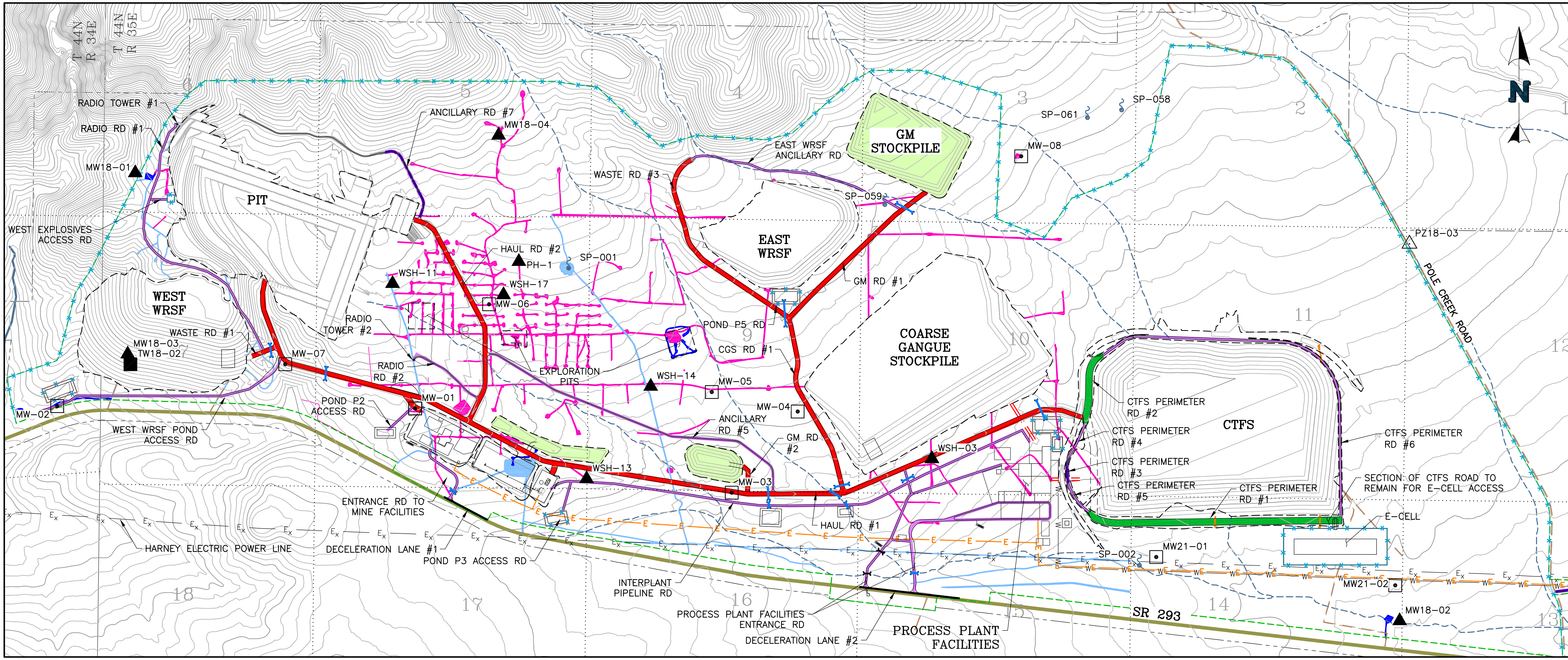
0 100 200 FEET

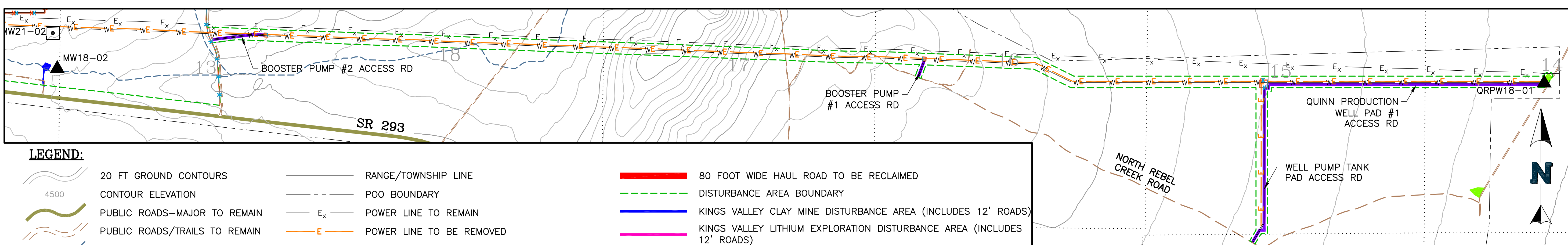
NOTES:

1. ALL LINEWORK IS PROPOSED UNLESS CALLED OUT AS EXISTING.

LithiumNevada	CLIENT LITHIUM NEVADA CORP.
PROJECT	THACKER PASS 10YR FACILITY SRCE MODEL
TITLE	SEDIMENT PONDS
FILENAME	0385.000.109F
FIGURE NO.	09
REVISION	C

P:\Projects\0385.000 Lithium Nevada Thacker Pass Project\A-CAD\FIG\0385.000.109F.dwg—7/7/2021 5:02 PM





LEGEND:

- 20 FT GROUND CONTOURS
- 4500 CONTOUR ELEVATION
- PUBLIC ROADS–MAJOR TO REMAIN
- PUBLIC ROADS/TRAILS TO REMAIN
- DRAINAGES
- EPHEMERAL CREEKS
- SECTION LINES
- 20 SECTION NUMBER
- R 34E RANGE 34 EAST
- T 44N TOWNSHIP 44 NORTH
- RANGE/TOWNSHIP LINE
- POO BOUNDARY
- POWER LINE TO REMAIN
- POWER LINE TO BE REMOVED
- FENCE TO BE REMOVED
- CULVERT TO REMAIN
- CULVERT TO BE REMOVED
- GROWTH MEDIA STOCKPILE
- 20 FOOT WIDE ACCESS ROAD TO BE RECLAIMED
- 30 FOOT WIDE ACCESS ROAD TO BE RECLAIMED
- 130 FOOT WIDE HAUL ROAD TO BE RECLAIMED
- 80 FOOT WIDE HAUL ROAD TO BE RECLAIMED
- DISTURBANCE AREA BOUNDARY
- KINGS VALLEY CLAY MINE DISTURBANCE AREA (INCLUDES 12' ROADS)
- KINGS VALLEY LITHIUM EXPLORATION DISTURBANCE AREA (INCLUDES 12' ROADS)
- FAR EAST NOI DISTURBANCE AREA (INCLUDES 12' ROADS)
- QUINN RIVER VALLEY TEST WELLS NOI
- SPRING/SEEP
- MONITORING WELL
- EXISTING MONITORING WELL
- EXISTING PRODUCTION WELL

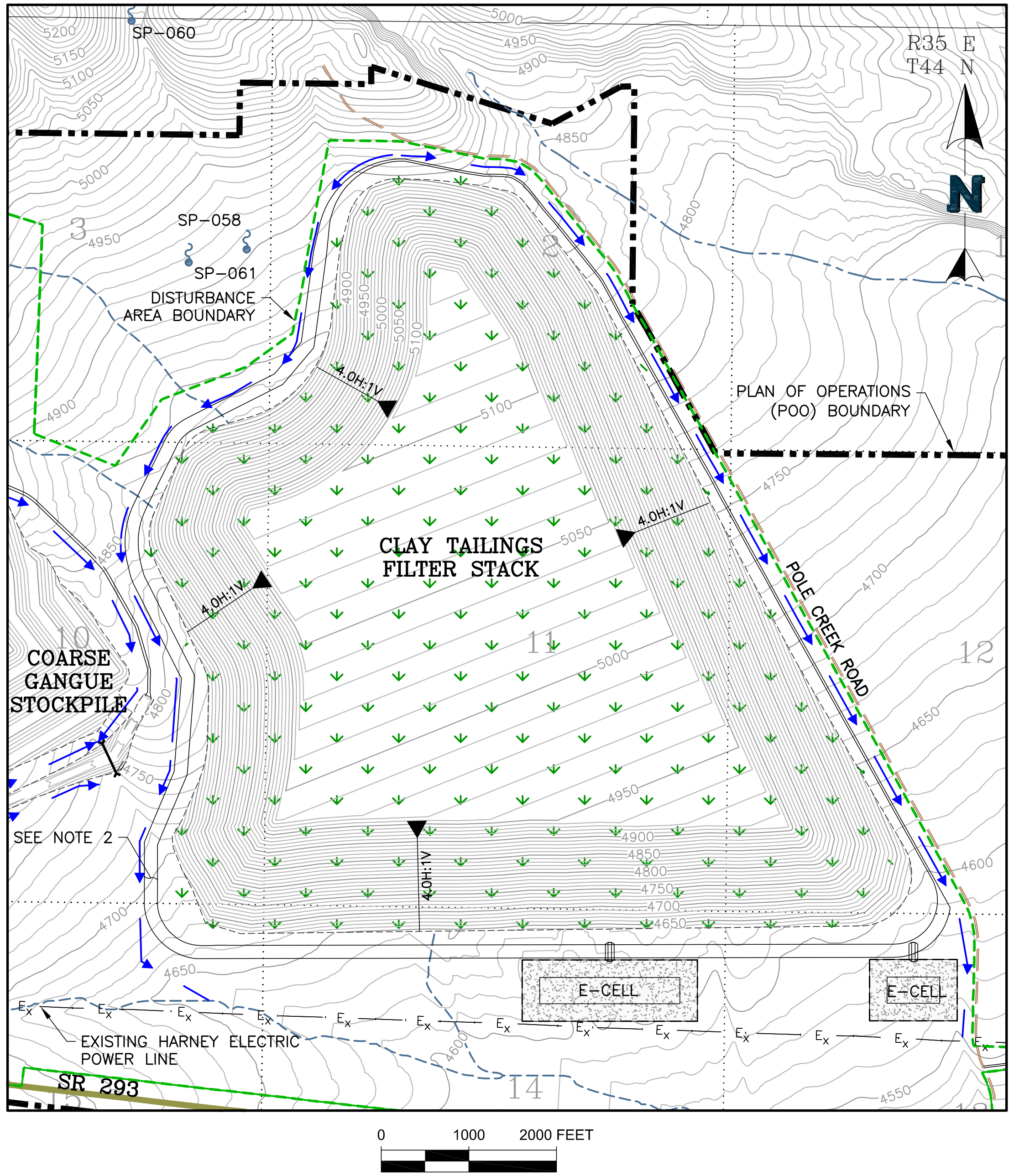
0 1000 2000 FEET

NOTES:

1. ACCESS TO CTFS AFTER CLOSURE WILL BE FROM EXISTING TRAIL OFF SR293 OR PROPOSED ACCESS ROAD FROM POLE CREEK ROAD.
2. ALL LINEWORK IS PROPOSED UNLESS CALLED OUT AS EXISTING.

LithiumNevada	CLIENT: LITHIUM NEVADA CORP.
PROJECT	THACKER PASS 10YR FACILITY SRCE MODEL
TITLE: FENCES, GROWTH MEDIA STOCKPILES, POWERLINES, AND ROADS	FILENAME: 0385.000.110F; FIGURE NO.: 10; REVISION: E

P:\Projects\0385.000 Lithium Nevada Thacker Pass Project\A-CAD\FIG\0385.000.110F.dwg-7/8/2021 10:02 PM

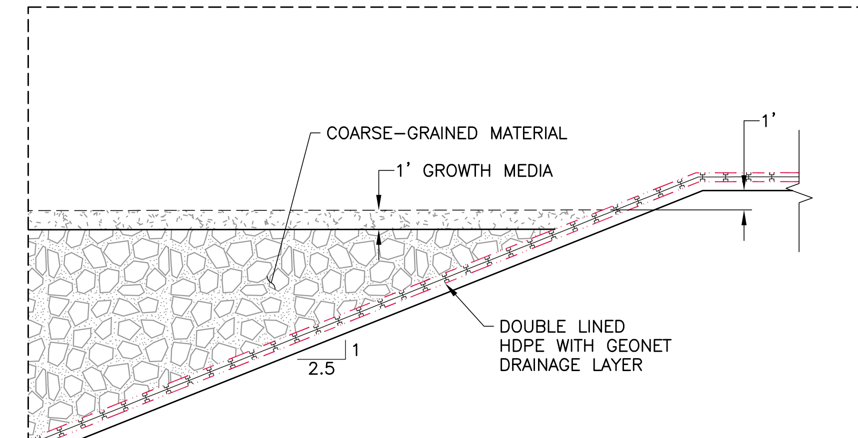


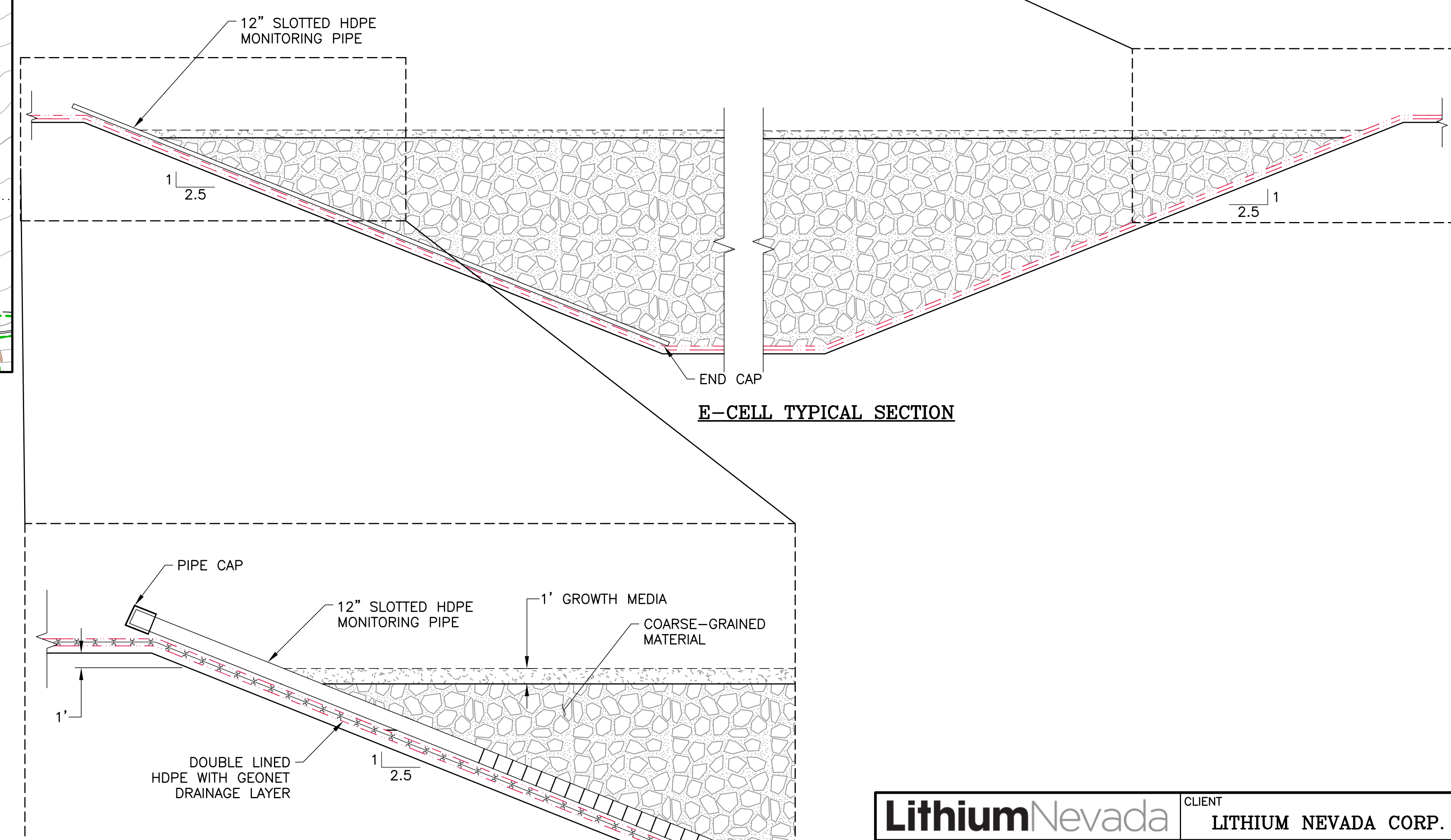
LEGEND:

- CLOSURE GROUND 10 FOOT CONTOURS
- 4500 — CLOSURE CONTOUR ELEVATION
- EXISTING ROADS–MAJOR
- EXISTING ROADS/TRAILS
- EXISTING DRAINAGES
- EXISTING EPHEMERAL CREEKS
- SECTION LINES
- 20 — SECTION NUMBER
- R 35E — RANGE 35 EAST
- T 44N — TOWNSHIP 44 NORTH
- RANGE/TOWNSHIP LINE
- POO BOUNDARY
- DISTURBANCE AREA BOUNDARY
- E_x — EXISTING POWER LINE
- STORMWATER DIVERSION CHANNEL
- EXISTING SEEP/SPRING

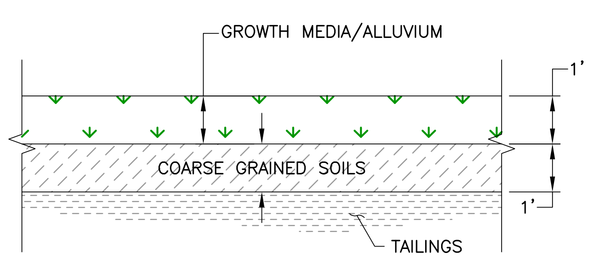
NOTE:

1. ALL LINE WORK IS PROPOSED UNLESS CALLED OUT AS EXISTING.
2. CERTAIN ROADS TO REMAIN IN PLACE AT CLOSURE IN ORDER TO MAINTAIN ACCESS TO MONITORING SITES.





E-CELL TYPICAL SECTION



CLAY TAILINGS FILTER STACK CLOSURE DETAIL

LithiumNevada	CLIENT: LITHIUM NEVADA CORP.	
PROJECT	THACKER PASS PROJECT	
TITLE	CLAY TAILINGS FILTER STACK CLOSURE PLAN	FILENAME: 0385.000.139F; FIGURE NO. 11; REVISION A

SRK Consulting (U.S.), Inc.
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Reno, NV 89502
United States

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+1 775 828 6820 fax

reno@srk.com
www.srk.com

Technical Memo

September 23, 2021

To	Catherine Clark
From	Amy Prestia, Alex Bailey
Cc	Ted Grandy, Lithium Nevada Corporation
Subject	Summary of the Waste Rock and Gangue Management Plan for the Thacker Pass Project – Revision 1
Client	Lithium Nevada Corporation
Project	357800.240

This memorandum was prepared by SRK Consulting (U.S.), Inc. (SRK) on behalf of Lithium Nevada Corporation (LNC) to provide a summary of the *Waste Rock and Gangue Management Plan for the Thacker Pass Project* (WRGMP). This summary has been prepared in response to comments from the NDEP-BMRR on the *Thacker Pass Project Tentative Plan for Permanent Closure (TPPC)*, which was submitted to the Nevada Division of Environmental Protection – Bureau of Mining Regulation and Reclamation (NDEP-BMRR) and Bureau of Land Management (BLM) by Lithium Nevada Corporation (LNC) in February 2021.

A draft WRGMP was submitted to NDEP-BMRR and BLM on January 6, 2020. At that time, the geochemical characterization program was ongoing. The draft WRGMP was revised to include additional data from the characterization program as well as address comments from the NDEP-BMRR received on October 29, 2020 (SRK, 2020a). The revised WRGMP was submitted to the BLM and NDEP-BMRR on February 25, 2021 (SRK, 2021) and provides a description of the waste rock and gangue management approach developed for the ultimate 41-year mine plan. The February 2021 WRGMP was updated in June 2021 to reflect the initial 10-year period of mining and mine plan changes proposed for the Water Pollution Control Permit (WPCP). The summary of the waste rock and gangue management approach provided below is based on the most recent WRGMP that is focused on waste rock management activities for the 10-year mine plan, which may be consulted for additional information (SRK, 2021).

1 Summary

1.1 Mine Plan

LNC proposes to construct, operate, reclaim, and close an open pit lithium claystone mine and lithium processing operation. LNC will develop the Project in two phases (Phase 1 and Phase 2) over the estimated 41-year mine life. Phase 1 is planned to occur from years 0 to 10, and Phase 2 from years 10 to 41, after which the Project will enter the reclamation and closure period (for a minimum of five years). By approximately year 5, pit development will have advanced enough to accommodate a portion of the waste rock material to be placed as backfill. Coarse gangue material will be used as pit backfill when authorized by the NDEP-BMRR.

During the initial 10-year period of the WPCP, unless amended, mining would occur above the 4,825 ft amsl elevation and would remain above the regional water table. During this period LNC will continue to conduct studies to optimize closure configuration, pollutant prevention from saturated backfill, and alternative source control measures to manage the discharge of contact pit water. Additionally, LNC will update the groundwater flow model with data collected from these studies to further confirm and refine the conceptual understanding of the groundwater system and optimize closure design. LNC will seek formal NDEP-BMRR authorization of a final mitigation approach for mining below 4,825 ft amsl at an appropriate time, expected to be at some point prior to approximately year 20 of the mine plan when the water table would be encountered.

For the 10-year mine plan, the proposed activities and facilities associated with the Project will have a disturbance area estimated at 3,144.5 acres. Facilities and operations would include the following:

- Development of an open pit mine to recover approximately 50 million (M) cubic yards (CY) of ore.
- Concurrent backfill of the open pit using 12.2 M CY of waste rock.
- Construction of two waste rock storage facilities (WRSFs) to accommodate permanent storage of approximately 32.2 M CY of excavated mine waste rock material.
- Construction and operation of mine facilities to support mining operations.
- Construction of a 494,000 CY 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 10-year storage capacity of approximately 26.1 M CY.
- Construction and operation of lithium processing facilities designed to produce lithium carbonate, lithium hydroxide monohydrate, lithium sulfide, and lithium metal.
- 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.

- 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 70 M CY of material on the CTFS.
- Construction and maintenance of haul and secondary roads and other ancillary facilities to support the Project.

Mining at the Project will be conducted by open pit method using a modified panel mining method. The modified panel method would involve mining a section along the length of the pit to its entire width and depth before proceeding to the next section of the pit. Based on the current mine plan, mining will begin in the western portion of the proposed pit (West Pit) and expand to the east.

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. Waste rock generated during mining activities will be placed in the proposed WRSFs as well as backfilled in the pit.

Lithium will be recovered from the claystone ore at a processing plant which will be constructed on site. The process facility will be capable of producing lithium carbonate, lithium sulfide, lithium hydroxide monohydrate, and lithium metal. Sodium hypochlorite solution (chlorine bleach) will be produced as a co-product with lithium metal. Lithium carbonate and lithium hydroxide monohydrate are the products that are expected to be produced in the initial phase of operations.

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 and water 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. Primarily recycled water with some 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. 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. 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. For the initial 10-year period, the coarse gangue material will be placed in the CGS and will not be placed as pit backfill until approval has been obtained from NDEP-BMRR.

Lithium will be recovered from the claystone ore at a processing plant which will be constructed on site. The process facility will be capable of producing lithium carbonate, lithium sulfide, lithium hydroxide monohydrate and lithium metal. 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. LNC proposes to place the clay tailings in the CTFS which will be a permanent lined storage facility located east of the process plant. Prior to disposal, the tailings will be dewatered in a filtration plant to remove much of the water from the solids to where it can be conveyed to a stockpile. Approximately 70.0 M CY of clay tailings will be placed on the CTFS over the 10-year mine life. The CTFS will be constructed as a lined, zero discharge facility and covered with waste rock/growth media at closure; therefore, no degradation to groundwater will occur. No operational management considerations for tailings are included in the WRGMP.

1.2 Waste Rock Management

Waste rock is characterized as material that contains less than approximately 2,000 ppm lithium and is comprised mainly of claystone and ash lithologic units. A minor amount of basalt, tertiary volcanics (Tv), and Hot Pot Zone (HPZ) materials may also be managed as waste rock.

As described in the Thacker Pass Geochemical Characterization Report (SRK, 2020b), the waste rock for the Project exhibits high acid neutralization potential (ANP) and only a limited fraction of the waste rock is estimated to be potentially acid generating (PAG) (0.25% of the total waste rock from the ultimate pit). The proportion of PAG that will be mined during the initial 10-years will likely be slightly higher but will still be a minor percentage of the total waste rock. Any seepage from the waste rock is predicted to have an overall low potential for acid rock drainage and metal leaching (ARDML) and is not anticipated to degrade groundwater. During the initial 10-year period of operations, all waste rock is planned to be placed in lined WRSFs or backfilled in the pit over a compacted clay liner.

Some of the Tv and basalt units may be used as construction material during operations. The use of these materials for construction is supported by an Ecological Risk Assessment (ERA) which was conducted by SRK (SRK, 2020c) and geochemical modeling by Piteau (2021). Per the radiological analysis completed by FoxFire (2021), Tv material may be used for road-base and construction purposes; however, due to slightly elevated radium-226 levels, Tv material will be buried at least 15 cm deep at closure (if not already buried). If Tv is used for sub-base of indoor structures, Tv material would be initially tested to ensure that radium-226 would not accumulate in the buildings (FoxFire, 2021).

Up to 32.2 M CY of waste rock material is expected to be generated from open pit operations under the 10-year mine plan. The waste rock produced during mining will be placed in two lined WRSFs (i.e., the East and West WRSFs) until it can be backfilled directly into the mined-out panels in the open pit.

1.3 Coarse Gangue Management

Coarse gangue is separated during the attrition scrubbing process, which mechanically rinses and breaks down the claystone ore. The process of physical scrubbing results in a sand and gravel gangue material which has been double rinsed by water. No chemical leaching for rinsing occurs in the resulting gangue material. As described in the Thacker Pass Geochemical Characterization Report (SRK, 2020b), the gangue material is predicted to be net neutralizing with a low potential for acid rock drainage and metal leaching (ARDML) and is not anticipated to degrade groundwater. For the initial 10-year period, the coarse gangue material is planned to be placed primarily in the CGS, although some may also be placed in the CTFS as overliner. In order to address comments from NDEP-BMRR, LNC will construct a compacted clay liner under the CGS.

LNC is planning to conduct studies to optimize closure configuration, pollutant prevention from saturated backfill, and alternative source control measures to manage the discharge of contact pit water. Coarse gangue material will be used as pit backfill when authorized by the NDEP-BMRR.

1.4 Facility Design and Construction

1.4.1 Waste Rock Storage Facilities

Waste rock that will be generated from open pit operations during the 10-year mine life will be placed in two proposed WRSFs, located west and east of the pit. The West WRSF is designed with a storage capacity of approximately 26.4 M CY while the East WRSF will accommodate placement of approximately 5.8 M CY of waste rock material. The waste rock material will be placed in the WRSFs in approximately 50-foot lifts to form overall slopes of 3.5H:1V (horizontal to vertical). General design information for the East and West WRSFs is provided in Table 1. LNC plans to haul waste rock to either WRSF depending on operational requirements such as capacity and haul cycle efficiency.

The WRSFs will be lined with 12 inches of low hydraulic conductivity soil layer (LHCSL) overlain with a minimum of 2 feet of LHCSL cover material to prevent the LHCSL from drying out or freezing and cracking. For the West WRSF, the down-gradient drainage is the Thacker Creek channel, which is the natural western drainage in the area. For the East WRSF, the down-gradient drainage is an eastern drainage channel that runs parallel to State Route 293 within the Project area. Berms will be constructed around the perimeters of the WRSFs as needed to fully contain any stormwater within the lined area. Stormwater will be directed to lined stormwater sediment ponds.

Four inch diameter corrugated polyethylene (CPe) pipes with 2 feet of overliner material covering the pipes will be placed in the natural drainages of each facility to improve lateral flow to the single geomembrane-lined ponds sized for the 100-year, 24-hour storm event, plus 2 feet of sediment and 3 feet of freeboard. The stormwater sediment ponds will also have emergency spillways designed to discharge runoff from the 500-year, 24-hour storm event with 1 foot of freeboard. Each pond will be constructed with a 3-foot deep sump and a sloping pumpback system that will allow water to be pumped out of the pond and back into the process circuit. The stormwater management strategy that will be implemented for the WRSFs is described in more detail in Section 1.4.4.

Table 1: General Design of WRSFs for Phase 1 (Approximate)

WRSF	Capacity (M CY)	Lift Height (ft)	Overall Slopes	Liner
East WRSF	13.2	50	3.5H:1V	LHCSL
West WRSF	32.7	50	3.5H:1V	LHCSL

1.4.2 Pit Backfilling

After approximately 4 years of operation, pit development will have advanced enough to accommodate a portion of the waste rock material being placed in the pit as backfill. During the initial phase of the operation (i.e., during the 10-year period of the initial WPCP), mining will only occur above the groundwater table and only waste rock material will be placed in the dry pit as backfill. Because mining is initially not planned below the water table, there will not be the potential to form a pit lake and the pit backfill will be unsaturated. A pit backfill design was completed using a one foot compacted clay liner overlain by a one foot thick overliner layer which will be graded near the base of the pit to allow positive drainage of seepage to drain to the sump at the low point of the pit. During operations water collected in the sump will be pumped into water trucks and hauled out for use as dust suppression on other contained facilities such as the CTFS, CGS or WRSFs. During closure the sump will be converted to an ET-Cell for passive evaporation of seepage. LNC will continue to conduct studies to optimize controls for mining below the groundwater and evaluate placement of waste rock and coarse gangue material in the saturated portion of the open pit as backfill.

1.4.3 Coarse Gangue Stockpile

During the initial 10-year mine plan, all coarse gangue material produced during ore processing will be conveyed to the coarse gangue stockpile located east of the open pit or used as overliner material in facilities with containment such as the CTFS. The stockpile for the 10-year mine plan is designed with a storage capacity of 26.7 M CY, compared to the 48.4 M CY of CGS storage capacity planned for the 41-year mine plan. The final volume of coarse gangue in the stockpile will depend on the results of the classification circuit and if placement of coarse gangue material in the pit backfill is authorized in the future. LNC may use remaining stockpile capacity for placement of waste rock material as required to optimize movement of heavy equipment on the stockpile.

The coarse gangue stockpile will be constructed in 50-foot lifts using trucks and dozers. The ultimate stockpile is designed to be a maximum of 200 feet tall with 4H:1V inter-bench slopes and 5.5H:1V overall slopes. The coarse gangue stockpile will be fully lined in a similar manner as the WRSFs, with 12 inches of LHCSL and a minimum of 2 feet of coarse gangue or overliner material placed to prevent the LHCSL from drying out or freezing and cracking. CPe pipes will be placed in the natural drainages of the facility with 2 feet of overliner to convey stormwater to a single-lined pond. The pond is sized for the 100-year, 24-hour storm event with 3 feet of freeboard. The spillway outlet channel is sized to convey runoff from the 500-year, 24-hour storm event with one foot of freeboard. Water from the stormwater sediment pond will be pumped back into the process circuit. The stormwater management strategy to be implemented for the coarse gangue stockpile is described in more detail in Section 1.4.4.

1.4.4 Stormwater Management

LNC will implement Project-wide Best Management Practices (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. The diversion channels have been designed to intercept and divert non-contact stormwater away from facilities and around the site.

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.

LNC will manage stormwater runoff from the Project area through the construction of both lined and unlined stormwater sediment ponds. Sediment ponds will be constructed prior to construction of mine facilities upgradient from them. The unlined sediment ponds will be designed to store a minimum 2-year, 24-hour storm event and release excess water using a low flow 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 convey the 25-year, 24-hour storm peak flow through the low flow riser pipe and flows in excess of that up to a 100-year, 24-hour event will flow out of the spillway with one foot of freeboard. The lined sediment ponds (downstream of the WRSFs, CGS and ROM pad) will be designed to store a minimum 100-year, 24-hour storm event and release excess water through a spillway that is designed to handle the flow from a 500-year, 24-hour storm event plus still have one foot of freeboard.

In the event of an overflow, water in the ponds would be directed to natural drainage or diversion channels. The sediment ponds will be routinely cleaned out to maintain adequate storage capacity. 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.

1.5 Reclamation and Closure

1.5.1 Waste Rock Storage Facilities

Reclamation of the East WRSF and West WRSF will occur on a concurrent basis, whenever possible, and will 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 both facilities will be graded to an overall slope of approximately 3.5H:1V. LNC will ensure the slopes are stable and graded using dozers to blend with the surrounding topography, to the extent possible.

The WRSFs will have a one-foot-thick compacted LHCSL base layer. Runoff from the WRSFs will drain to the single lined sediment pond where it is pumped for use into the process circuit or used on other contained areas such as for dust suppression on the CTFS. At closure, LNC will remove sediments from the sediment pond, test, and if suitable re-use as growth media. If unsuitable the sediments will be placed in the CTFS. The geomembrane in the sediment pond will be cut and folded at the toe of the pond slope and buried. The pond will be backfilled to allow positive drainage out of the pond basin prior to revegetation activities.

Reclamation activities include the placement of a 12-inch growth media cover on the WRSFs. Seeding will be completed to promote revegetation.

1.5.2 Coarse Gangue Stockpile

The CGS will have a one-foot-thick compacted LHCSL base layer for which the coarse gangue material will be stacked upon. Runoff from the stockpile will drain to the single lined sediment pond where it is pumped for use into the process circuit or used on other contained areas such as for dust suppression on the CTFS. At closure, LNC will remove sediments from the sediment pond, test, and if suitable re-use as growth media. If unsuitable the sediments will be placed in the CTFS. The geomembrane in the sediment pond will be cut and folded at the toe of the pond slope and buried. The pond will be backfilled to allow positive drainage out of the pond basin prior to revegetation activities.

Closure and reclamation activities for the CGS include re-grading the slopes to an overall slope of 5.5H:1V, with interbench slopes of 4H:1V overall. The area will then be covered with 12 inches of growth media and seeded to promote vegetation growth.

1.5.3 Pit Area

Concurrent pit backfill and reclamation activities are anticipated to begin by year four of production. Reclamation will include backfilling previously mined areas as mining advances. LNC will use waste rock generated from each new pit area to backfill a previously mined-out area of the pit. The proposed backfilling plan consists of partially backfilling the open pit. At closure, a slight depression will occur in the pit area as a portion of the highwall will remain exposed. The backfill plan will include contouring at closure to blend with surrounding topography, and promote proper drainage to limit meteoric water draining into the pit.

Final topography of the backfilled pit will induce positive surface water drainage from the north to the south .. The sump in the pit will be converted to an ET-Cell to passively evaporate seepage water through the pit backfill. The sump will be lined with geomembrane, filled with perforated pipes and gravel to the crest and covered with growth media.

Suitable growth media will be placed on the surface to approximately six-inch thickness, with the exception of any exposed highwalls, and the area will be revegetated. If needed, in order to control access, physical barriers (e.g., berms, fencing, or other appropriate barriers) will be installed around the perimeter of the pit.

1.5.4 Stormwater Management

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. The diversions will be constructed with side slopes no steeper than 2H:1V and sized to convey the 25-year, 24-hour storm event (except around the plant area where the CTFS West Diversion Channel will be sized to convey the 100-year, 24-hour storm event) and include one foot of freeboard.

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. At closure, LNC will backfill the sediment ponds to allow positive drainage to the natural drainages.

1.6 Monitoring and Reporting

1.6.1 Operational Monitoring

Visual inspections of the WRSFs, coarse gangue stockpile, pit backfill and associated stormwater controls will be conducted to evaluate the performance and condition of the facilities. These inspections will be conducted on a quarterly basis and as soon as practicable after significant precipitation events. Additionally, site staff will carry out quarterly visual inspections on all parts of the facilities which are undergoing active development or concurrent reclamation. Visual inspections of non-active areas of the facilities will be carried out on an annual basis. The results of the inspections will be incorporated into the inspection recording and document storage system developed for the site.

Confirmatory sampling and testing will be performed quarterly on waste rock and gangue material in accordance with the site WPCP to ensure that the geochemical behavior of the mined material is consistent with the results of the baseline geochemical characterization program.

Representative waste rock samples will be collected to represent each of the material types encountered during the quarter. In addition, samples representative of coarse gangue material generated during the quarter will be collected. These samples will be submitted to a State of Nevada-certified laboratory for Acid base accounting (ABA) using the Nevada Modified Sobek and Meteoric Water Mobility Procedure (MWMP, ASTM E2242-13) with laboratory analysis of the leachate for NDEP-BMRR Profile I and I-R constituents. The results of the monitoring program will be provided in Quarterly and Annual Reports that will be prepared for the WPCP:

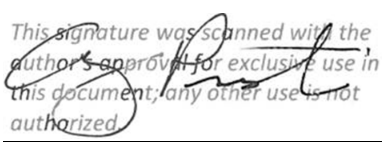
Groundwater and surface water monitoring will continue for at least five years after cessation of mining, processing, and closure operations. Quarterly groundwater sampling and reporting will be performed according to the current groundwater monitoring plan for the site WPCP with laboratory analysis of the leachate for Nevada Profile I-R constituents.

1.6.2 Closure and Post-Closure Monitoring

Closure and post-closure monitoring will be performed in accordance with NAC 445A.446(3) (Requirements for Permanent Closure and Post-closure Monitoring) and may consist of visual inspection of the WRSFs, gangue stockpile and backfill areas including areas of potential stormwater concentration and areas where seepage will have the highest potential to occur. The frequency of inspections should be at least once annually in the spring and following any storm events exceeding the 25-year, 24-hour storm event. Inspections, repairs, and evaluations will be documented and submitted to the BLM and NDEP-BMRR on an annual basis.

Annual monitoring and maintenance of the 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 East and West WRSF, CGS, and pit backfill 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 vegetated cover.

Regards,
SRK Consulting (U.S.), Inc.



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The opinions expressed in this document have been based on the information available to SRK at the time of preparation. SRK has exercised all due care in reviewing information supplied by others for use on this project. While SRK has compared key supplied data with expected values, the accuracy of the results and conclusions from the review are entirely reliant on the accuracy and completeness of the supplied data. SRK does not accept responsibility for any errors or omissions in the supplied information, except to the extent that SRK was hired to verify the data.

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Technical Memo

May 26, 2021

To	Catherine Clark
From	Amy Prestia, Alex Bailey
Cc	Ted Grandy, Lithium Nevada Corporation
Subject	Summary of the Baseline Geochemical Characterization for the Thacker Pass Project
Client	Lithium Nevada Corporation
Project	357800.240

This memorandum has been prepared to provide a summary of the geochemical characterization program completed for the Thacker Pass Project in response to comments from the NDEP-BMRR on the *Thacker Pass Project Tentative Plan for Permanent Closure (TPPC)*, which was submitted to the NDEP-BMRR and BLM by Lithium Nevada Corp. (LNC) in February 2021.

LNC plans to develop the Project in two phases (Phase 1 and Phase 2) over the estimated 41-year mine life. An initial 10-year period of mining is proposed for the Water Pollution Control Permit (WPCP) and the Waste Rock and Gangue Management Plan. During this time, mining will remain above the 4840 ft amsl elevation and above the regional groundwater table. During this period LNC will continue to conduct studies to optimize closure configuration, pollutant prevention from saturated backfill, and alternative source control measures to manage the discharge of contact pit water. LNC would seek formal NDEP authorization of a final mitigation approach for mining below 4840 ft amsl.

The *Baseline Geochemical Characterization Report for the Thacker Pass Project* was submitted to the Nevada Division of Environmental Protection – Bureau of Mining Regulation and Reclamation (NDEP-BMRR) and Bureau of Land Management (BLM) by SRK Consulting (U.S.), Inc. (SRK) on behalf of Lithium Nevada Corporation (LNC) on December 8, 2020 (SRK, 2020b). The baseline characterization program was designed to provide the geochemical characterization data needed to support permitting of the ultimate 41-year mine plan. The baseline characterization program as described in the 2020 report is applicable to the 10-year mine life. The summary of the characterization program provided in the following sections has been tailored to reflect the 10-year mine life.

1 Summary

1.1 Introduction

The Thacker Pass geochemical characterization program incorporates relevant data collected during several characterization programs conducted over the past nine years for the ultimate 41-year mine plan. LNC commissioned a geochemical characterization program beginning in 2011 to define the potential for acid rock drainage and metal leaching (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-BMRR 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) expanding the dataset to the Project's new ultimate pit boundaries using recent exploration samples, and 2) providing characterization data for gangue and tailings material associated with an updated process flow sheet. The 2018/2019 program also 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 ultimate pit.

Based on geologic interpretation of the Thacker Pass deposit, material types in the Thacker Pass open pit area include alluvium, ash, claystone, claystone/ash, hot pot zone (HPZ), and Tertiary volcanics (Tv) and a minor amount of basalt. For the purposes of the waste rock and ore characterization program, material types were defined based solely on primary rock type (i.e., lithology). The characterization program also included samples representative of gangue (oxidized and unoxidized) and tailings (clay tailings, neutralization solids, sulfate salts) that would be produced during mining.

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 associated with the ultimate pit. A summary of these results is presented in Attachment 1. In addition, 14 representative waste rock/ore samples, 4 gangue samples, and 2 tailings samples were submitted for kinetic humidity cell testing (HCT). The number of samples selected for geochemical testing was based on the number of discrete material types identified for a deposit as well as the relative percentage of each material type predicted to be mined according to the geologic model. The characterization program was designed to provide a dataset representative of the ultimate 41-year pit shell.

1.2 Methods

The analytical methods used as part of the geochemical characterization program comply with guidance established under the BLM and NDEP-BMRR (2013 and 2019, respectively), and include the following:

- 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.

- Net acid generation (NAG) testing at a Nevada-approved laboratory to provide a secondary measure of ARDML potential.
- 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) at a Nevada-approved laboratory.
- 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) at a Nevada-approved laboratory and Profile I analysis at a Nevada-certified laboratory to define sulfide oxidation rates and metal leaching potential under laboratory-controlled oxygen and water exposure conditions that simulate weathering in the field.

1.3 Waste Rock and Ore Results

A total of 219 samples of waste rock and ore were collected in three campaigns from 2011, 2018 and 2019 from drill core. 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 3 for all material types (Attachment 1, Table 1). 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 exhibit a higher potential for acid generation and is predicted to be Potentially Acid Generating (PAG). Kinetic testing of a sample of ash material predicted to be acid generating (i.e., NPR less than 1.2) did not generate acid for the duration of the test (62 weeks). These results indicate that the ABA test may over predict acid generation potential.

Even though acidic conditions have not been observed in the kinetic testing program, a conservative estimate of PAG material within the ultimate pit was developed by LNC geologists using the multi-element data from the exploration program. Total sulfur and calcium were used to assign Acid Generation Potential (AGP), Acid Neutralization Potential (ANP), and NPR values to each mine block within the geologic 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 from the ultimate pit is negligible and estimated to comprise 0.25% of the total waste rock and approximately 1% of the final pit wall surface. The proportion of PAG that will be mined during the initial 10-years will be slightly higher but will still be a minor percentage of the total waste rock. Due to the net neutralizing character of the waste rock and the limited quantity of estimated PAG, segregated waste rock management to preclude acid generation is not recommended for any stage of 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 Profile I reference values through the test's duration.

Other constituents were initially flushed from the humidity cell test from weeks 0 to 4 at concentrations above Profile I reference values including fluoride, iron, magnesium, manganese, and sulfate. However, these constituents equilibrate to lower concentrations after the initial flush. Baseline groundwater quality results for monitoring wells in the area indicate arsenic is naturally elevated in groundwater.

Low levels of uranium are initially flushed from the waste rock HCTs at concentrations above Profile I-R (i.e., 0.03 mg/L); however, uranium concentrations rapidly decrease to levels below Profile I-R 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. Additional information is presented in the SRK technical memorandum *Thacker Pass Project Uranium Geochemistry*, which was submitted to the NDEP-BMRR and BLM on September 14, 2020 (SRK, 2020a). Based on monitoring done as part of the monitoring program for WPCP NEV2015108 for the Kings Valley Lithium Exploration Project, radioactive elements (radium 226/radium 228 and thorium) are locally present in groundwater, but at low concentrations below the Profile I-R reference values.

A waste rock and gangue management plan (WRGMP) has been prepared for the Thacker Pass Project for the ultimate pit (41-year mine plan) that was submitted to the NDEP-BMRR on February 25, 2021. This plan has been revised to address comments from the NDEP-BMRR received May 3, 2021 to support the WPCP for the initial 10-year mine plan.

1.4 Gangue Results

A total of 52 samples were analyzed as part of the geochemical characterization program that are representative of oxidized and unoxidized gangue and ore feed material from the ultimate pit. Geochemical characterization data show that the oxidized ore feed material is net neutralizing with an average NPR value of 17 (Attachment 1, Table 1). Oxidized gangue material shows similar results to the ore feed material and is net neutralizing with an average NPR value of 24. ABA results for the unoxidized ore feed and gangue samples show that they are generally comparable to the oxidized ore feed and are mainly non-acid generating with a few samples exhibiting uncertain acid generation potential resulting in an average NPR value of 4.

The MWMP leachates are consistently neutral for all oxidized and unoxidized gangue samples, with pH values around 8 s.u. (Attachment 1, Table 5). A comparison of MWMP leachate chemistry to NDEP Profile I reference values shows that the majority of constituents are below their respective reference value with the exception of antimony, arsenic, fluoride, and manganese (Attachment 1, Table 4 to Table 6). Based on 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. This is attributed to the breakdown of mineral grains during the attrition process and the enrichment of these constituents in the coarse gangue fraction. In addition, calcium, chloride, sodium, sulfate, and total dissolved solids (TDS) concentrations decrease indicating these constituents are rinsed from the ore material during the attrition process.

MWMP leachate from three of the oxidized gangue samples and two of the oxidized ore feed samples was submitted for Profile I-R analysis that includes analysis of uranium, gross alpha, radium

226/radium 228, and thorium. Results indicate that these radionuclides are leached from the oxidized ore feed and gangue material at concentrations below the NDEP Profile I-R reference values (Attachment 1, Table 3).

MWMP leachate was also submitted for Profile I-R analysis for three of the unoxidized gangue samples. These results show that the majority of radionuclides are leached from the unoxidized gangue samples at concentrations below Profile I-R (Attachment 1, Table 3). The exceptions to this include uranium, which is elevated in two out of four of the unoxidized gangue samples along with gross alpha. Radium 226/Radium 228 is elevated in one out of four unoxidized gangue samples.

Two samples of oxidized gangue and two samples of unoxidized gangue material have undergone humidity cell testing. Results from the humidity cell test program confirm the oxidized and unoxidized gangue material is non-acid generating and there is a low potential to leach metals and sulfate under alkaline conditions. However, under the alkaline conditions, there is a potential to leach aluminum, arsenic and antimony from the oxidized and unoxidized gangue at concentrations greater than the NDEP-BMRR Profile I reference values. Arsenic is consistently released from both the oxidized and unoxidized gangue at concentrations above the NDEP-BMRR Profile I reference values throughout the test. For the unoxidized gangue material, antimony concentrations remain above the NDEP-BMRR Profile I reference values and aluminum remains below the reference values throughout the test. Manganese is also leached from the unoxidized gangue at concentrations above the NDEP-BMRR Profile I reference values during the first flush. For the oxidized gangue material, antimony and aluminum release decreases to concentrations below the NDEP-BMRR Profile I reference values midway through the test.

Operational management considerations for the gangue material are included the WRGMP.

1.5 Tailings Results

Static and kinetic testing was carried out for six samples of clay tailings, four samples of neutralization solids, and one sample of sulfate salts generated at the LNC research and development facility. These samples are representative of process materials from the ultimate pit as well as the 10-year pit. The 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 (Attachment 1, Table 1); this has been confirmed through mineralogical analysis. However, the clay tailings contain residual sulfuric acid from the lithium extraction process that was flushed from the material resulting in the generation of low pH values in the NAG test (Attachment 1, Table 2). Under the low pH conditions, aluminum, arsenic, antimony, beryllium, cadmium, chromium, copper, fluoride, iron, lead, magnesium, manganese, mercury, nickel, sulfate, thallium, TDS and zinc were leached at concentrations above NDEP Profile I reference values (Attachment 1, Table 4 to Table 6). Samples of neutralization solids and sulfate salts produced circum-neutral to alkaline leachate and constituent concentrations that are lower in comparison to the clay tailings.

MWMP leachate from one sample of clay tailings, one sample of neutralization solids and one sample of sulfate salts was submitted for Profile I-R 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 I-R reference values (Attachment 1, Table 3). For the neutralization solids and sulfate salts, these radionuclides are all below Profile I-R reference values.

One sample of clay tailings (HC-17) and one sample of neutralization solids (HC-16) were selected for humidity cell testing. The cells were run for 71 and 54 weeks respectively before being terminated upon approval from the BLM and NDEP-BMRR.

Consistent with the results of the ABA and NAG testing (Attachment 1, Table 1 to Table 2), the clay tailings sample (HC-17) generated acidic leachate with a pH of 1.6 s.u. that increased and stabilized to between pH 3.41 to 3.66 s.u. from week 25 to week 71. As expected with low pH solutions, the majority of parameters were elevated above NDEP Profile I reference values in the initial weeks of testing, but all metal(loid)s show a decreasing trend throughout the remainder of the test, with the exception of barium, which showed a slight increasing trend throughout the test. Antimony, arsenic, fluoride and copper were consistently elevated above NDEP Profile I reference values for the duration of the test.

The initially low pH of the clay tailings sample (HC-17) is linked to the presence of residual sulfuric acid; leaching of residual sulfuric acid is reflected in the high sulfate leaching rates (approximately 1,000 mg/kg/week). Additionally, mineralogy results for HC-17 confirm the abundance of iron and manganese sulfate minerals produced during the lithium extraction process; this demonstrates that sulfate minerals rather than sulfide minerals are contributing to the high sulfate release in HC-17.

Cell HC-16 (neutralization solids) generated slightly alkaline pH in the range of 7.5 to 8.3 s.u. during the 54 weeks of testing. Antimony, arsenic, lead and magnesium were elevated above the NDEP-BMRR Profile I reference values during the initial flushing, and sulfate and TDS remained elevated throughout the test. Single apparent exceedances in aluminum, beryllium, cadmium, iron, lead and nickel occurred due to dilution of the sample that resulted in increased detection limits above the NDEP-BMRR Profile I reference value.

The kinetic test results for HC-16 are consistent with the NAG static test results which predicted the sample would be non-acid generating (Attachment 1, Table 2). The ABA results predicted that the sample would be acid generating when AGP was calculated from total sulfur, and non-acid generating when AGP was calculated from pyritic sulfur (Attachment 1, Table 1). This is attributed to the widespread presence of sulfate minerals produced as by-products of lithium leaching, which contribute to measured total sulfur and can result in an overestimate of AGP.

Due to the potential to leach metals and radioactive elements from the tailings at concentrations that exceed Profile I-R reference values, the tailings impoundment will be constructed as a zero-discharge facility and covered with waste rock/growth media at closure; therefore, no degradation to groundwater will occur. In addition, because the tailings impoundment will be a dry stack facility, there is limited potential of ponded water on the surface during operations. Based on the results of the leachate testing, rinsing the tailings with fresh water does not seem to have any benefit for long term tailings stabilization.

Regards,
SRK Consulting (U.S.), Inc.

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Attachments:

Attachment 1 Geochemical Characterization Summary Tables

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Attachment 1 Geochemical Characterization Summary Tables

Table 1: Summary of ABA Results from SRK (2020b)

Parameter	Units	Statistic	*Waste Rock Dump and Pit Backfill*							*Ore Feed Stockpile (Operations Only)*				*Gangue Stockpile Pit Backfill*			*Tailings Impoundment*		
			Alluvium	Ash	Basalt	Claystone	Claystone/ Ash	HPZ	Tv	Ore Feed - ROM - Ox	Ore Feed - ROM - Unox	-1" Ore Feed - Ox	-75um Ore Feed - Unox	+1" Gangue - Ox	+100um Gangue - Ox	+75um Gangue - Unox	Clay Tailings	Neutralization Solids	Sulfate Salts
		n	*13*	*32*	*13*	*103*	*31*	*13*	*14*	*2*	*12*	*5*	*12*	*4*	*5*	*12*	*6*	*4*	*1*
Paste pH	s.u.	Min	7.1	6.2	7.43	6.1	6	5.8	6.05	7.4	7.5	7.3	7.4	7.9	7.7	7.9	1.1	6.3	5.8
		Max	9.08	8.7	9.53	8.67	8.58	8.5	8.8	7.6	8	8	8.1	8.4	8.1	8.2	1.6	8.2	5.8
		Mean	8.1	7.6	8.3	7.8	7.7	7.8	8.1	7.5	7.8	7.7	7.9	8.2	7.9	8.1	1.4	7.6	5.8
Total Sulfur	wt%	Min	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.02	1.22	0.01	0.79	0.005	0.005	1.37	3.81	12.9	14.2
		Max	0.18	2.75	1.01	3.68	3.0	2.29	1.97	0.07	1.83	0.30	1.20	0.05	0.08	2.21	6.50	13.9	14.2
		Mean	0.04	0.90	0.13	0.79	0.70	0.37	0.34	0.05	1.49	0.11	0.98	0.03	0.03	1.83	4.72	13.4	14.2
H_2O Soluble Sulfate	wt%	Min	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.02	0.30	0	0.43	0.005	0.005	0.23	3.81	11.4	13.9
		Max	0.18	1.30	0.31	2.7	3.0	0.70	0.53	0.03	1.16	0.29	0.72	0.05	0.08	1.40	6.48	11.6	13.9
		Mean	0.03	0.32	0.06	0.25	0.41	0.19	0.11	0.03	0.72	0.10	0.58	0.02	0.03	0.46	4.72	11.5	13.9
Pyritic Sulfur	wt%	Min	0	0	0	0	0	0	0	0	0.80	0	0.45	0	0	0.85	0	0	0
		Max	0.06	1.93	0.6	2.89	2.3	1.07	1.26	0.06	1.14	0.05	0.75	0.01	0.01	1.65	0.03	0	0
		Mean	0.0	0.6	0.1	0.5	0.5	0.1	0.2	0.0	1.0	0.0	0.6	0.0	0.0	1.3	0.02	--	--
Reactive Sulfur	wt%	Min	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.02	1.21	0	0.93	0.005	0.005	1.13	3.84	11.5	13.9
		Max	0.07	2.28	0.91	4.11	1.84	1.76	1.79	0.09	2.23	0.31	1.44	0.05	0.08	2.73	6.48	11.6	13.9
		Mean	0.0	0.9	0.2	0.8	0.6	0.3	0.4	0.1	1.7	0.1	1.2	0.0	0.0	1.8	4.7	11.5	13.9
AGP	kg $CaCO_3$ eq/t	Min	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.63	37.8	0.15	29.1	0.16	0.16	35.3	120	358	435
		Max	2.19	71.3	28.4	128	71.0	55.0	55.9	2.81	69.7	9.69	45.0	1.56	2.5	85.3	203	362	435
		Mean	0.6	27.4	3.7	22.5	19.6	8.0	9.6	1.7	52.7	3.7	37.2	0.9	1.0	55.0	148	360	435
ANP	kg $CaCO_3$ eq/t	Min	1.8	9.8	19.5	14.8	3.7	1	5.2	5.3	88.7	5.5	16.4	1.4	4.7	151	0.1	0.8	0.3
		Max	24.9	176	216	566	560	227	382	7.2	292	13.7	262	8.5	38.5	326	0.1	47.3	0.3
		Mean	11.8	64.1	101.0	234.2	132.2	32.3	124.0	6.3	175.3	9.6	80.8	4.9	15.3	214.3	0.1	24.6	0.3
NNP	kg $CaCO_3$ eq/t	Min	1.6	-43	19	-16	-17	-23	-11	2.5	40	0.6	-13	0.5	3.5	105	-202	-357	-435
		Max	23	165	216	549	560	226	366	6.6	222	14	227	7.6	36	271	-120	-313	-435
		Mean	11	37	97	212	113	24	114	4.5	123	5.9	44	4.0	14	159	-148	-336	-435
NPR	--	Min	4.0	0.4	5.9	0.5	0.6	0.05	0.8	1.9	1.7	1.1	0.6	1.5	3.8	2.7	0.0005	0.002	0.0007
		Max	122	444	1382	2234	3584	242	1946	12	6.0	91	7.6	28	120	5.9	0.0008	0.13	0.0007
		Mean	35	63	202	151	290	28	347	6.7	3.4	21	2.2	10	34	4.0	0.0007	0.07	0.0007

(green)	Non-Acid Generating (Non-PAG)
(yellow)	Uncertain acid generating characteristics
(pink)	Potentially Acid Generating (PAG)

Table 2: Summary of NAG Results from SRK (2020b)

Parameter	Units	Statistic	*Waste Rock Dump and Pit Backfill*							*Ore Feed Stockpile (Operations Only)*				*Gangue Stockpile Pit Backfill*			*Tailings Impoundment*		
			Alluvium	Ash	Basalt	Claystone	Claystone/ Ash	HPZ	Tv	Ore Feed - ROM - Ox	Ore Feed - ROM - Unox	-1" Ore Feed - Ox	-75um Ore Feed - Unox	+1" Gangue - Ox	+100um Gangue - Ox	+75um Gangue - Unox	Clay Tailings	Neutralization Solids	Sulfate Salts
		n	*10*	*30*	*10*	*93*	*25*	*11*	*12*	*2*	*12*	*5*	*12*	*4*	*5*	*12*	*6*	*4*	*1*
NAG pH	s.u.	Min	6.16	2.47	7.81	2.83	2.97	2.8	6.49	6.47	7.47	5.89	2.85	5.58	6.32	7.6	2.19	5.59	4.96
		Max	9.3	10.08	9.04	10.21	10.35	10.3	9.27	6.48	10.17	8.93	9.76	6.99	9.29	8.43	2.44	8.25	4.96
		Mean	7.0	7.8	8.4	7.9	7.7	7.0	7.7	6.5	8.6	6.9	6.8	6.0	7.7	8.1	2.3	7.0	5.0
Net Acid Generation	kg H_2SO_4 eq/t	Min	0.2	0.02	0.02	0.02	0.02	0.02	0.02	0.2	0.2	0.2	0.2	0.2	0.2	0.2	68.5	0.2	0.2
		Max	0.2	43.5	0.2	17.1	13.01	22	0.2	0.2	0.2	0.2	21	0.2	0.2	0.2	93.8	0.2	0.2
		Mean	0.2	2.8	0.15	0.3	1.0	2.1	0.16	0.2	0.2	0.2	3.5	0.2	0.2	0.2	77.3	0.2	0.2

Non-Acid Generating (Non-PAG)

Potentially Acid Generating (PAG) (Lower Capacity)

Potentially Acid Generating (PAG) (Higher Capacity)

Table 3: Summary of Profile IR Results from SRK (2020b)

Material Type		Sample ID	Total Dissolved Solids	Uranium		Thorium		Gross Alpha Activity			Gross Beta Activity			Radium 226 Activity			Radium 228 Activity			Radium 226/ Radium 228
		Measurement >>>	*mg/L*	*mg/L*	*ug/L*	*mg/L*	*pCi/L*	*pCi/L*	*Error (+/-)*	*LLD*	*pCi/L*	*Error (+/-)*	*LLD*	*pCi/L*	*Error (+/-)*	*LLD*	*pCi/L*	*Error (+/-)*	*LLD*	*pCi/L*
		NDEP Profile I-R Reference Values >>>	***1000***	*--*	***30***	*--*	***15***	***15***	*--*	*--*	***50***	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	***5***
Waste Rock Dump and Pit Backfill	Ash	LNC-135 (351.5-365.6)	62	0.002	2	<0.002	<0.001	6.5	2.5	4.6	7.3	3.1	7.3	0.36	0.11	0.28	0.11	0.59	0.61	0.47
	Basalt	WLC-050 (37-67.1)	82	0.0001	0.1	<0.001	<0.0007	0.51	1.2	5.4	1.3	2.5	5.5	0.07	0.19	0.27	0.71	0.68	0.68	0.78
	Claystone	LNC-141 (122.5-131.2)	664	0.027	27	<0.001	<0.0007	27	6.1	10	13	3.6	12	0.64	0.13	0.23	0.71	0.74	0.74	1.35
	HPZ	WLC-040 (186.9-194)	86	0.0012	1.2	<0.001	<0.0007	0.66	1.5	4	1.7	2.6	6.5	0.16	0.17	0.57	0.27	0.68	0.7	0.43
	Alluvium	LNC-131 (0-41.6)	100	0.0002	0.2	<0.002	<0.001	0.69	1.2	4.8	-0.18	2.7	7.3	0.6	0.23	0.24	0.46	1.8	1.9	1.06
	Tv	LNC-096 (112.5-132.2)	<20	<0.0002	<0.2	<0.002	<0.001	0.46	0.85	4.8	0.37	2.4	6.7	0.55	0.25	0.35	-1.6	2.6	2.8	-1.05
Ore Feed Stockpile (Operations Only)	-1" Ore Feed - Ox	9-SWECO-1.0-E22B-348 (1 of 2)	1580	<0.0005	<0.5	<0.005	<0.003	0.01	1.6	9.8	7.8	3.2	12	0.71	0.19	0.26	-0.25	1	1.1	0.46
	-1" Ore Feed - Ox	14-UNSIZE-C11B-68	910	<0.005	<5	<0.001	<0.0007	2.6	2.5	9.8	15	3.8	7.9	0.62	0.18	0.26	0.48	0.99	1	1.10
Gangue Stockpile Pit Backfill	+1" Gangue - Ox	9-SWECO+1.0-E22B-349 (1 of 2)	960	<0.0005	<0.5	<0.005	<0.003	2	1.7	4.6	8.4	2.9	6.5	0.26	0.23	0.35	0.94	2.4	2.5	1.20
	+100um Gangue - Ox	14-PPGANGUE-D02B-79	250	<0.005	<5	0.003	0.002	4.9	3.4	12	52	6.4	12	1.3	0.22	0.22	0.37	1.8	1.9	1.67
	+100um Gangue - Ox	9-CYCUFCOMP-E23B-356	1150	0.0021	<2.1	<0.005	<0.003	3.2	2.4	8.9	36	4.4	7.1	1.5	0.29	0.43	2.5	3.4	3.4	4.00
	+75um Gangue - Unox	SAMPLE GROUP #2 (+) 75UM	820	0.0945	94.5	<0.001	<0.0007	84	11	8.7	35	4.4	5.4	1.8	0.16	0.05	4.3	4.2	11	6.1
	+75um Gangue - Unox	SAMPLE GROUP #4 (+) 75UM	972	0.0522	52.2	<0.001	<0.0007	43	8.2	8.3	28	4.7	10	0.7	0.11	0.07	0.3	3.7	9.7	1.00
	+75um Gangue - Unox	SAMPLE GROUP #11 (+) 75UM	928	0.0133	13.3	<0.001	<0.0007	12	4.4	15	8.8	3.2	12	0.55	0.11	0.09	0.4	8.1	19	0.95
	+75um Gangue - Unox	Sample Group #6 (+) 75 UM	520	0.0137	13.7	<0.001	<0.0007	11	4	7.6	8.5	3	5.3	1	0.25	0.33	1.9	2.4	5.9	2.9
Tailings Impoundment	Neutralization solids	4-NFILTCAKE-E09B-308	37400	0.003	3	<0.02	<0.01	-44	58	230	1700	170	230	0.64	0.3	0.3	0.63	0.67	0.67	1.27
	Clay tailings	4-LFILTCAKE-E05B-314	74700	0.724	724	0.39	0.26	670	340	890	3800	450	580	1.6	0.35	0.53	6.6	0.79	0.55	8.2
	Sulfate Salts	4-NEUTSALTS-E24B-416	378000	<0.02	<20	<0.2	<0.13	0.37	12	60	18000	1000	1100	0.76	0.25	0.66	0.78	1.4	1.5	1.54

Denotes concentration is greater than NDEP Profile I-R reference value

Table 4: Summary of MWMP Results from SRK (2020b)

Parameter	Units	NDEP Profile I Reference Value	NDEP Profile III Reference Value	Statistic	*Waste Rock Dump and Pit Backfill*							*Ore Feed Stockpile (Operations Only)*		*Gangue Stockpile Pit Backfill*			*Tailings Impoundment*		
					Alluvium	Ash	Basalt	Claystone	Claystone/ Ash	HPZ	Tv	Ore Feed - ROM - Ox	-1" Ore Feed - Ox	+1" Gangue - Ox	+100um Gangue - Ox	+75um Gangue - Unox	Clay Tailings	Neutralization Solids	Sulfate Salts
				n	*7*	*11*	*6*	*20*	*11*	*6*	*7*	*2*	*3*	*2*	*5*	*3*	*3*	*2*	*1*
Alkalinity, $CaCO_3$	mg/L	--	--	Min	6.0	-390	12	4.8	11	-230	8.3	20	28	10	28	92	10	10	12
				Max	80	79	110	200	120	38	75	66	100	20	97	160	10	41	12
				Mean	29	-8.6	33	80	52	-18	28	43	53	15	56	121	10	26	12
Aluminum	mg/L	0.2	4.47	Min	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.05	0.05	0.19	0.1	0.05	1050	1.0	10
				Max	3.8	7.1	0.4	4.9	1.8	3.8	0.1	0.1	0.5	0.7	5.0	0.1	5130	10	10
				Mean	0.9	1.3	0.1	0.5	0.3	0.7	0.1	0.1	0.2	0.4	1.8	0.1	2623	5.5	10
Antimony	mg/L	0.006	0.29	Min	0.0008	0.001	0.001	0.003	0.002	0.0009	0.0008	0.003	0.007	0.002	0.009	0.05	0.41	0.014	0.08
				Max	0.0028	0.073	0.031	0.69	0.094	0.0074	0.01	0.011	0.014	0.003	0.026	0.097	0.49	0.02	0.08
				Mean	0.002	0.02	0.007	0.07	0.028	0.003	0.005	0.007	0.009	0.003	0.017	0.07	0.5	0.02	0.08
Arsenic	mg/L	0.01	0.2	Min	0.0056	0.005	0.0063	0.005	0.0025	0.0086	0.0038	0.015	0.096	0.026	0.084	0.035	17	0.01	0.04
				Max	0.042	0.073	0.047	0.45	0.054	0.37	0.14	0.028	0.13	0.026	0.33	0.069	31	0.011	0.04
				Mean	0.02	0.03	0.02	0.08	0.02	0.10	0.03	0.02	0.11	0.03	0.2	0.05	25	0.01	0.04
Barium	mg/L	2	23.1	Min	0.011	0.01	0.01	0.015	0.02	0.007	0.01	0.06	0.06	0.02	0.02	0.03	0.5	0.2	1
				Max	0.26	0.1	0.052	0.067	0.25	0.078	0.02	0.16	0.17	0.1	0.35	0.071	1	0.4	1
				Mean	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.2	0.0	0.7	0.3	1.0
Beryllium	mg/L	0.004	2.83	Min	0.0002	0.0002	0.00008	0.00008	0.0008	0.00008	0.0002	0.00008	0.0004	0.0006	0.0002	0.00008	0.67	0.002	0.02
				Max	0.001	0.016	0.001	0.0084	0.003	0.0061	0.001	0.001	0.001	0.001	0.0055	0.00008	1.3	0.042	0.02
				Mean	0.0009	0.0027	0.0008	0.0018	0.0016	0.0017	0.0009	0.0005	0.0008	0.0008	0.002	0.00008	1.0	0.02	0.02
Bismuth	mg/L	--	--	Min	0.08	0.08	0.04	0.04	0.04	0.04	0.08	0.08	0.08	0.08	0.08	0.04	2	0.8	8
				Max	0.1	0.5	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.08	8	2	8
				Mean	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	4.7	1.4	8.0
Boron	mg/L	--	5	Min	0.06	0.1	0.04	0.1	0.11	0.06	0.04	0.04	0.25	0.15	0.14	0.26	29	19.5	69
				Max	0.39	0.5	0.14	0.94	0.57	0.14	0.25	0.23	0.37	0.2	0.58	0.81	87	109	69
				Mean	0.1	0.2	0.1	0.4	0.3	0.1	0.1	0.1	0.3	0.2	0.3	0.5	50.3	64.3	69.0
Cadmium	mg/L	0.005	0.05	Min	0.0002	0.0002	0.00005	0.00051	0.001	0.00005	0.0001	0.00005	0.0001	0.0003	0.0001	0.00101	0.179	0.001	0.01
				Max	0.001	0.031	0.001	0.009	0.002	0.0051	0.0078	0.001	0.001	0.001	0.0019	0.00129	0.376	0.011	0.01
				Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Calcium	mg/L	--	--	Min	0.95	4.1	1.7	8.3	2.4	0.86	1.6	58.9	17.5	5.3	5.7	141	489	462	140
				Max	54	370	140	350	270	12	98	130	120	33	19	162	620	521	140
				Mean	13.6	93.9	26.4	116.1	109.4	6.3	30.6	94.5	65.8	19.2	11.4	153.3	543.3	491.5	140.0
Chloride	mg/L	400	--	Min	1.4	1	1	2.4	2.4	1	0.7	214	44	12.9	7.2	22	10	6.9	50
				Max	220	25	13	340	62	8.3	16	310	240	31	10.5	37.9	50	50	50
				Mean	47.2	7.6	3.9	65.9	17.9	3.6	5.8	262.0	138.7	22.0	8.8	31.0	30.0	28.5	50.0
Chromium	mg/L	0.1	1	Min	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.01	1.6	0.2	2
				Max	0.02	0.025	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	2	0.5	2
				Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.4	2.0
Cobalt	mg/L	--	--	Min	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.5	0.2	2
				Max	0.02	0.32	0.022	0.12	0.036	0.021	0.02	0.02	0.02	0.02	0.02	0.02	2	0.5	2
				Mean	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.4	2.0
Copper	mg/L	1	0.5	Min	0.02	0.02	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.01	2	0.2	2
				Max	0.05	0.2	0.05	0.05	0.08	0.05	0.05	0.04	0.04	0.04	0.04	0.02	2.2	0.5	2
				Mean	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.4	2.0

Yellow	Denotes concentration is greater than NDEP Profile I reference value
Orange	Denotes concentration is greater than NDEP Profile III reference value
Pink	Denotes concentration is greater than NDEP Profile I and Profile III reference values

Table 5: Summary of MWMP Results from SRK (2020b)

Parameter	Units	NDEP Profile I Reference Value	NDEP Profile III Reference Value	Statistic	*Waste Rock Dump and Pit Backfill*							*Ore Feed Stockpile (Operations Only)*		*Gangue Stockpile Pit Backfill*			*Tailings Impoundment*		
					Alluvium	Ash	Basalt	Claystone	Claystone/ Ash	HPZ	Tv	Ore Feed - ROM - Ox	-1" Ore Feed - Ox	+1" Gangue - Ox	+100um Gangue - Ox	+75um Gangue - Unox	Clay Tailings	Neutralization Solids	Sulfate Salts
				n	*7*	*11*	*6*	*20*	*11*	*6*	*7*	*2*	*3*	*2*	*5*	*3*	*3*	*2*	*1*
Fluoride	mg/L	4	2	Min	0.11	0.45	0.1	0.38	0.9	0.1	0.1	2.7	2.7	1.2	2.5	4	2000	110	480
				Max	2.1	9.1	1.1	19	9.1	1.2	1.5	3.7	7	2	13	10	56000	178	480
				Mean	0.8	2.9	0.4	5.3	4.4	0.6	0.8	3.2	4.5	1.6	7.3	6.0	20000.0	144.0	480.0
Gallium	mg/L	--	--	Min	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	5	2	20
				Max	0.2	0.5	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	20	5	20
				Mean	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	11.7	3.5	20.0
Iron	mg/L	0.6	--	Min	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.06	0.1	0.23	0.13	0.03	2350	0.6	6
				Max	2.77	300	1.2	40	58	74	4.8	0.1	1.16	0.95	10	0.06	3370	2	6
				Mean	0.6	49.4	0.3	5.4	7.5	12.4	0.9	0.1	0.5	0.6	3.6	0.0	2823.3	1.3	6.0
Lead	mg/L	0.015	0.1	Min	0.0025	0.0009	0.001	0.0004	0.0002	0.0005	0.0019	0.0003	0.0005	0.0014	0.0002	0.0001	0.147	0.002	0.05
				Max	0.0026	0.025	0.0025	0.0025	0.0025	0.023	0.0025	0.0025	0.0025	0.0025	0.0078	0.0002	0.36	0.013	0.05
				Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1
Lithium	mg/L	--	40.3	Min	0.07	0.05	0.029	0.1	0.1	0.03	0.02	0.2	0.35	0.63	0.3	0.056	412	336	4,030
				Max	0.1	3.8	0.66	2.4	1.5	0.1	0.12	0.45	0.98	1	4.91	0.462	1120	1480	4,030
				Mean	0.1	0.7	0.2	0.6	0.5	0.1	0.1	0.3	0.6	0.8	2.0	0.2	677.0	908.0	4030.0
Magnesium	mg/L	150	--	Min	0.5	1.5	0.5	1.2	4.4	0.5	0.4	14.2	13.7	8.9	5.8	35.1	6640	4290	62,600
				Max	16	180	67	370	230	3	26	33	26	9.8	65.2	57.4	10300	13600	62,600
				Mean	5.6	42.5	11.9	78.3	77.5	2.1	8.7	23.6	18.4	9.4	23.5	48.6	8286.7	8945.0	62600.0
Manganese	mg/L	0.1	377	Min	0.005	0.005	0.005	0.005	0.01	0.005	0.005	0.01	0.01	0.01	0.0054	0.13	59.7	10	212
				Max	0.037	18	0.33	7	3.57	0.33	5.5	0.02	0.02	0.02	0.14	0.64	89	81.9	212
				Mean	0.0	4.0	0.1	1.1	1.1	0.1	1.0	0.0	0.0	0.0	0.1	0.3	70.9	46.0	212.0
Mercury	mg/L	0.002	0.01	Min	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.00025	0.0002	0.0002	0.018	0.0003	0.0008
				Max	0.00025	0.0079	0.0004	0.0016	0.01	0.0018	0.00025	0.00025	0.0013	0.0005	0.0022	0.0002	0.065	0.0004	0.0008
				Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Molybdenum	mg/L	--	0.6	Min	0.01	0.02	0.01	0.01	0.02	0.02	0.02	0.028	0.04	0.022	0.04	7.8	2	0.5	4
				Max	0.05	11	2.7	17	17	0.062	0.25	0.04	0.22	0.04	0.51	9.37	10	1	4
				Mean	0.0	1.9	0.5	4.9	4.3	0.0	0.1	0.0	0.1	0.0	0.2	8.8	5.0	0.8	4.0
Nickel	mg/L	--	171	Min	0.01	0.01	0.008	0.008	0.01	0.008	0.01	0.02	0.02	0.02	0.02	0.008	0.4	0.2	2
				Max	0.03	0.19	0.03	0.092	0.082	0.034	0.03	0.03	0.03	0.03	0.03	0.02	3	0.4	2
				Mean	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.3	2.0
Nitrogen, Total as N	mg/L	10	100	Min	0.02	0.02	0.02	0.02	0.07	0.02	0.02	0.45	0.05	0.02	0.02	0.02	0.06	0.09	0.23
				Max	1.15	2.5	0.61	2.5	2.5	0.61	1.4	1.9	2.5	0.61	0.61	0.02	0.08	0.15	0.23
				Mean	0.7	0.9	0.4	1.2	1.0	0.4	0.6	1.2	1.0	0.3	0.2	0.0	0.1	0.1	0.2
pH	s.u.	6.5 - 8.5	6.5 - 8.5	Min	6.61	4.38	7	5.12	6.03	3.18	6.47	7.5	7.3	7	7.3	8	0.8	5.8	5.9
				Max	8.43	8.09	8	8.1	8.09	7.8	7.95	7.95	7.97	7.37	8.2	8.2	1.6	7.4	5.9
				Mean	7.4	6.8	7.4	7.4	7.2	6.6	7.3	7.7	7.7	7.2	7.8	8.1	1.2	6.6	5.9
Phosphorus	mg/L	--	--	Min	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.5	0.1	20	2	20
				Max	0.73	2.5	0.5	0.58	1	0.5	0.5	0.5	0.5	0.5	0.7	0.2	29	5	20
				Mean	0.5	0.7	0.4	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.6	0.1	23.0	3.5	20.0
Potassium	mg/L	--	--	Min	0.5	1	0.5	1.3	2	0.5	0.4	8	6.1	5.6	3	4.1	2940	3340	18,000
				Max	7.9	12	9.9	19	14	2.1	2.8	11	15	6	33.4	16.3	10200	6490	18,000
				Mean	2.5	4.6	2.5	7.5	7.3	1.6	1.3	9.5	10.0	5.8	13.9	8.7	5836.7	4915.0	18000.0

Denotes concentration is greater than NDEP Profile I reference value

Denotes concentration is greater than NDEP Profile III reference value

Denotes concentration is greater than NDEP Profile I and Profile III reference values

Table 6: Summary of MWMP Results from SRK (2020b)

Parameter	Units	NDEP Profile I Reference Value	NDEP Profile III Reference Value	Statistic	*Waste Rock Dump and Pit Backfill*							*Ore Feed Stockpile (Operations Only)*		*Gangue Stockpile Pit Backfill*			*Tailings Impoundment*		
					Alluvium	Ash	Basalt	Claystone	Claystone/ Ash	HPZ	Tv	Ore Feed - ROM - Ox	-1" Ore Feed - Ox	+1" Gangue - Ox	+100um Gangue - Ox	+75um Gangue - Unox	Clay Tailings	Neutralization Solids	Sulfate Salts
				n	*7*	*11*	*6*	*20*	*11*	*6*	*7*	*2*	*3*	*2*	*5*	*3*	*3*	*2*	*1*
Scandium	mg/L	--	--	Min	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	5	2	20
				Max	0.2	0.5	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	20	5	20
				Mean	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	11.7	3.5	20.0
Selenium	mg/L	0.05	0.05	Min	0.0002	0.0002	0.0002	0.005	0.0033	0.0002	0.0002	0.0022	0.0007	0.0005	0.0003	0.0016	0.01	0.003	0.02
				Max	0.0073	0.015	0.045	0.03	0.026	0.005	0.01	0.0096	0.01	0.005	0.005	0.0021	0.02	0.005	0.02
				Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Silver	mg/L	0.1	--	Min	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.01	0.5	0.2	2
				Max	0.02	0.05	0.05	0.05	0.05	0.05	0.02	0.02	0.02	0.02	0.02	0.02	2	0.5	2
				Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.4	2.0
Sodium	mg/L	--	2000	Min	3.5	1.5	2	2.8	8.9	1.1	0.5	57.4	45.8	5.9	15.9	10.5	180	54	230
				Max	81	42	77	270	120	22	40	100	110	24	45.2	27	2380	270	230
				Mean	42.6	17.7	16.7	77.6	51.2	10.4	11.4	78.7	67.7	15.0	27.6	16.3	1073.3	162.0	230.0
Strontium	mg/L	--	1127	Min	0.02	0.05	0.06	0.1	0.1	0.042	0.02	0.32	0.19	0.04	0.04	1	2.2	0.4	2
				Max	0.37	2.5	1.2	4.5	7.3	0.1	0.48	0.7	0.72	0.19	0.16	1.45	5	2.2	2
				Mean	0.1	0.8	0.3	1.5	2.1	0.1	0.2	0.5	0.4	0.1	0.1	1.2	3.2	1.3	2.0
Sulfate	mg/L	500	--	Min	1	3.6	1.9	17	6.2	1	1	23	69	5	16	425	49400	26200	255,000
				Max	220	2400	660	2500	1300	230	310	180	210	100	33	465	103000	76700	255,000
				Mean	46.0	481.5	111.9	617.3	547.4	50.6	100.7	101.5	123.0	52.5	24.9	442.0	73767	51450	255000
Thallium	mg/L	0.002	0.032	Min	0.0002	0.0002	0.0001	0.0003	0.0003	0.0001	0.0002	0.0003	0.0002	0.0005	0.0003	0.0002	0.17	0.056	0.7
				Max	0.001	0.005	0.001	0.0015	0.0021	0.019	0.005	0.001	0.001	0.001	0.001	0.0002	0.28	0.19	0.7
				Mean	0.0009	0.0016	0.0009	0.0010	0.0011	0.0039	0.0015	0.0007	0.0006	0.0008	0.0007	0.0002	0.2	0.1	0.7
Tin	mg/L	--	29.2	Min	0.08	0.08	0.04	0.04	0.04	0.04	0.08	0.08	0.08	0.08	0.08	0.04	2	0.8	8
				Max	0.2	0.5	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.08	8	2	8
				Mean	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	4.7	1.4	8.0
Titanium	mg/L	--	--	Min	0.09	0.01	0.018	0.006	0.008	0.005	0.01	0.01	0.02	0.08	0.02	0.008	85.7	0.1	1
				Max	0.1	0.5	0.1	0.1	0.27	0.1	0.1	0.1	0.22	0.1	0.81	0.01	298	0.3	1
				Mean	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.0	166.9	0.2	1.0
TDS	mg/L	1000	7000	Min	20	62	10	54	180	10	10	552	284	260	150	820	74700	37400	378,000
				Max	540	3500	1200	4000	2300	350	500	980	1580	960	1150	972	137000	95200	378,000
				Mean	216.3	779.5	230.8	1174.2	945.1	118.8	210.9	766.0	924.7	610.0	452.0	906.7	102633	66300	378000
Uranium	mg/L	0.03	6.995	Min	0.0002	0.002	0.0001	0.005	0.0004	0.0012	0.0002	0.0002	0.0002	0.0005	0.0013	0.0133	0.37	0.003	0.02
				Max	0.01	0.15	0.13	0.069	0.024	0.011	0.01	0.005	0.005	0.005	0.005	0.0945	0.724	0.005	0.02
				Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	0.0	0.0
Vanadium	mg/L	--	0.1	Min	0.01	0.01	0.01	0.005	0.005	0.005	0.01	0.01	0.01	0.01	0.01	0.013	7.2	0.1	1
				Max	0.1	0.088	0.068	0.4	0.081	0.01	0.045	0.01	0.05	0.01	0.09	0.02	19	0.3	1
				Mean	0.040	0.028	0.025	0.079	0.026	0.009	0.018	0.01	0.03	0.01	0.049	0.018	11.6	0.2	1.0
Zinc	mg/L	5	25	Min	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.01	8.3	0.2	2
				Max	0.03	16	0.042	3.5	0.38	2	0.55	0.02	0.02	0.02	0.09	0.04	16	1.4	2
				Mean	0.02	2.2	0.02	0.31	0.09	0.35	0.13	0.02	0.02	0.02	0.04	0.02	11	0.80	2.00

Denotes concentration is greater than NDEP Profile I reference value

Denotes concentration is greater than NDEP Profile III reference value

Denotes concentration is greater than NDEP Profile I and Profile III reference values

Sludge depth: 2 ft

SRCE Structure	Diameter (ft)	Sludge (cf)
Mine Facilities Fuel Tank 1 (20' dia)	20	628.3
Mine Facilities Fuel Tank 2 (10' dia)	10	157.1
Mine Facilities Fuel Tank 3 (8' dia)	8	100.5
Attrition Scrubber Water Tank (48' dia)	48	3,619.1
Attrition Tank 2 (15' dia)	15	353.4
Area 2B - Acid Leach Tank 1 (22' dia) Acid leach tank	22	760.3
Area 2B - Acid Leach Tank 2 (22' dia) Acid leach tank	22	760.3
Area 2B - Acid Leach Tank 3 (22' dia) Acid leach tank	22	760.3
Area 2B - Acid Leach Tank 4 (22' dia) Acid leach tank	22	760.3
Area 2B - Acid Leach Tank 5 (22' dia) Acid leach tank	22	760.3
Area 2B - Acid Leach Tank 6 (22' dia) Acid leach tank	22	760.3
Area 2B - Acid Leach Tank 7 (11' dia) discharge tank	11	190.1
Area 2B - Acid Leach Tank 8 (11' dia) Condensate Tank	11	190.1
Area 2B - Acid Leach Tank 9 (11' dia) Condensate Tank	11	190.1
Area 3 - Acid Leach Sulf Acid Storage Tank (30' dia)	30	1,413.7
Area 4 - Filter Tank 1 (16' dia)	16	402.1
Area 4 - Filter Tank 2 (16' dia)	16	402.1
Area 4 - Filter Tank 3 (16' dia)	16	402.1
Area 4 - Filter Tank 4 (6' dia) Condensate Tank	6	56.5
Area 4 - Filter Tank 5 (6' dia) Condensate Tank	6	56.5
Area 4 - Filter Tank 6 (15' dia) Repulp Tank	15	353.4
Area 5B - Filter Tank Farm Tank 1 (32' dia)	32	1,608.5
Area 5B - Filter Tank Farm Tank 2 (32' dia)	32	1,608.5
Area 5B - Filter Tank Farm Tank 3 (27' dia)	27	1,145.1
Area 5B - Filter Tank Farm Tank 4 (27' dia)	27	1,145.1
Area 5B - Filter Tank Farm Tank 5 (45' dia)	45	3,180.9
Area 5B - Filter Tank Farm Tank 6 (45' dia)	45	3,180.9
Area 5B - Filter Tank Farm Tank 7 (20' dia)	20	628.3
Area 5B - Filter Tank Farm Tank 8 (32' dia)	32	1,608.5
Area 8 - Flocculant (Neut & Mag Precip) Tank 1 (10' dia)	10	157.1
Area 8 - Flocculant (Neut & Mag Precip) Tank 2 (10' dia)	10	157.1
Area 8 - Flocculant (Neut & Mag Precip) Tank 3 (10' dia)	10	157.1
Area 8 - Flocculant (Neut & Mag Precip) Tank 4 (10' dia)	10	157.1
Area 9 - Ion Exchange Tank 1 (10' dia)	10	157.1
Area 9 - Ion Exchange Tank 2 (10' dia)	10	157.1
Area 9 - Ion Exchange Tank 3 (10' dia)	10	157.1
Area 9 - Ion Exchange Tank 4 (2.5' dia)	2.5	9.8
Area 9 - Ion Exchange Tank 5 (2.5' dia)	2.5	9.8
Area 9 - Ion Exchange Tank 6 (2.5' dia)	2.5	9.8
Area 9 - Ion Exchange Tank 7 (2.5' dia)	2.5	9.8
Area 10 - HCL Acid Tank 1 (10' dia)	10	157.1

SRCE Structure	Diameter (ft)	Sludge (cf)
Area 11 - Soda Ash Tank 1 (10' dia)	10	157.1
Area 11 - Soda Ash Tank 2 (6' dia)	6	56.5
Area 12 - North Tank Farm Tank 1 (37' dia)	37	2,150.4
Area 12 - North Tank Farm Tank 2 (37' dia)	37	2,150.4
Area 12 - North Tank Farm Tank 3 (37' dia)	37	2,150.4
Area 12 - North Tank Farm Tank 4 (52' dia)	52	4,247.4
Area 12 - North Tank Farm Tank 5 (12' dia)	12	226.2
Area 12 - North Tank Farm Tank 6 (10' dia)	10	157.1
Area 12 - North Tank Farm Tank 7 (16' dia)	16	402.1
Area 12 - North Tank Farm Tank 8 (16' dia)	16	402.1
Area 12 - North Tank Farm Tank 9 (16' dia)	16	402.1
Area 12 - North Tank Farm Tank 10 (42' dia)	42	2,770.9
Area 12 - North Tank Farm Tank 11 (10' dia)	10	157.1
Area 12 - North Tank Farm Tank 12 (10' dia)	10	157.1
Area 12 - North Tank Farm Tank 13 (10' dia)	10	157.1
Area 12 - North Tank Farm Tank 14 (10' dia)	10	157.1
Area 12 - North Tank Farm Tank 15 (15' dia)	15	353.4
Area 12 - North Tank Farm Tank 16 (15' dia)	15	353.4
Area 12 - North Tank Farm Tank 17 (10' dia)	10	157.1
Area 12 - North Tank Farm Tank 18 (10' dia)	10	157.1
Area 12 - North Tank Farm Tank 19 (10' dia)	10	157.1
Area 12 - North Tank Farm Tank 20 (7' dia)	7	77.0
Area 12 - North Tank Farm Tank 21 (7' dia)	7	77.0
Area 12 - North Tank Farm Tank 22 (7' dia)	7	77.0
Area 12 - North Tank Farm Tank 23 (7' dia)	7	77.0
Area 12 - North Tank Farm Tank 24 (30' dia)	30	1,413.7
Area 12 - North Tank Farm Tank 25 (30' dia)	30	1,413.7
Area 12 - North Tank Farm Tank 26 (30' dia)	30	1,413.7
Area 12 - North Tank Farm Tank 27 (24' dia)	24	904.8
Area 12 - North Tank Farm Tank 28 (15' dia)	15	353.4
Area 12 - North Tank Farm Tank 29 (15' dia)	15	353.4
Area 12 - North Tank Farm Tank 30 (24' dia)	24	904.8
Area 12 - North Tank Farm Tank 31 (6' dia)	6	56.5
Area 12 - North Tank Farm Tank 32 (6' dia)	6	56.5
Area 13A - Lithium Hydroxide Dryer Tank 1 (7' dia)	7	77.0
Area 13B - Lithium Hydroxide Crystalization Tank 1 (17' dia)	17	454.0
Area 13B - Lithium Hydroxide Crystalization Tank 2 (17' dia)	17	454.0
Area 13B - Lithium Hydroxide Crystalization Tank 3 (14' dia)	14	307.9
Area 13B - Lithium Hydroxide Crystalization Tank 4 (14' dia)	14	307.9
Area 13B - Lithium Hydroxide Crystalization Tank 5 (14' dia)	14	307.9
Area 13B - Lithium Hydroxide Crystalization Tank 6 (17' dia)	17	454.0
Area 13B - Lithium Hydroxide Crystalization Tank 7 (17' dia)	17	454.0
Area 13B - Lithium Hydroxide Crystalization Tank 8 (7' dia)	7	77.0
Area 13B - Lithium Hydroxide Crystalization Tank 9 (5.5' dia)	5.5	47.5
Area 13B - Lithium Hydroxide Crystalization Tank 10 (17' dia)	17	454.0

SRCE Structure	Diameter (ft)	Sludge (cf)
Area 13B - Lithium Hydroxide Crystalization Tank 11 (9' dia)	9	127.2
Area 13B - Lithium Hydroxide Crystalization Tank 12 (10' dia)	10	157.1
Area 13B - Lithium Hydroxide Crystalization Tank 13 (10' dia)	10	157.1
Area 13B - Lithium Hydroxide Crystalization Tank 14 (7' dia)	7	77.0
Area 13B - Lithium Hydroxide Crystalization Tank 15 (22' dia)	22	760.3
Area 13B - Lithium Hydroxide Crystalization Tank 16 (14' dia)	14	307.9
Area 13B - Lithium Hydroxide Crystalization Tank 17 (14' dia)	14	307.9
Area 13B - Lithium Hydroxide Crystalization Tank 18 (11' dia)	11	190.1
Area 13B - Lithium Hydroxide Crystalization Tank 19 (5.5' dia)	5.5	47.5
Area 13B - Lithium Hydroxide Crystalization Tank 20 (7' dia)	7	77.0
Area 14 - Casutic Tank 1 (28' dia)	28	1,231.5
Area 15B - Lithium Carbonate Crystallization Tank 1 (6' dia)	6	56.5
Area 15B - Lithium Carbonate Crystallization Tank 2 (6' dia)	6	56.5
Area 15B - Lithium Carbonate Crystallization Tank 3 (6' dia)	6	56.5
Area 16 - Magnesium Sulfate Feed Filters Tank 1 (8' dia)	8	100.5
Area 16 - Magnesium Sulfate Feed Filters Tank 2 (8' dia)	8	100.5
Area 16 - Magnesium Sulfate Feed Filters Tank 3 (8' dia)	8	100.5
Area 16 - Magnesium Sulfate Feed Filters Tank 4 (8' dia)	8	100.5
Area 17 - Magnesium Sulfate Crystallization Tank 1 (6' dia)	6	56.5
Area 17 - Magnesium Sulfate Crystallization Tank 2 (6' dia)	6	56.5
Area 17 - Magnesium Sulfate Crystallization Tank 3 (6' dia)	6	56.5
Area 18 - ZLD (Sod/Potass Sulf Crystallization) Tank 1 (7' dia)	7	77.0
Area 18 - ZLD (Sod/Potass Sulf Crystallization) Tank 2 (7' dia)	7	77.0
Area 18 - ZLD (Sod/Potass Sulf Crystallization) Tank 3 (6' dia)	6	56.5
Area 18 - ZLD (Sod/Potass Sulf Crystallization) Tank 4 (6' dia)	6	56.5
Area 18 - ZLD (Sod/Potass Sulf Crystallization) Tank 5 (6' dia)	6	56.5
Area 19 - Water Treatment Building Tank 1 (6' dia)	6	56.5
Area 19 - Water Treatment Building Tank 2 (6' dia)	6	56.5
Area 20 - South Tank Farm Tank 1 (13' dia) Na/K sulfate salt feed tank and pumps	13	265.5
Area 20 - South Tank Farm Tank 2 (35' dia) Mag. sulf. feed tanks	35	1,924.2
Area 20 - South Tank Farm Tank 3 (35' dia) Mag. sulf. feed tanks	35	1,924.2
Area 20 - South Tank Farm Tank 4 (35' dia) Mag. sulf. feed tanks	35	1,924.2
Area 20 - South Tank Farm Tank 5 (35' dia) Mag. sulf. feed tanks	35	1,924.2
Area 20 - South Tank Farm Tank 6 (13' dia) Lithium Carbonate Crystallizer Feed Tanks	13	265.5
Area 20 - South Tank Farm Tank 7 (13' dia) Lithium Carbonate Crystallizer Feed Tanks	13	265.5
Area 20 - South Tank Farm Tank 8 (13' dia) Lithium Carbonate Crystallizer Feed Tanks	13	265.5
Area 20 - South Tank Farm Tank 9 (24' dia) Contact Water Collection Tanks (South)	24	904.8
Area 20 - South Tank Farm Tank 10 (24' dia) Contact Water Collection Tanks (South)	24	904.8
Area 21 - HRS Acid Area & Washdown Area Tank 1 (27' dia)	27	1,145.1

SRCE Structure	Diameter (ft)	Sludge (cf)
Area 21 - HRS Acid Area & Washdown Area Tank 2 (5' dia)	5	39.3
Area 22 - Acid Plant SolvR Area Tank 1 (4' dia)	4	25.1
Area 22 - Acid Plant SolvR Area Tank 2 (13' dia)	13	265.5
Area 22 - Acid Plant SolvR Area Tank 3 (24' dia)	24	904.8
Area 22 - Acid Plant SolvR Area Tank 4 (30' dia)	30	1,413.7
Area 22 - Acid Plant SolvR Area Tank 5 (22' dia)	22	760.3
Area 23 - Acid Plant Sulfuric Acid Storage Tank 1 (75' dia)	75	8,835.7
Area 23 - Acid Plant Sulfuric Acid Storage Tank 1 (75' dia)	75	8,835.7
Area A - Classification Thickener Tank 1 (66' dia)	66	6,842.4
Area A - Classification Tank 2 (30' dia)	30	1,413.7
Area A - Classification Tank 3 (40' dia)	40	2,513.3
Area A - Classification Tank 4 (15' dia)	15	353.4
Area A - Classification Tank 5 (10' dia)	10	157.1
Area A - Classification Tank 6 (10' dia)	10	157.1
Area A - Classification Tank 7 (10' dia)	10	157.1
Area A - Classification Tank 8 (10' dia)	10	157.1
Area F - Process Raw Water Tank		0.0
Area G - Process Propane Tank		0.0
Radio Tower #2 Water Storage Tank #1		0.0
Radio Tower #2 Water Storage Tank #2		0.0

TOTAL SLUDGE VOLUME:	**105,294.4**	**CF**
	3,899.8	**CY**
	787,602.1	**GAL**

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TECHNICAL MEMORANDUM

FINAL: January 26, 2021

REVISED: September 21, 2021

TO: Ted Grandy, Catherine Clark
Lithium Nevada Corporation

FROM: Tyler Cluff
Email: tcluff@piteau.com

RE: **Clay Tailing Filter Stack (CTFS) Unsaturated Flow Modeling Revision 1**

INTRODUCTION

This technical memorandum has been prepared at the request of Lithium Nevada Corporation (LNC) to estimate infiltration through the Clay Tailing Filter Stack Facility (CTFS) upon permanent closure. Seepage through the CTFS will be controlled by unsaturated flow governing equations because i) clay tailings will be mechanically and naturally dried to near optimal moisture content prior to stacking, and ii) a store and release cover will be placed upon closure to eliminate / reduce infiltration to the facility. The objectives of this analysis are:

- Estimate long term infiltration through the proposed store and release cover;
- Estimate draindown from residual pore water present in clay tailings for water management.

This analysis includes a sensitivity designed to consider sectors of the CTFS which may be exposed to greater precipitation and/or snow cover (i.e. north facing slopes) and addresses the effect of non-structural material on the hydraulic conductivity of the tailings.

The CTFS will be constructed on a single lined synthetic liner as proposed in the engineering design report (Newfields, 2020). The engineering design provides that the CTFS will be fully lined with an HDPE geomembrane, with two feet of material as overliner and 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.

The CTFS is designed to span an area of ~386 acres and have an average thickness of 190 ft (~58 m). The CTFS surface will be graded to match natural topography (~3% - 6%) which drains towards the southeast, encouraging runoff and reducing the presence of ponds forming on the surface. The clay tailings will be comprised of a silty sand to a silty clay material and will meet the criteria for a clay cap. Measured hydraulic conductivity range from 4.8 x 10^{-6} cm/s to 1.2 x 10^{-7} cm/s (DBS&A, 2019, Newfields, 2019). Therefore, the clay tailings themselves will function as a 190 ft thick low permeability cap which will impede infiltration and enhance the functionality of the store and release cover. Compaction drying, and stacking of clay tailings in the CTFS is anticipated to further reduce the hydraulic conductivity of materials. Due to the thickness and stacking of clay tailings, the material itself is not expected to develop desiccation cracks that might penetrate the full 190 ft profile. Composite salt/clay tailings materials were tested to have even lower hydraulic conductivity values than unmixed clay tailings (1.2 x 10^{-7} cm/s) owing to the hydration of salts (Newfields, 2019). Table 1 summarizes the particle size distributions and hydraulic conductivity values for available clay tailings samples. Laboratory testing results are provided in Attachment A.

Table 1 Hydraulic summary of clay tailing samples

Sample ID	% Sand & Gravel	% Silt	% Clay	USCS Classification	Hydraulic Conductivity (cm/s)	Φ_{sat}	Type	Source
4-LFILTCAKE-E05B-315	61.4	17.1	21.4	SM	8.3 x 10^{-7}	0.63	Clay Tailings	DBSA, 2019
4381-Blend	52.8	12.3	34.9	SM	4.8 x 10^{-6}	0.59	Clay Tailings	DBSA, 2019
19-036-01	16.5	83.5[1]		ML	4.1 x 10^{-7}	0.59	Clay Tailings	Newfields, 2019
19-057-02C	35.4	64.6[1]		ML	1.2 x 10^{-7}	0.45	Composite Salt / Clay Tailings	Newfields, 2019

[1] This is percentage of Silt and Clay combined
[2] Saturated Porosity (**Φ_{sat}**)

The CTFS will be divided into two zones as follows:

- Structural zone: This zone will consist of stacked and compacted clay tailings.
- Non-structural sector: This zone will consist of a mixture of clay tailings with interlayers of salt. The effect of hydrated salts has been shown to decrease the hydraulic conductivity of the clay tailings (Newfields, 2019). This zone is anticipated to be comprised of interbeds of clay and salt, which at the bulk, 190-ft thick scale, resembles a well mixed material.

Both CTFS zones are planned to be closed with a 24-inch thick store and release cover, comprised of a waste rock layer and growth media. The cover design is engineered to shed runoff, foster vegetation growth, and limit erosion / exposure of clay tailings. The cover will be vegetated using a seed mixture, as previously described in unsaturated modeling for waste rock and coarse gangue facilities (Piteau, 2020). The cover design is as follows:

- 12-inch layer of growth media (alluvium) will be placed on top to foster vegetation growth;

- 12-inch layer of run of mine waste rock will underlay the growth media. This material is designed as a coarser grained layer to reduce erosion, supply a material buffer should an isolated rill come in contact with surface runoff, and support deeper root growth.

Alluvium growth media and waste rock hydraulic properties were previously characterized in the Thacker Pass Project Water Quantity and Quality Impacts Report (Piteau, 2020). A schematic of the CTFS closure design is provided in Figure 1.

APPROACH

The analysis followed the approach and methodology utilized to simulated infiltration through Waste Rock Storage Facility (WRSF) and coarse gangue stockpiles in the Thacker Pass Project Water Quantity and Quality Impacts Report (Impacts Report) (Piteau, 2020). Model configuration was adjusted to reflect the CTFS geometry, including the modified store and release cover, and material properties. A summary of the model approach is as follows:

- Identical meteorological boundary conditions were used as in the Impacts Report.
- A seepage face was employed as the lower boundary conditions.
- Root water uptake was simulated using the same Feddes parameters; however, the root length density was adjusted to reflect the thicker store and release cover and truncated so roots would not extend into clay tailings. A root density to a depth of 0.6 m, following that found by Winkler for Nevada climate was used (Winkler, 1999).
- Hydraulic properties for growth media and waste rock materials were identical to those used in the Impacts Report (Table 2). CTFS materials were assigned hydraulic properties based on geometrically averaged values from soil testing.
- Two suites of Hydrus 1D models were developed to assess i) potential infiltration through the CTFS cover and ii) draindown from residual water within clay tailings present during stacking. Brief descriptions of the Hydrus 1D model are as follows:

  Infiltration models: A 10-meter thick model was developed to simulate long term infiltration through the CTFS store and release cover. Because of the very long equilibration period (due to the low hydraulic conductivity of clay tailings), it was more practical to breakout the infiltration model separately. Initial water contents were recycled through until equilibrium was reached in the clay tailings (i.e. water contents did not change). Equilibrium seepage rates were then estimate using the unsaturated models. Several sensitivities were run for this configuration to assess infiltration.

  Drain down model: A 58.5-meter thick (192 ft) model was developed to simulate the drain down from residual water content in clay tailings. Initial water content for materials was 23% - 46% as described in Table 2. The simulation was run for a 1,000 year period. All other model inputs were identical to the infiltration model.

  It should be noted that clay tailings will be dried and stacked at near optimal moisture content, thus the materials are unsaturated upon placement and are not anticipated to produce any meaningful seepage. The purpose of this exercise is to validate the concept.

A side-by-side summary of both configurations are shown in Figure 2. Flux values from the 1D Hydrus models were multiplied by the facility footprint to assess the total seepage rate.

- Six sensitivity analyses were run for the infiltration model configuration to evaluate the potential variation that may be encountered during closure. The sensitivities are described as:

  Alternate clay tailings: Clay tailings material were assigned hydraulic properties of silty loam from the HYDRUS database. The key element is that hydraulic conductivity was raised by two orders of magnitude to 1.2 x 10^{-4} cm/s.

  No transpiration: Plant transpiration was turned off in this sensitivity to assess the effect of root uptake in controlling infiltration.

  Decreased Potential Evaporation/Transpiration: PET rates were decreased by 15% to assess the effect on infiltration. This is more robust than adjusting precipitation rates because it does not need to account for the episodic occurrence of precipitation.

  12-inch cover: An alternative cover configuration utilizing only 12-inches of growth media was used to simulate infiltration. This is a similar cover design as the waste rock facilities and coarse gangue facilities.

  Cover only: This sensitivity only simulated the upper 24-inch cover material. No tailings were simulated. The lower boundary condition at the bottom of the cover was simulated using a deep drainage boundary condition, meaning that the lower boundary simulated the same water content and unsaturated hydraulic conductivity to permit pore water to drain out of the model.

  Precipitation x 2: This sensitivity multiplied daily precipitation by a factor of 2. The frequency of rainy days remained the same with double the magnitude. The cumulative effect doubles precipitation, but maintains the lower PET measured on rainy days. This sensitivity is designed to consider sectors of the CTFS which may be exposed to greater precipitation and/or snow cover (i.e. north facing slopes).

All Hydrus models conservatively simulate infiltration in the structural zone (i.e. clay tailings), because the clay tailing material has been shown to possess greater hydraulic conductivity than the composite salt / clay tailings. The non-structural zone will have less infiltration than the structural zone, owing to it's lower saturated hydraulic conductivity values. Additionally, physical processes associated with the dissolution of salts are anticipated to increase density contrasts between the tailings pore water and meteoric water, thus further reducing the saturated hydraulic conductivity of composite salt/clay tailings.

Table 2 Materials property summary of CTFS models

Material	alpha (1/m)	N	θr	θsat	Ksat (cm/s)	Initial Water Content (%)
Growth Media	0.74	1.342	0.021	0.424	6.1×10^{-5}	23
Waste Rock	1.67	1.336	0.03	0.435	6.8×10^{-4}	23
Clay Tailings	0.6	1.128	0.066	0.61	1.2×10^{-6}	46[1]
Alternate Clay Tailings[2] (Hydrus' Silt Loam)	2	1.41	0.067	0.45	1.2×10^{-4}	30

[1] Projected water content of stacked clay tailings
[2] Selected soil material data from HYDRUS database

RESULTS

Infiltration model results

Infiltration through the store and release cover was minimal, simulated as ~0.01% MAP (Table 3). The store and release cover was very effective in facilitating the removal of infiltration from precipitation or temporary ponding. Nearly all precipitation was removed via root uptake or evaporation. Cumulative fluxes to the model are shown in Figure 3, which identifies that ~69 m of precipitation entered the store and release cover and a nearly equal amount of water was removed via root uptake. Approximately 0.02 m of seepage occurred during the simulation.

Water content in the store and release cover varies seasonally according to meteorological conditions (Figure 4). The low hydraulic conductivity of the clay tailings enhanced the effectiveness of the store and release cover by acting as a flow barrier to the wetting front. Soil moisture stored in the cover was then removed during the growing season via root uptake and soil capillarity prior to penetrating the clay tailings.

The water content profile of the 10-meter simulated section at several time periods during the simulation is shown in Figure 5. Water content in the clay tailings has reached equilibrium during the final model simulation, as shown by the consistent water content profile, thus simulated results represent an equilibrium condition.

Infiltration model sensitivities all indicated that the range of reasonable infiltration through the cover was low (0.06% - ~6% MAP). The majority of sensitivity scenarios indicated minor changes to seepage rates associated with input parameters. Modifications to the clay tailings material produced higher infiltration rates over the base case but were still quite low and underscoring the effectiveness of the store and release cover.

Eliminating vegetation from the cover and/or reductions to atmospheric PET had minimal effect on simulated infiltration, indicating that the climatic evaporation deficit is sufficiently large to attenuate fluctuations in year to-year PET. These sensitivities underscore the robustness of the store and release cover, that even unvegetated it can effectively intercept precipitation from infiltrating.

Doubling the precipitation rate had a moderate effect on increasing seepage rates (~5.2% MAP) because precipitation falls during the winter season when PET is low. The increased seasonal water content of cover materials provides a pathway for percolation into tailings materials. However, it should be noted that this condition would occur only on a portion of the CTFS and southern facing slopes would be exposed to the opposite conditions (i.e. lower infiltration rates in those sectors). Thus the net effect is insubstantial. Additionally, the double precipitation model does not account for increases to vegetation density that would occur where soil moisture can sustain growth.

The "Cover only" sensitivity produced the highest infiltration rate at ~6.3% MAP. The "Cover only" sensitivity is considered an overestimate of potential seepage because in reality the presence of any underlying materials will constrain the infiltration rate below the cover and allow root transpiration to remove pore water. Fine-grained materials, such as the clay tailings, have a very low saturated hydraulic conductivity which will cause increased water content at the boundary between materials seasonally, until transpiration removes water from the cover. Coarse-grained materials will form a Richard's barrier (low unsaturated hydraulic conductivity) at the transition of the cover until sufficient water content is reached to permit percolation. This allows transpiration to consume much of the seasonal wetting front before infiltration migrates into underlying material.

Table 3 Summary of Infiltration Results

Simulation / Sensitivity	Cumulative 1D Seepage (m)	Average Seepage rate (in/yr)	Average Seepage rate (% MAP)	Facility Seepage rate (gpm)
Base Case	**0.02**	**0.001**	**0.01%**	**0.02**
Alternate Clay Tailings	1.0	0.056	0.46%	1.12
No Transpiration	2.2	0.121	0.99%	2.42
Reduced Evaporation	0.14	0.008	0.06%	0.15
12-inch Cover	0.68	0.038	0.31%	0.76
Cover Only	13.6	0.76	6.26%	15.2
Precipitation x 2[1]	11.3	0.64	5.22%	12.7

[1]Sensitivity meant to represent, among other properties, north facing slopes with greater precipitation and/or snow drifts.

Draindown model results

Seepage related to the drainage of insitu water content during the first 1,000 years of emplacement was zero. Water content at the bottom of the CTFS was simulated to slowly increase as a result of unsaturated gravity drainage (Figure 6). However, pore water along the bottom of the CTFS will remain in tension with clay material until water content reaches field saturation conditions to overcome capillary tension and freely seep into the collection system. The wetting front via infiltration slowly migrated downward to approximately the 20-meter depth during the 1,000 year simulation, confirming that there will be significant time before any infiltration reaches the CTFS bottom. In practice a minor amount of draindown may occur, due to macro pores, heterogeneity, and stacking irregularities; but it is anticipated to be very small, if measurable at all.

CONCLUSIONS

Key conclusions drawn from the foregoing analysis are summarized as follows:

- The hydraulic conductivity of the clay tailings materials (both the clay tailings and mixed clay tailings / waste salts) in the CTFS is anticipated to be very low, in the range of 10^{-6} to 10^{-7}cm/s based on testing data as well as the anticipated grain size of clay tailings and compaction during stacking. Hydration of salts after mixing with clay tailings is anticipated to reduce hydraulic conductivity further. Thus, the clay tailings themselves function as a 190 ft thick clay cap.

- A store and release cover is proposed to close the CTFS which is designed to shed runoff, reduce erosion, and foster vegetation growth. The store and release cover is expected to be very efficient at removing precipitation percolation, owing the thicker profile of materials (24-inch) and being underlain by low permeability clay tailings. The penetration of moisture through the upper clay tailings is limited by the material's low hydraulic conductivity. When the growing season resumes, soil capillarity and root uptake remove the excess water stored in the cover.

- Water content in the store and release cover will fluctuate seasonally, which will wet the upper layer of clay tailings and reduce desiccation. Given the thickness of the clay tailings, any desiccation in the upper horizon would not compromise the overall ability of the CTFS to impede infiltration.

- Moisture content through the CTFS was estimated to take several thousand years to equilibrate and produce any seepage to the underdrain system. No meaningful seepage related to draindown from residual water present in the clay tailings upon stacking is anticipated.

- Infiltration rates for the structural zone of the CTFS are estimated be quite low, ~0.01% of MAP. Reasonable sensitivities to the infiltration model suggest infiltration rates may vary from 0.06% - ~0.5% MAP (the "No Transpiration" sensitivity is unlikely to occur).

- Infiltration rates for the non-structural zone of the CTFS will be less than the structural zone, owing to the lower hydraulic conductivity value of composite salt/tailings material. Thus the results and sensitivity analysis for the structural zone is sufficient for seepage design purposes.

- Although sectors of the CTFS may experience different climatic conditions and infiltration rates, the design capacity of ET cells will be capable of managing seepage rates. The sensitivity analysis estimated 12.7 gpm of seepage from the CTFS in the case where the entire facility is subjected to doubled precipitation rates. Snow drifting or shading would be restricted to smaller footprints of the CTFS.

- A "Cover only" sensitivity provided an upper bound, very conservative estimate of potential infiltration (6.3% MAP, ~15 gpm seepage). The CTFS reclaim pond will be converted to an evapotransporation cell upon closure and can handle a seepage rate of 15 gpm even though the realistic seepage rate is expected to be orders of magnitude less.

LIMITATIONS

This investigation has been conducted using a standard of care consistent with that expected of scientific and engineering professionals undertaking similar work under similar conditions in Nevada. No warranty is expressed or implied.

This memorandum is prepared for the sole use of Lithium Nevada Corporation. Any use, interpretation, or reliance on this information by any third party, is at the sole risk of that party, and Piteau Associates accepts no liability for such unauthorized use.

CLOSING

We trust the above is adequate for your current needs. If you have any questions regarding the above, or we can be of further service, please do not hesitate to contact us.

Respectfully submitted,

PITEAU ASSOCIATES USA LTD.

Tyler Cluff, PG
Senior Hydrogeologist

TC/ap

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DBS&A, Inc., 2019. DBS&A Laboratory Report for the Piteau Associates, Lithium Nevada Sample Testing. October 2019.

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Winkler, W. 1999. Thickness of Monolithic Covers in Arid and Semi-Arid climates. MS Thesis, University of Wisconsin-Madison. January.

FIGURES

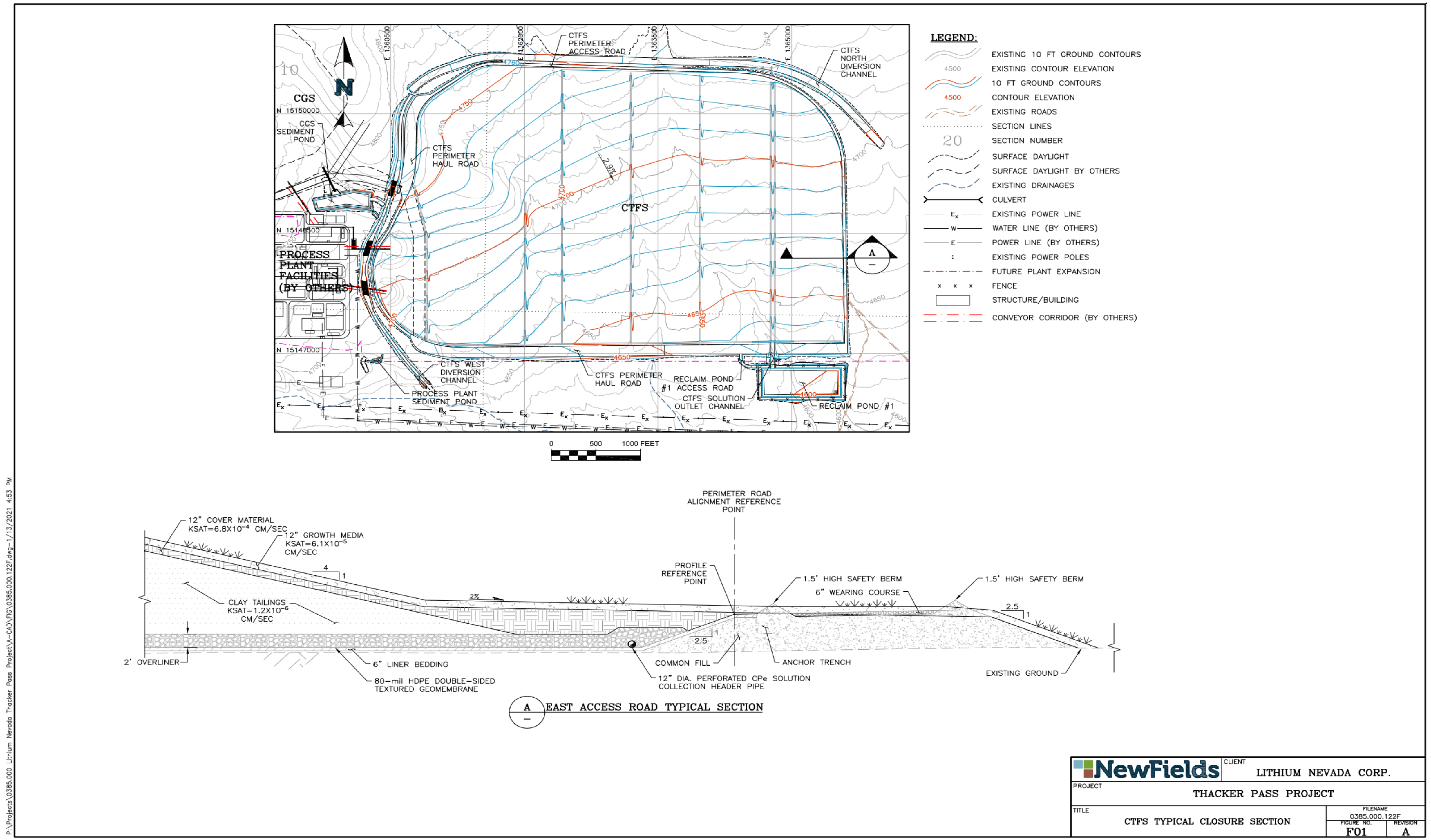
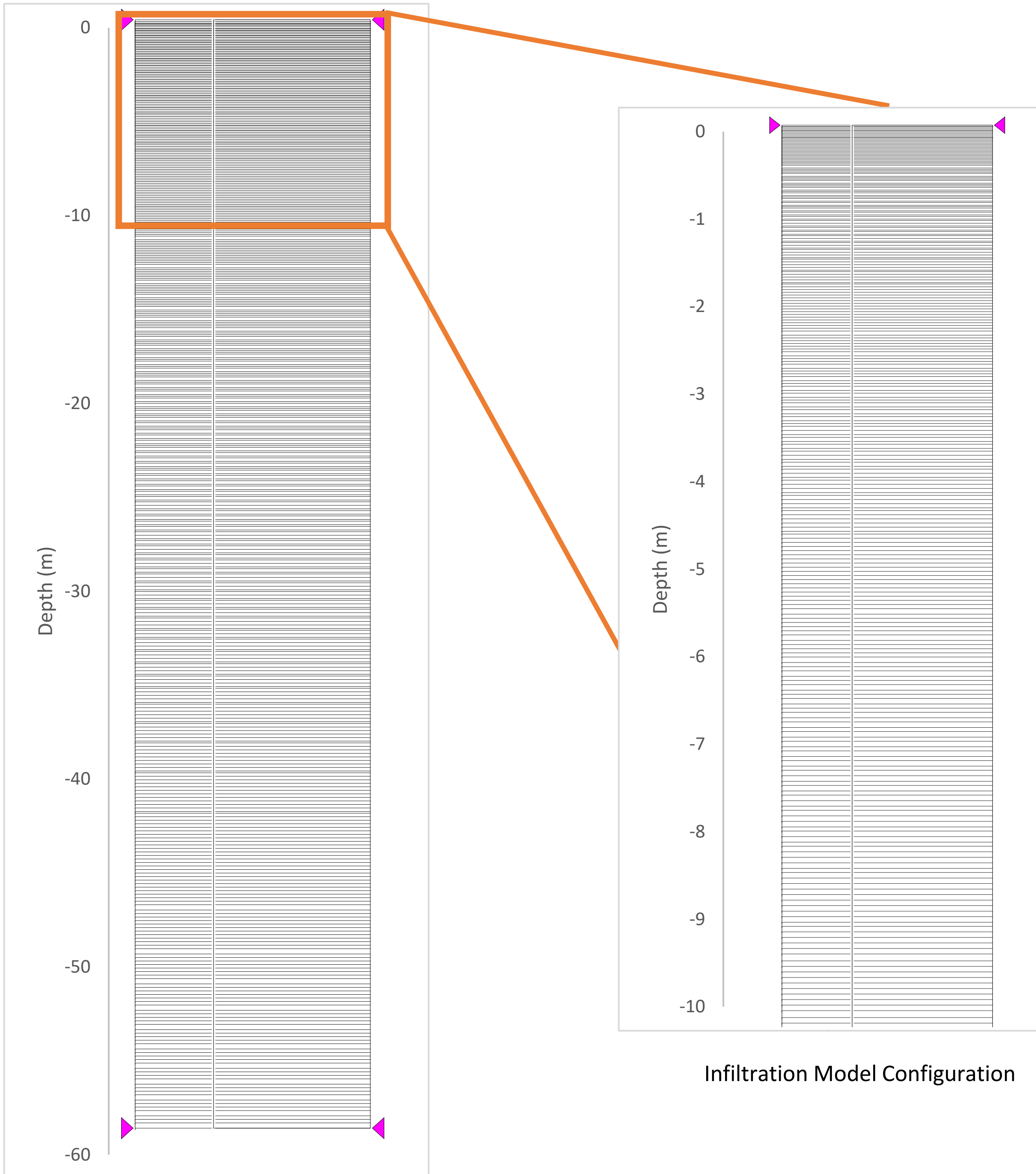


Figure provided from Newfields, 2020

PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS	CTFS Closure Configuration			
	CLIENT: LNC	PROJECT:	CTFS Infiltration Modeling	
	JOB 3898	DRAWN:	TC	CHECKED: TC
	DATE: January, 2021	FIGURE:	1	



Draindown Model Configuration

Infiltration Model Configuration

PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS	1D Hydrus Model Configurations
CLIENT: LNC	PROJECT: CTFS
JOB #: 3898	DRAWN: TC / CHECKED: TC
DATE: January, 2021	FIGURE: 2

H:\Project\3898\3898-2 Kings Valley EIS\500_Deliverables\520_Tech_Memos\2021 0120 CTFS Seepage Modeling\Figures\[CTFS 1D

D:\Work\Templates\Excel\[Title Block templates2014.xlsx]

PITEAU ASSOCIATES

Cumulative Fluxes for 10-m CTFS Infiltration Model

CLIENT: LNC

PROJECT: CFTS Infiltration Modeling

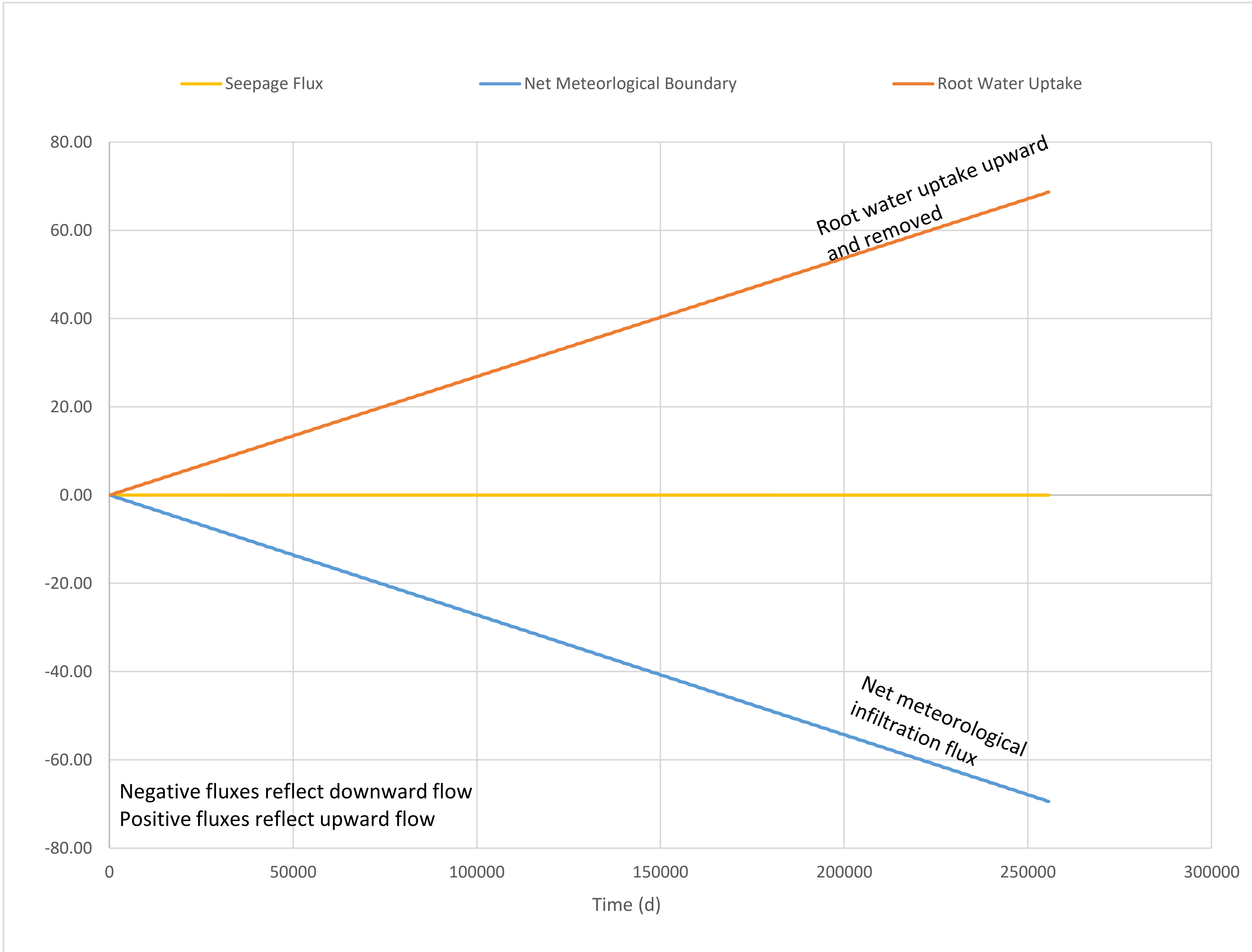
JOB #: 3898

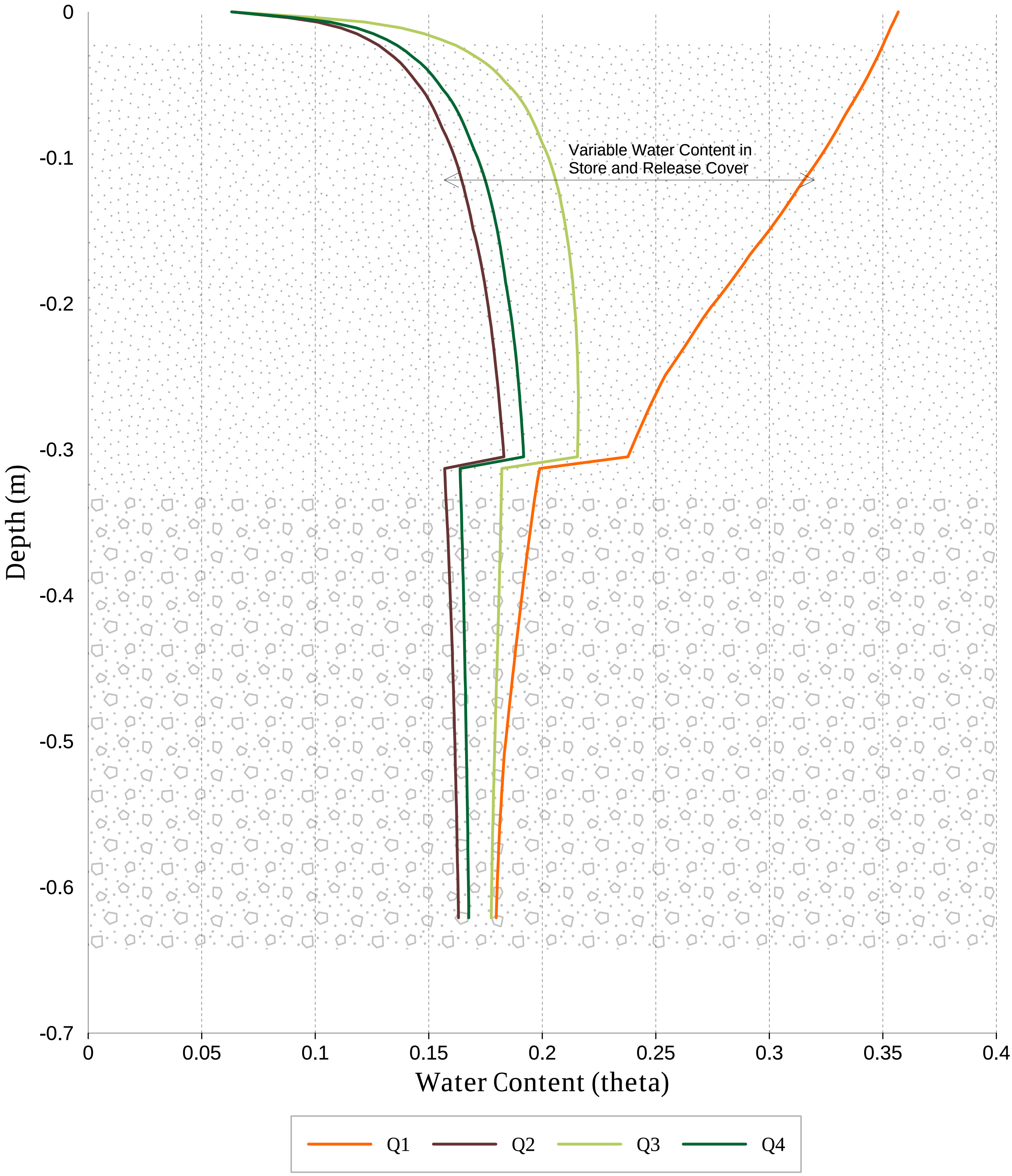
DRAWN: TC

CHECKE TC

DATE: January, 2021

FIGURE: 3



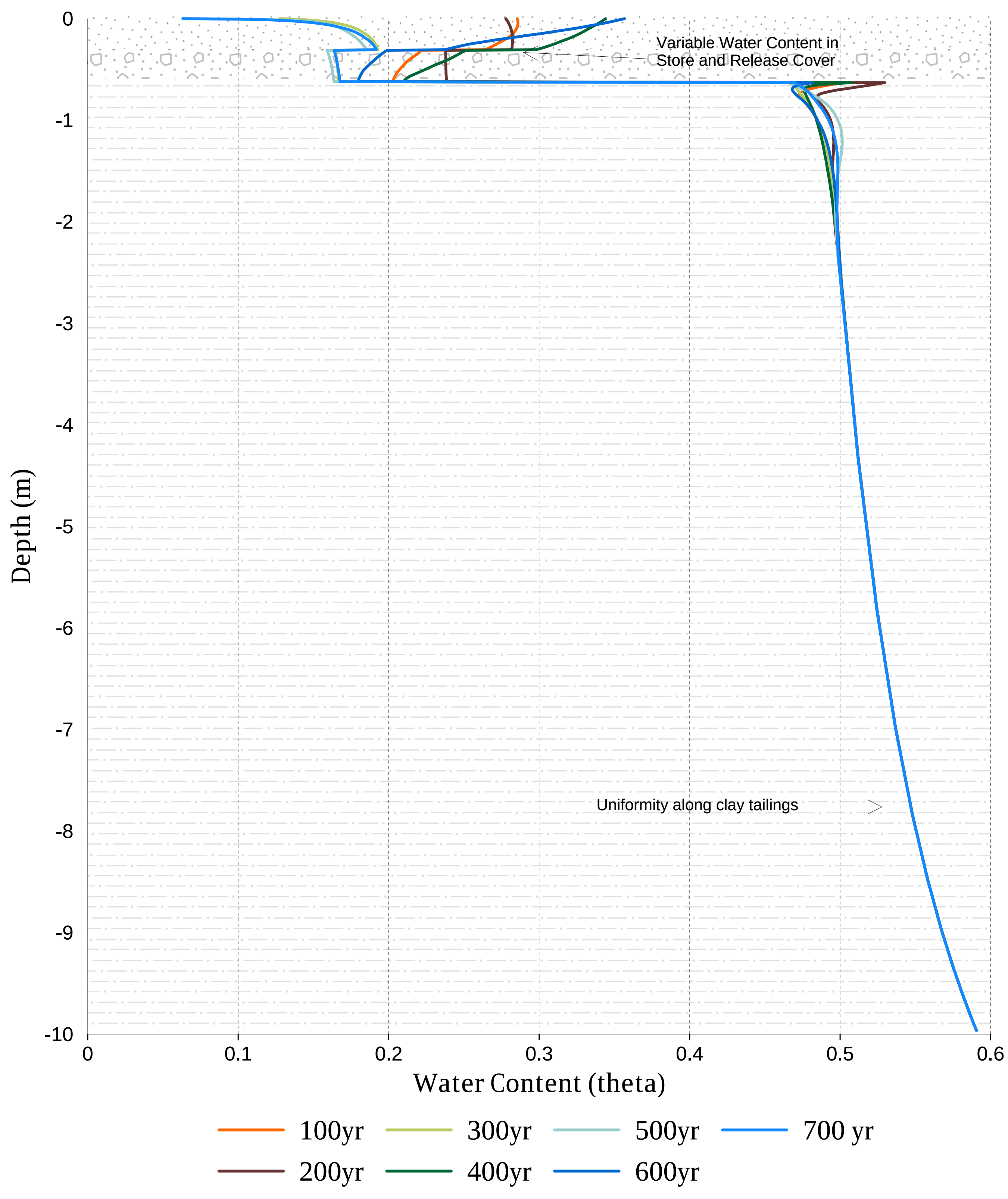


Thacker Pass Project
Lithium Nevada Corporation
CTFS Infiltration Modeling

PITEAU ASSOCIATES
GEOTECHNICAL AND HYDROGEOLOGICAL CONSULTANTS

Annual Water Content Variation in Store and Release Cover

BY:	DATE:
TC	Jan 2021
APPROVED:	FIG:
TC	4

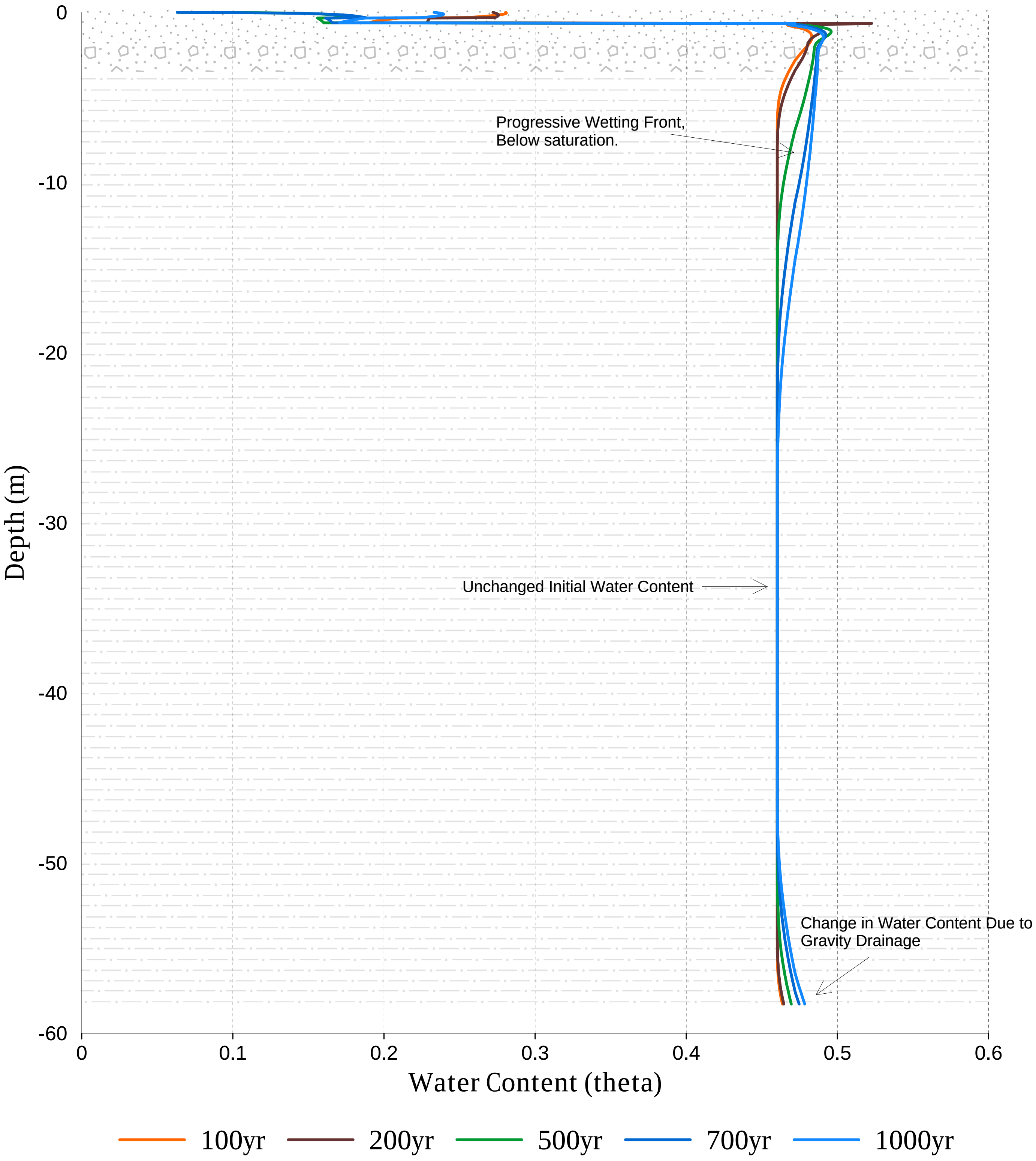


CTFS Equilibrium Water Content Profile
Lithium Nevada Corporation
CTFS Unsaturated Flow Modeling

PITEAU ASSOCIATES
GEOTECHNICAL AND HYDROGEOLOGICAL CONSULTANTS

Equilibrium Water Content in 10-Meter Infiltration Model

BY:	DATE:
TC	Jan 2021
APPROVED: TC	FIG: 5



CTFS Equilibrium Water Content Profile
Lithium Nevada Corporation
CTFS Unsaturated Flow Modeling

PITEAU ASSOCIATES
GEOTECHNICAL AND HYDROGEOLOGICAL CONSULTANTS

Simulated Water Content in 58.5-Meter Drain Down Model

BY:	DATE:
TC	Jan 2021
APPROVED:	FIG:
TC	6

ATTACHEMENT A
LABORATORY TESTING

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name:	Piteau Associates
Job Number:	DB19.1317.00
Sample Number:	4-LFILTCAKE-E05B-315 (Firm) (930 kg/m³)
Material Type:	Tailings
Depth:	NA

	As Received	Remolded
Test Date:	NA	10-Sep-19
Field weight of sample* (g):		490.40
Tare weight, ring (g):		140.05
Tare weight, pan/plate (g):		0.00
Tare weight, other (g):		0.00
Dry weight of sample (g):		208.81
Sample volume (cm^3):		224.27
Assumed particle density (g/cm^3):		2.65
Gravimetric Moisture Content (% g/g):		67.8
Volumetric Moisture Content (% vol):		63.1
Dry bulk density (g/cm^3):		0.93
Wet bulk density (g/cm^3):		1.56
Calculated Porosity (% vol):		64.9
Percent Saturation:		97.3

Laboratory analysis by:	D. O'Dowd
Data entered by:	D. O'Dowd
Checked by:	J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Saturated Hydraulic Conductivity
Falling Head Method

Job Name:	Piteau Associates	*Type of water used:*	TAP
Job Number:	DB19.1317.00	*Backpressure* (psi):	0.0
Sample Number:	4-LFILTCAKE-E05B-315 (Firm) (930 kg/m³)	*Offset* (cm):	0.1
Material Type:	Tailings	*Sample length* (cm):	7.64
Depth:	NA	*Sample x-sectional area* (cm^2):	29.36
		Reservoir x-sectional area (cm^2):	0.70

Date	Time	Temp (°C)	Reservoir head (cm)	Corrected head (cm)	Elapsed time (sec)	Ksat (cm/sec)	Ksat @ 20°C (cm/sec)
Test # 1:							
12-Sep-19	12:53:47	22.5	51.1	51.0	2425	8.9E-07	8.4E-07
12-Sep-19	13:34:12	22.5	50.5	50.4			
Test # 2:							
12-Sep-19	14:09:12	22.5	50	49.9	2078	8.8E-07	8.3E-07
12-Sep-19	14:43:50	22.5	49.5	49.4			
Test # 3:							
12-Sep-19	15:25:59	22.5	48.9	48.8	2601	8.7E-07	8.2E-07
12-Sep-19	16:09:20	22.5	48.3	48.2			

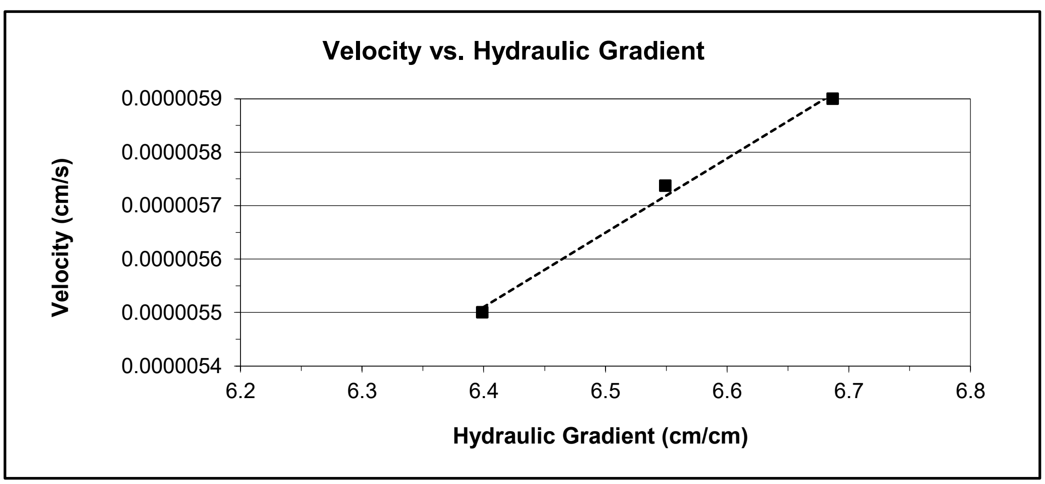
***Average Ksat* (cm/sec): 8.3E-07**

***Oversize Corrected Ksat* (cm/sec): NA**

Comments:

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass

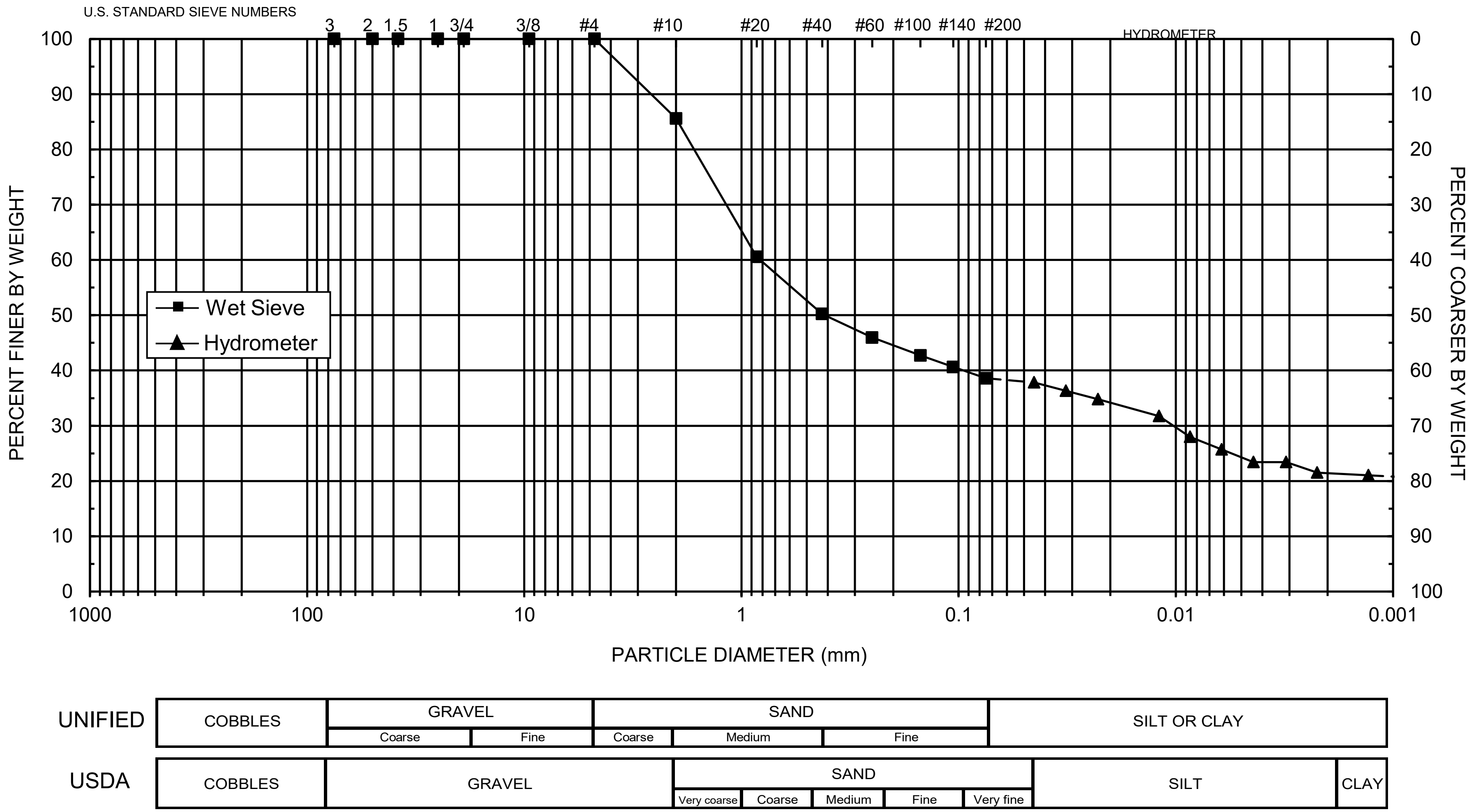
NA = Not applicable



Laboratory analysis by: D. O'Dowd

Data entered by: D. O'Dowd

Checked by: J. Hines



d_{10} = **6.5E-09**	d_{30} = **0.010**	d_{50} = **0.41**	d_{60} = **0.82**	C_u = **1.3E+08**	C_c = **1.9E+04**

SAMPLE NUMBER	DEPTH	ASTM CLASSIFICATION	USDA CLASSIFICATION
4-LFILTCAKE-E05B-315	**NA**	**Silty sand (SM)**	**Sandy Clay Loam †**

† Greater than 10% of sample is coarse material

Note: Reported values for d_{10}, C_u, C_c, and ASTM classification are estimates, since extrapolation was required to obtain the d_{10} diameter

Daniel B. Stephens & Associates, Inc.

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name:	Piteau Associates
Job Number:	DB19.1317.00
Sample Number:	4381-Blend (Firm) (970 kg/m³)
Material Type:	Tailings
Depth:	NA

	As Received	Remolded
Test Date:	NA	10-Sep-19
Field weight of sample* (g):		717.10
Tare weight, ring (g):		276.80
Tare weight, pan/plate (g):		0.00
Tare weight, other (g):		0.00
Dry weight of sample (g):		274.58
Sample volume (cm^3):		283.34
Assumed particle density (g/cm^3):		2.65
Gravimetric Moisture Content (% g/g):		60.4
Volumetric Moisture Content (% vol):		58.5
Dry bulk density (g/cm^3):		0.97
Wet bulk density (g/cm^3):		1.55
Calculated Porosity (% vol):		63.4
Percent Saturation:		92.2

Laboratory analysis by:	D. O'Dowd
Data entered by:	D. O'Dowd
Checked by:	J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Daniel B. Stephens & Associates, Inc.

Saturated Hydraulic Conductivity
Falling Head Method

Job Name:	Piteau Associates	*Type of water used:*	TAP
Job Number:	DB19.1317.00	*Backpressure* (psi):	0.0
Sample Number:	4381-Blend (Firm) (970 kg/m³)	*Offset* (cm):	0.1
Material Type:	Tailings	*Sample length* (cm):	7.00
Depth:	NA	*Sample x-sectional area* (cm^2):	40.49
		Reservoir x-sectional area (cm^2):	0.70

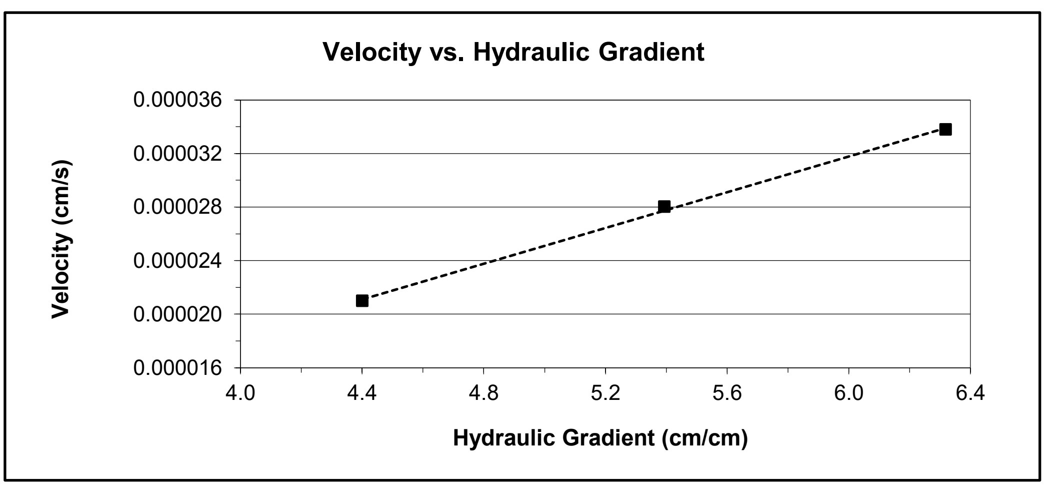
Date	Time	Temp (°C)	Reservoir head (cm)	Corrected head (cm)	Elapsed time (sec)	Ksat (cm/sec)	Ksat @ 20°C (cm/sec)
Test # 1:							
12-Sep-19	13:11:45	22.5	45.7	45.6	1408	5.3E-06	5.0E-06
12-Sep-19	13:35:13	22.5	42.95	42.9			
Test # 2:							
12-Sep-19	14:06:01	22.5	39.6	39.5	2160	5.2E-06	4.9E-06
12-Sep-19	14:42:01	22.5	36.1	36.0			
Test # 3:							
12-Sep-19	15:24:35	22.5	32.55	32.5	2718	4.8E-06	4.5E-06
12-Sep-19	16:09:53	22.5	29.25	29.2			

***Average Ksat* (cm/sec): 4.8E-06**

***Oversize Corrected Ksat* (cm/sec): ---**

Comments:

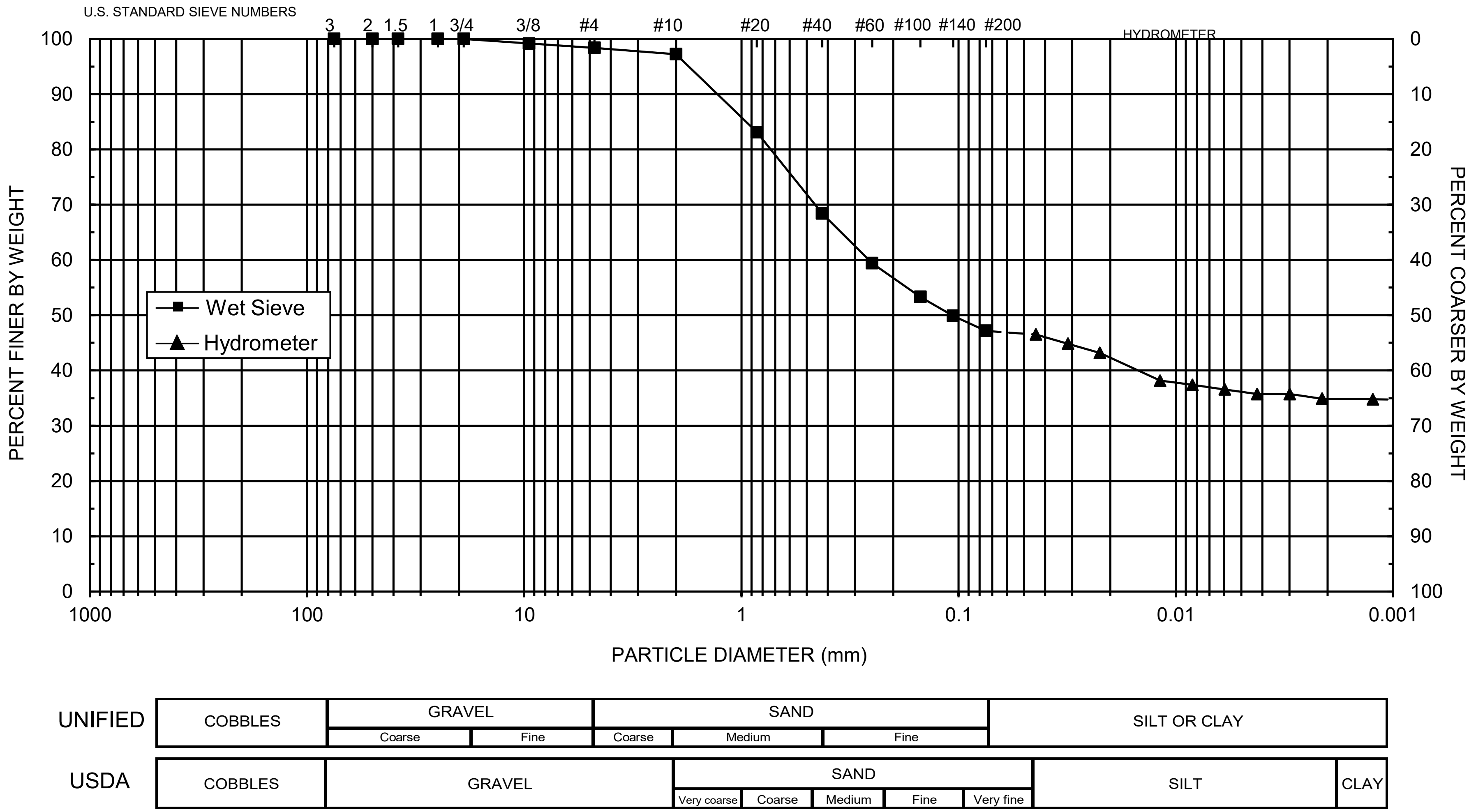
--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass



Laboratory analysis by: D. O'Dowd

Data entered by: D. O'Dowd

Checked by: J. Hines



d_{10} = 5.7E-52	d_{30} = 6.2E-13	d_{50} = 0.11	d_{60} = 0.26	C_u = 4.6E+50	C_c = 2.6E+27

SAMPLE NUMBER	DEPTH	ASTM CLASSIFICATION	USDA CLASSIFICATION
4381-Blend	**NA**	**Silty sand (SM)**	**Sandy Clay**

Note: Reported values for d_{10}, C_u, C_c, and ASTM classification are estimates, since extrapolation was required to obtain the d_{10} diameter

Daniel B. Stephens & Associates, Inc.

NewFields

Flexible Wall Hydraulic Conductivity
ASTM D5084

Client:	Lithium Nevada	Lab Sample No.:	19-036-01A
Project:	Thacker Pass	Field Sample No.:	Clay Tailings
Project No.:	475.0385.000	Location:	Pilot Plant
Phase:	-	Elevation/Depth:	N/A
Requested By:	Mark Walden	Tested By:	K.Engelmeier
Test Started:	4/1/2019	Checked By:	K.Magner
Test Finished:	2/25/2019	Sample Description:	Light brown Silt with Sand

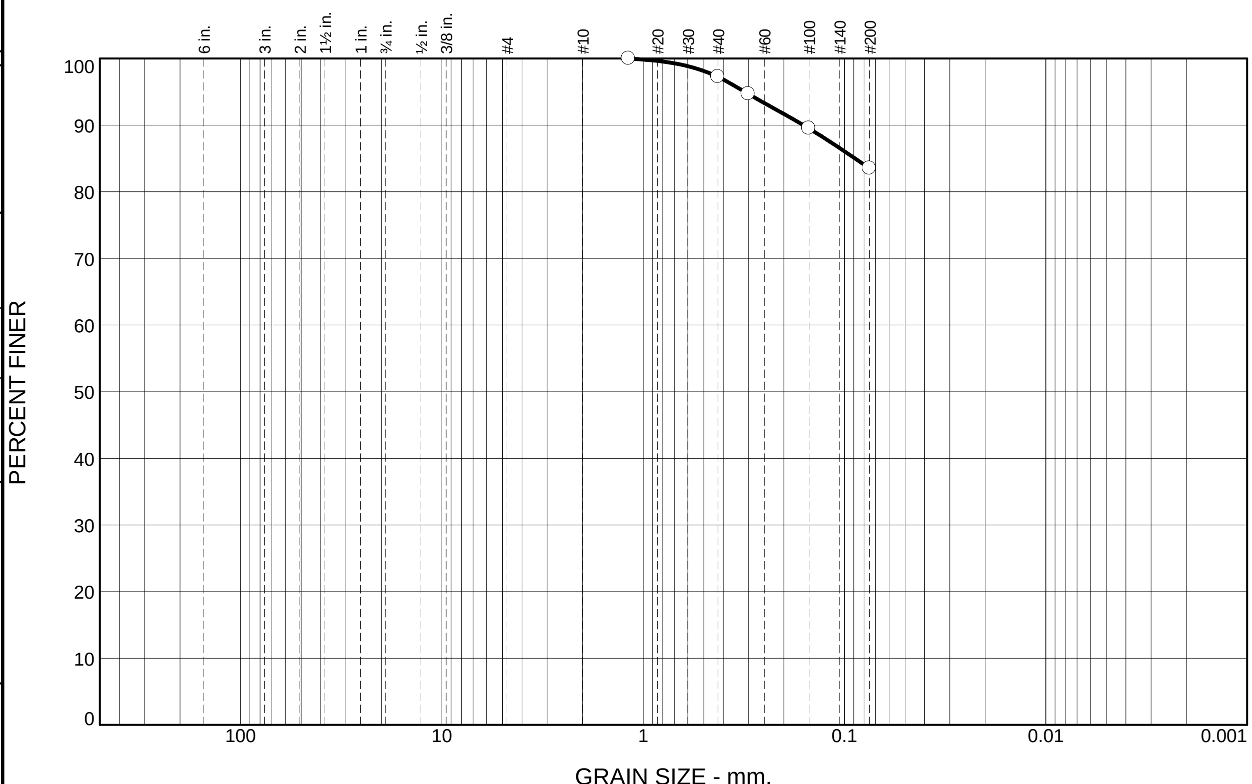
Test Boundary Conditions	
Type of Permeant	De-aired Bottled
Magnitude of Back pressure (psi)	50
Saturated (Y/N):	Yes
Permeability: Effective Stress (psi)	5
Sample Type	Remolded
Burrete Area (cm^2)	0.877

Test Specimen Data	Initial	After Consolidation	Final
Wet Soil + Tare (g)	905.8		945.26
Dry Soil + Tare (g)	612.31		640.35
Tare (g)	0.00		45.19
Wt. of Water (g)	293.49		304.91
Dry Soil (g)	612.31		595.16
Moisture Content (%)	47.9		51.2
Sample Volume (ft^3)	0.02023	0.02012	
Dry Unit Weight (pcf)	66.7	66.9	
Wet Unit Weight (pcf)	98.7	106.6	
Saturation (%)	80.7	100.0	
Relative Compaction (%)	89.1	89.3	
Height (in)	5.680	5.672	
Diameter (in)	2.799	2.795	
Area (in^2)	6.153	6.137	
Est. Moisture Content after Consolidation (%)		59.1%	
Est. Void Ratio after Consolidation		1.731	
Specific Gravity*	2.93		

*Specific gravity is measured
Maximum Dry Unit Weight:
ASTM D 1557

Maximum Dry Unit Weight (pcf):	74.9
Initial Remolded Dry Unit Weight (pcf):	66.7
Initial Percent Compaction:	89%
Initial Void Ratio:	1.741
Optimum Moisture Content(%):	40.4
Initial Moisture Content (%):	47.9
Confining Pressure (psi):	5.0
Hydraulic Conductivity, k_{20} (cm/s):	**4.1E-07**
Gradient Range (h/L):	2.6 3.6

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	2.8	13.7	83.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#16	100.0		
#40	97.2		
#50	94.7		
#100	89.5		
#200	83.5		

* (no specification provided)

Material Description

Light Brown silt with sand

Atterberg Limits

PL= 35 LL= 48 PI= 13

Coefficients

D_{90}= 0.1601 D_{85}= 0.0887 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= ML AASHTO= A-7-5(14)

Remarks

Atterberg and moisture correction dried at 110C / Natural Moisture Content: 51.9%

Location: Pilot Plant/ Clay Tailings
Sample Number: 19-036-01

Date: 4/1/2019

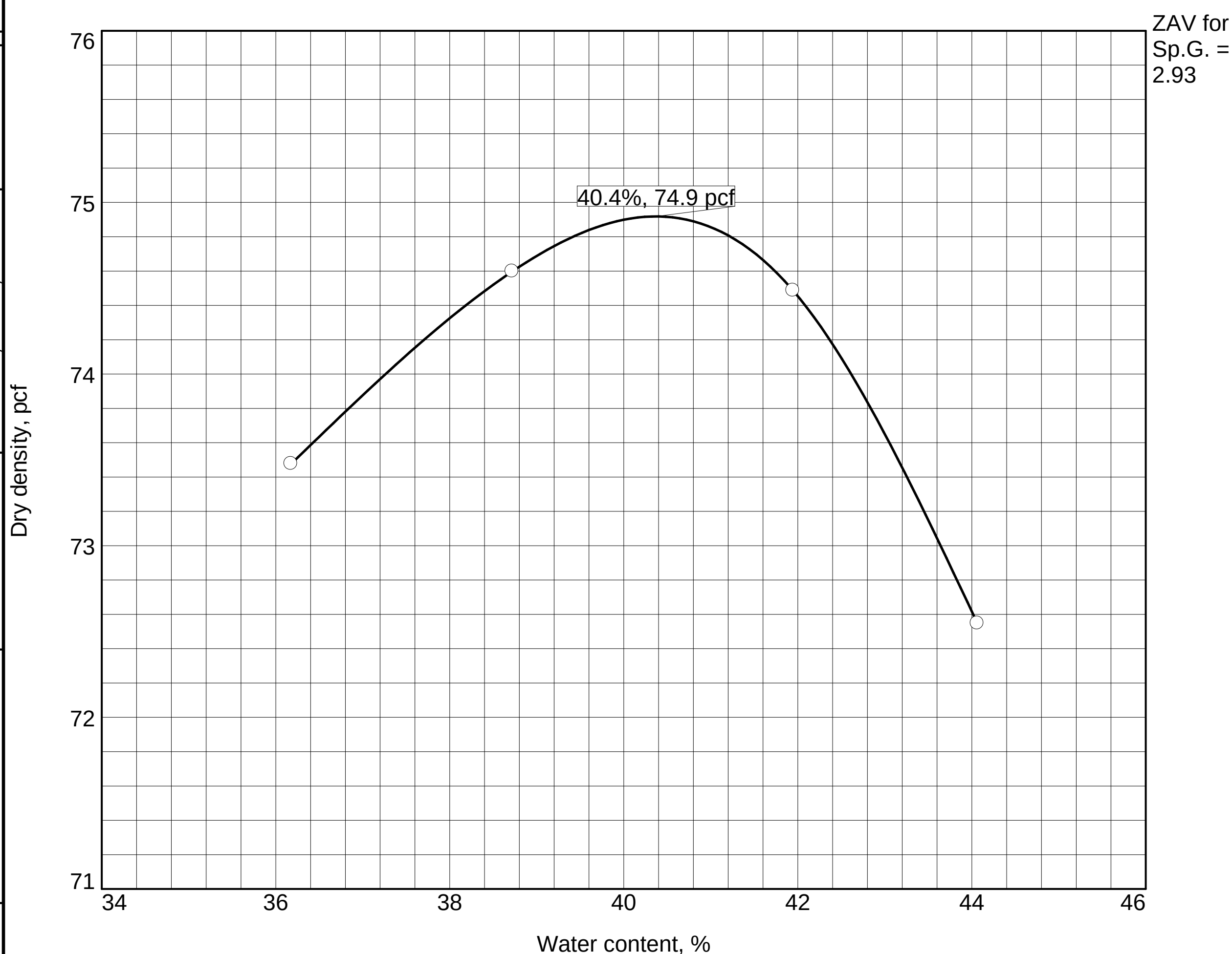
NewFields

Client: Lithium Nevada
Project: Thacker Pass

Project No: 475.0385.000 **Figure** 19-036-01

Tested By: AH **Checked By:** JH

COMPACTION TEST REPORT



Test specification: ASTM D 1557-12 Method B Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
	ML	A-7-5(14)	51.9	2.932	48	13	0.0	83.5

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 74.9 pcf Optimum moisture = 40.4 %	Light Brown silt with sand

Project No. 475.0385.000 **Client:** Lithium Nevada

Project: Thacker Pass

Date: 4/1/2019

Location: Pilot Plant/ Clay Tailings **Sample Number:** 19-036-01

NewFields

Remarks:

*Measured Specific Gravity
*Dried at 110C

Figure 19-036-01

Tested By: CB **Checked By:** JH

NewFields

Flexible Wall Hydraulic Conductivity
ASTM D5084

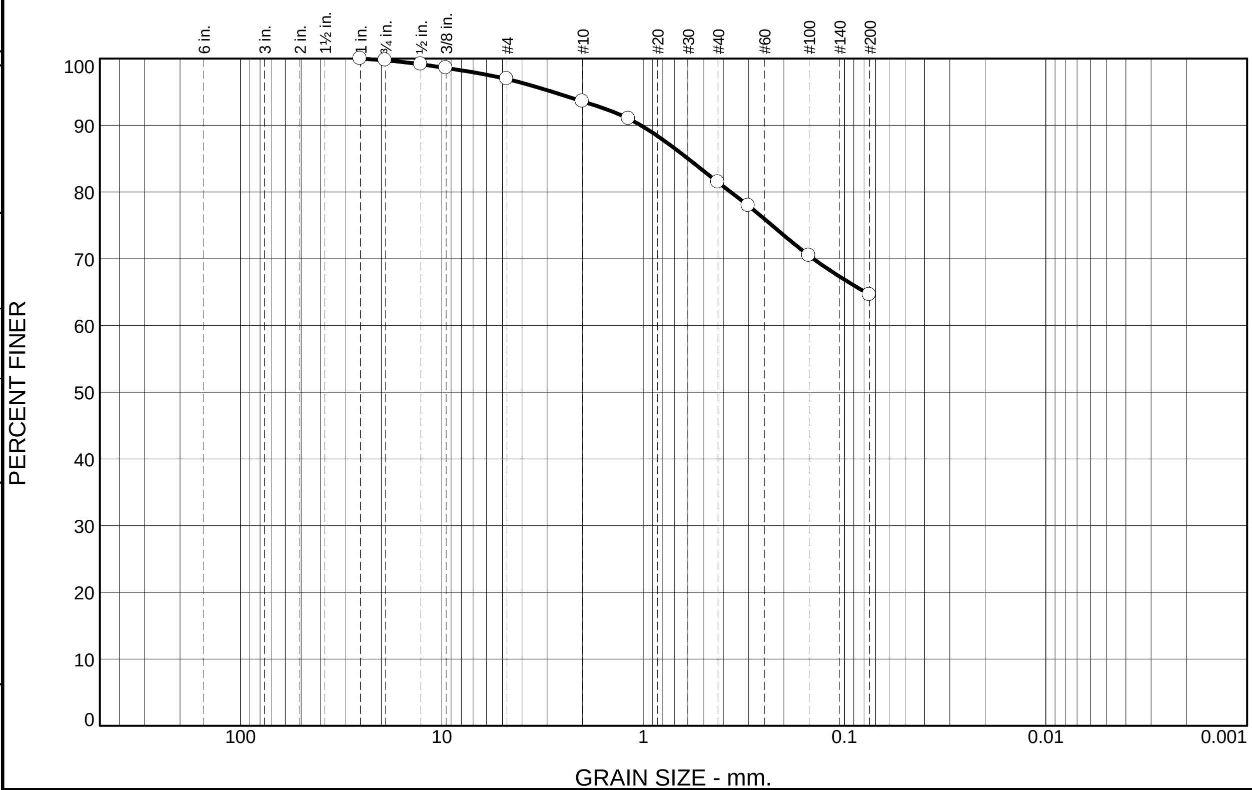
Client:	Lithium Nevada	Lab Sample No.:	19-057-02C
Project:	Thacker Pass	Field Sample No.:	Composite Tailings
Project No.:	475.0385.000	Location:	Composite Tailings
Phase:	-	Elevation/Depth:	Composite
Requested By:	Kerry Magner	Tested By:	KE
Test Started:	3/22/2019	Checked By:	KE
Test Finished:	3/25/2019	Sample Description:	Light brown sandy silt

Test Boundary Conditions	
Type of Permeant	De-aired Bottled
Magnitude of Back pressure (psi)	50
Saturated (Y/N):	Yes
Stage 1: Effective Stress (psi)	5
Sample Type	Remolded
Burrete Area (cm^2)	0.877

Test Specimen Data	Initial	During k Testing	Final
Wet Soil + Tare (g)	977.97		1104.40
Dry Soil + Tare (g)	688.77		840.29
Tare (g)	0.00		191.05
Wt. of Water (g)	289.20		264.11
Dry Soil (g)	688.77		649.24
Moisture Content (%)	42.0		40.7
Sample Volume (ft^3)	0.02002	0.01989	
Dry Density (pcf)	75.8	76.0	
Wet Density (pcf)	107.7	110.4	
Saturation (%)	92.8	100.0	
Percent Compaction	89.7	90.0	
Height (in)	5.623	5.612	
Diameter (in)	2.799	2.794	
Area (in^2)	6.153	6.130	
Est. Moisture Content after Consolidation (%)		44.8%	
Est. Void Ratio after Consolidation		1.210	
Specific Gravity*	2.70		

*Specific gravity is assumed	**Maximum Dry Density (pcf):**	84.5
Maximum Dry Density:	**Initial Remolded Dry Density (pcf):**	75.8
ASTM D 1557	**Initial Percent Compaction:**	90%
	Initial Void Ratio:	1.222
	Optimum Moisture Content(%):	34.5
	Initial Water Content (%):	42.0
	Confining Pressure (psi):	5.0
	Hydraulic Conductivity, k_{20} (cm/s):	**1.2E-07**
	Gradient Range (h/L):	1.0 1.8

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.3	2.8	3.3	12.1	16.9	64.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	99.7		
.5	99.1		
.375	98.6		
#4	96.9		
#10	93.6		
#16	91.0		
#40	81.5		
#50	77.9		
#100	70.5		
#200	64.6		

* (no specification provided)

Material Description

Light Brown sandy silt

Atterberg Limits

PL= 33 LL= 48 PI= 15

Coefficients

D_{90}= 1.0279 D_{85}= 0.5986 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= ML AASHTO= A-7-5(10)

Remarks

Atterberg and moisture correction dried at 110C

Location: Composite Tailings
Sample Number: 19-057-02

Date: 2/27/2019

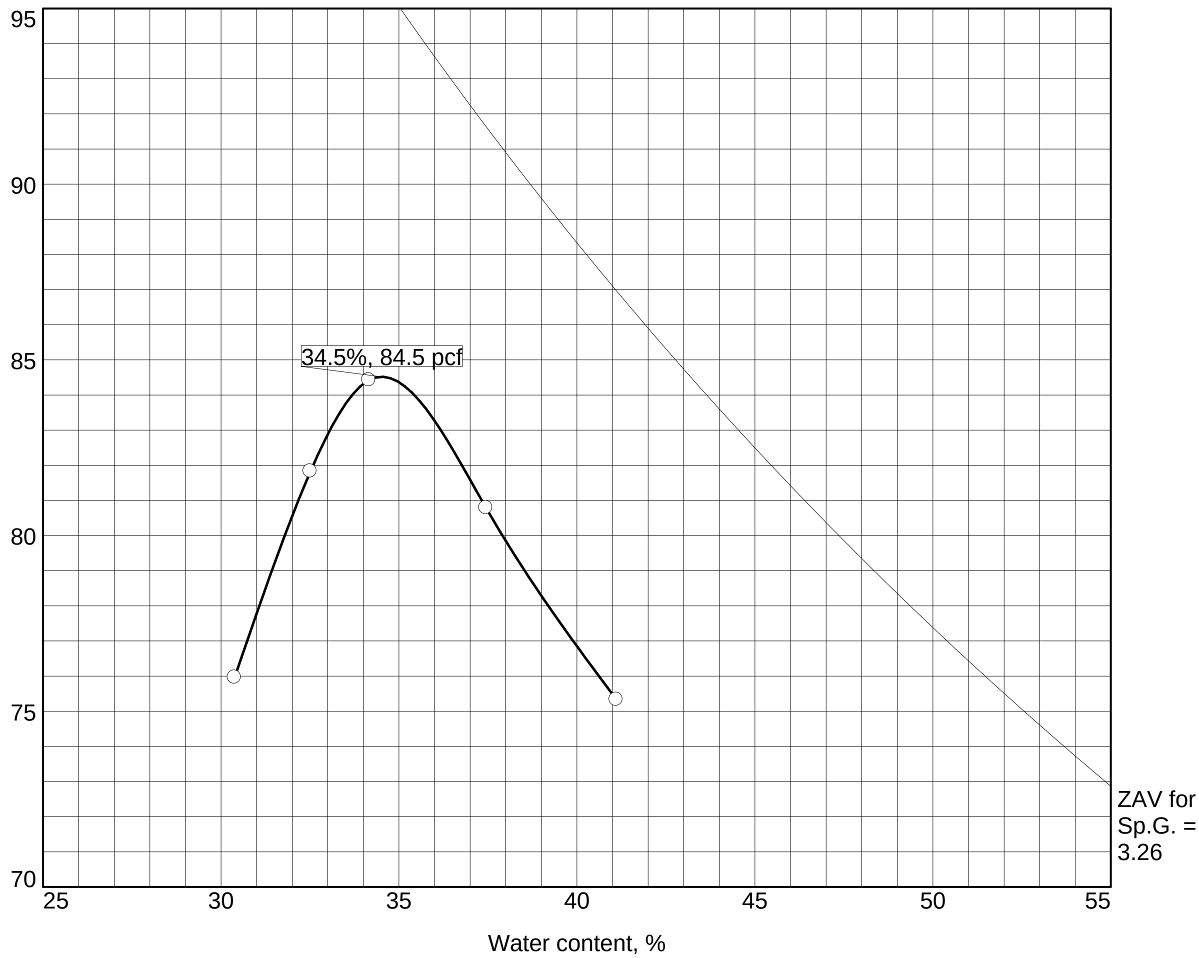
NewFields

Client: Lithium Nevada
Project: Thacker Pass

Project No: 475.0385.000 **Figure** 19-057-02

Tested By: AR **Checked By:** JH

COMPACTION TEST REPORT



Test specification: ASTM D 1557-12 Method B Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
	ML	A-7-5(10)		3.26	48	15	0	64.6

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 84.5 pcf Optimum moisture = 34.5 %	Light Brown sandy silt

Project No. 475.0385.000 **Client:** Lithium Nevada

Project: Thacker Pass

Date: 3/1/2019

Location: Composite Tailings **Sample Number:** 19-057-02

NewFields

Remarks:

*Assumed Specific Gravity
*Dried at 110C

Figure 19-057-02

Tested By: AR **Checked By:** JH