Nevada Division of Environmental Protection

New Class II Air Quality Operating Permit for Lithium Nevada Corporation – Thacker Pass Project

November 18, 2021

Presented by:
NDEP – Bureau of Air Pollution Control
NEW CLASS II AIR QUALITY OPERATING PERMIT FOR LITHIUM NEVADA CORPORATION – THACKER PASS PROJECT

• Facility Location
• Air Quality Operating Permit Process and Timeline
• Facility Description
• Additional Information Requested During the Technical Review
• Air Emissions Regulated and Facility-Wide Potential to Emit
• Air Dispersion Modeling
• Contents of Air Quality Operating Permit
• Sulfuric Acid Plant Requirements and Emission Monitoring
• Current Status and Next Steps
Lithium Nevada Corporation’s Thacker Pass Project is located in Humboldt County, NV
Lithium Nevada Corporation’s Thacker Pass Project is located 20 miles West-Northwest of Orovada, Nevada
The Air Permitting Process consists of:

- Application Submittal
- Administrative Completeness Review
- Technical Review (including Requests for Additional Information)
  - State and Federal Requirements
  - Emission Factors
  - Air Dispersion Modeling
  - Monitoring, Testing, Recordkeeping, and Reporting
- EPA Review
- Public Notice
- Public Hearing
- Comments Review
- Permit Decision
# Air Quality Operating Permit Process – Timeline

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
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<tbody>
<tr>
<td>January 26, 2021</td>
<td>Application Submitted</td>
</tr>
<tr>
<td>February 9, 2021</td>
<td>Application Deemed Administratively Complete</td>
</tr>
<tr>
<td>February 10, 2021</td>
<td>Technical Review Begins</td>
</tr>
<tr>
<td>October 15, 2021</td>
<td>Technical Review Ends &amp; Intent to Issue (75 stop days accrued)</td>
</tr>
<tr>
<td>October 18, 2021</td>
<td>Public Notice Begins</td>
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<tr>
<td>November 18, 2021</td>
<td>Public Hearing and Public Notice Ends</td>
</tr>
<tr>
<td>November 19, 2021</td>
<td>Comments Review Begins</td>
</tr>
<tr>
<td>To Be Determined</td>
<td>Final Permit Decision</td>
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</tbody>
</table>
The facility will consist of the following processes:

- **Open-Pit Ore Extraction**
- **Mineral Processing**
  - Mineral Sizing
  - Wet Screening
  - Classification and Thickening
- **Lithium Processing Operations**
  - Acid Leaching
  - Neutralization
  - Magnesium Precipitation
  - Lithium Carbonate Extraction
  - Lithium Carbonate Handling/Packaging
The facility will consist of the following processes:

- **Sulfuric Acid Plant**
  - Molten Sulfur Used to Produce Sulfuric Acid
  - Generate Steam for Energy that will Provide Power to Support the Facility
- **Start-Up Burner**
- **Package Boiler**
- **Additional Support Activities**
  - Emergency Generators
  - Gasoline, Oil and Diesel Storage Tanks
  - Laboratory Equipment
  - Ammonium Nitrate Prill Silo
Additional Information Requested During the Technical Review

Sulfuric acid plant limits
- Increased SO$_2$ emissions based on manufacturer's guarantee
- Increased H$_2$SO$_4$ emissions to include a safety factor

Additional information requested about calculations for the following systems:
- System 6 – Leach Tanks
- System 7 – Neutralization Filter Vents
- System 8 – Neutralization Filter Filtrate Blow Vent
- System 13 – Magnesium Precipitation Filter Vents
- System 14 – Magnesium Precipitation Filter Filtrate Blow Vent
- System 24 – Sulfuric Acid Plant
## Air Emissions Regulated and Facility-Wide Potential to Emit

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Facility-Wide PTE (tons/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PM</strong></td>
<td>83.3</td>
</tr>
<tr>
<td><strong>PM\textsubscript{10}</strong></td>
<td>52.4</td>
</tr>
<tr>
<td><strong>PM\textsubscript{2.5}</strong></td>
<td>36.9</td>
</tr>
<tr>
<td><strong>SO\textsubscript{2}</strong></td>
<td>47.8</td>
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<tr>
<td><strong>NO\textsubscript{x}</strong></td>
<td>88.7</td>
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<tr>
<td><strong>CO</strong></td>
<td>2.52</td>
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<tr>
<td><strong>VOC</strong></td>
<td>0.70</td>
</tr>
<tr>
<td><strong>H\textsubscript{2}S</strong></td>
<td>1.05</td>
</tr>
<tr>
<td><strong>H\textsubscript{2}SO\textsubscript{4}</strong></td>
<td>25.2</td>
</tr>
<tr>
<td><strong>HAPs</strong></td>
<td>0.032</td>
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</table>

A list of all 187 hazardous air pollutants, defined by EPA, can be found at: [https://www.epa.gov/haps/initial-list-hazardous-air-pollutants-modifications](https://www.epa.gov/haps/initial-list-hazardous-air-pollutants-modifications)
**AIR DISPERSION MODELING**

- AERMOD – EPA's regulatory air dispersion model
- Requires emission data, meteorological data, terrain data, and receptors to calculate air quality concentrations at receptor locations along the plant boundary
- All areas passed standards

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<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Period</th>
<th>Modeled Concentration</th>
<th>Background Concentration</th>
<th>Total Impact</th>
<th>NAAQS</th>
<th>Percent of Standard</th>
<th>Location (UTM)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>mN</td>
</tr>
<tr>
<td>PM$_{2.5}$</td>
<td>24-hr ($\mu g/m^3$)$^a$</td>
<td>7.4</td>
<td>8</td>
<td>15.4</td>
<td>35</td>
<td>44%</td>
<td>4,616,898</td>
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<tr>
<td></td>
<td>Annual ($\mu g/m^3$)$^b$</td>
<td>1.5</td>
<td>2.3</td>
<td>3.8</td>
<td>12</td>
<td>31%</td>
<td>4,616,817</td>
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<td>PM$_{10}$</td>
<td>24-hr ($\mu g/m^3$)</td>
<td>67.0</td>
<td>10.2</td>
<td>77.2</td>
<td>150</td>
<td>51%</td>
<td>4,616,760</td>
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<tr>
<td>SO$_2$</td>
<td>1-hr (ppb)$^c$</td>
<td>41.1</td>
<td>41.1</td>
<td>82.2</td>
<td>75</td>
<td>55%</td>
<td>4,615,256</td>
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<td>3-hr (ng/m$^3$)</td>
<td>81.9</td>
<td>81.9</td>
<td>163.8</td>
<td>1,300</td>
<td>6%</td>
<td>4,615,266</td>
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<td>24-hr (ng/m$^3$)</td>
<td>10.3</td>
<td>10.3</td>
<td>20.6</td>
<td>365</td>
<td>3%</td>
<td>4,615,266</td>
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<td>NO$_2$</td>
<td>Annual (ng/m$^3$)</td>
<td>0.3</td>
<td>0.3</td>
<td>0.6</td>
<td>80</td>
<td>0%</td>
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<td>1-hr (ppb)$^d$</td>
<td>57.9</td>
<td>57.9</td>
<td>115.8</td>
<td>100</td>
<td>58%</td>
<td>4,615,166</td>
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<td>CO</td>
<td>Annual (ng/m$^3$)</td>
<td>2.4</td>
<td>2.4</td>
<td>4.8</td>
<td>100</td>
<td>2%</td>
<td>4,615,369</td>
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<td>1-hr (ng/m$^3$)</td>
<td>97</td>
<td>97</td>
<td>194</td>
<td>40,500</td>
<td>0%</td>
<td>4,615,411</td>
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<td>H$_2$S</td>
<td>8-hr (ng/m$^3$)</td>
<td>31</td>
<td>31</td>
<td>62</td>
<td>7,000</td>
<td>0%</td>
<td>4,616,361</td>
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<tr>
<td></td>
<td>1-hr (ng/m$^3$)</td>
<td>6.4</td>
<td>6.4</td>
<td>12.8</td>
<td>112</td>
<td>6%</td>
<td>4,616,640</td>
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<td>Ozone</td>
<td>8-hr (ppm)</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.075</td>
<td>12%</td>
<td>4,615,156</td>
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</tbody>
</table>
What can you expect to see in the permit?

- General Conditions (applicable to all permittees)
- Specific Operating Conditions
- Emission Units and Limits
- Monitoring, Recordkeeping, and Reporting
- Source Testing and Sampling
- Specific Federal Regulations
- Surface Area Disturbance and Fugitive Dust

**NOTE:** The facility is required to control dust at all times and dust complaints (or any air quality complaint) can be called into the Bureau of Air Pollution Control directly at (775) 687-9349.
**Sulfuric Acid Plant Requirements**

**Required Control**
- Tail Gas Scrubber

**Emissions Controlled**
- Particulate Matter (PM/PM$_{10}$/PM$_{2.5}$)
- Sulfur Dioxide (SO$_2$)
- Sulfuric Acid (H$_2$SO$_4$)

**Monitoring**
- Hourly Maximum Throughput Limit
- Hourly Monitoring of the Tail Gas Scrubber
- Monthly Observation for Visible Emissions
Testing: Initial and Annual Stack Tests
• Initial stack testing required no later than 180 days after initial start-up.
• Annual performance testing within 90 days of the anniversary date of the previous initial performance testing

Continuous Emissions Monitoring System
• Measure for SO$_2$ (measured at a minimum of every 15 minutes)
• Quarterly Audits
• Annual Relative Accuracy Test Audit (RATA)
**Current Status**

- Based on information provided, the BAPC has determined that the facility will meet all applicable State and federal Air Quality Standards and Requirements.

**What Happens Next?**

- The BAPC must respond to comments received
- Review permit language/conditions as applicable
- Issue / Deny
Comments

Ways to comment:

- Fill out a comment card to state comment publicly at microphone.

- Email by close of meeting: ndepthackerpass@ndep.nv.gov

Contact:
Bureau of Air Pollution Control
775-687-9349
ndepthackerpass@ndep.nv.gov
ndep.nv.gov