

Nevada Division of Minerals

DISSOLVED MINERAL RESOURCE EXPLORATION A.B. 52 DEVELOPMENT OF REGULATIONS

NEVADA LANDMEN'S ASSOCIATION

September 21, 2017

Rich Perry, Administrator



Lithium

- Is a locatable mineral on Federal land under the general Mining law
- Placer claims are used to locate potential lithium brine deposits
- Lode claims are used to locate potential lithium clay deposits

NEVADA'S LITHIUM EXPLORATION ACTIVITY

>13,381 claims staked
in playas

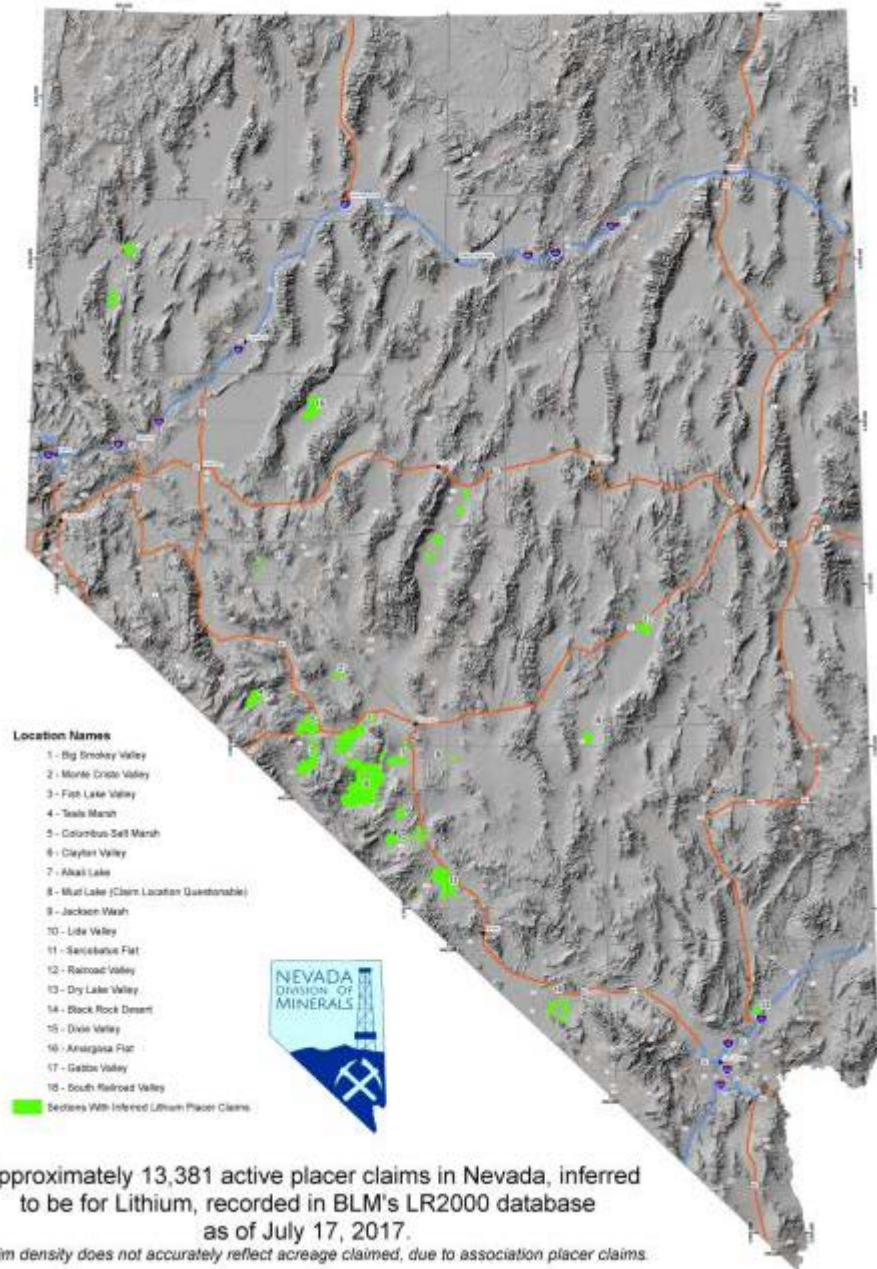
- 18 different
hydrographic basins

-25 different
exploration entities and
one producer

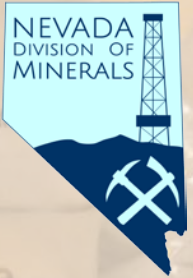
Current to 7-17-2017

Inferred Active Lithium Placer Claims in Nevada

Map Produced by: Lucia M. Patterson, Nevada Division of Minerals



Why the interest in Lithium ?

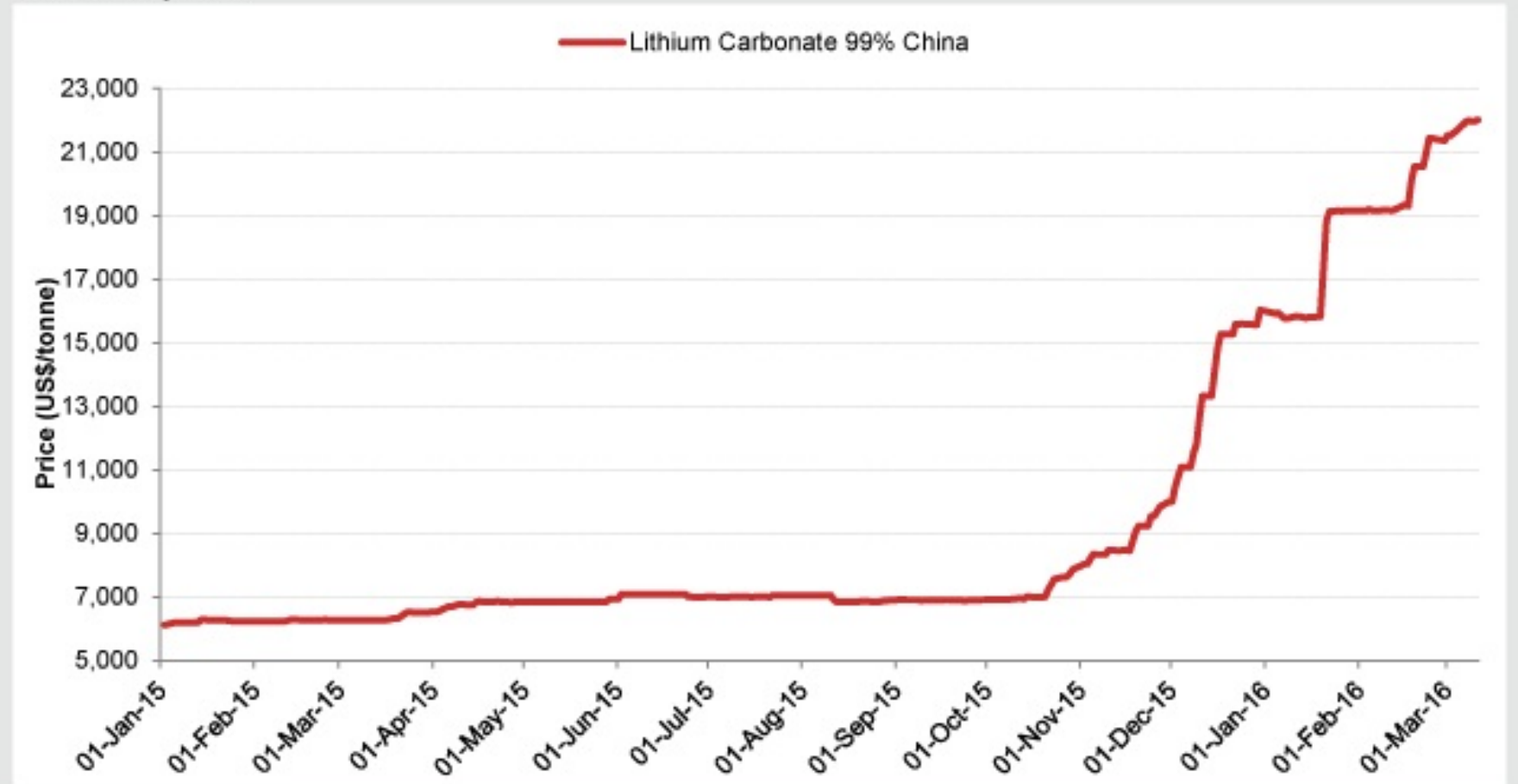


- Uses in energy storage are expanding
 - 3rd element on periodic table “the lightest metal”
 - 12 % world-wide increase in production in 2016 to 37,800 tons
 - Batteries 39%, ceramics and glass 30%, casting and polymers 5%, air treatment 3%, other including pharma 10% (*USGS Commodity Summaries, 2016*)
 - 4 major suppliers world-wide that produce lithium carbonate and hydroxide compounds to users under contracts. Chile, Argentina, US, Australia production
 - A critical high-tech mineral
 - U. S. is a net importer, Tesla (Panasonic) factory will require increased imports

WHY THE STAKING BOOM ?

Answer: SPOT LITHIUM PRICES IN CHINA INCREASED 300% IN 2016

Lithium price



Data as of March 11, 2016.
Source: Thomson Reuters

Lithium Brine Exploration in NV

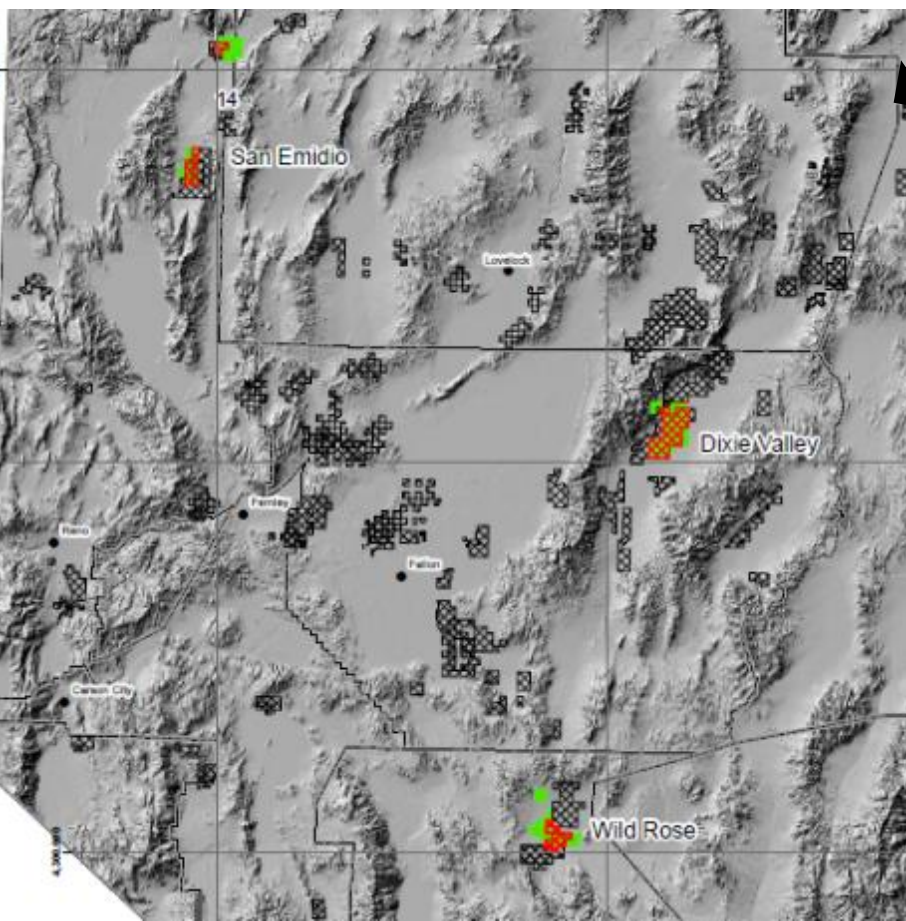
- **Nevada has the only operating lithium mine in the U.S. – located in Clayton Valley, Esmeralda County**
 - Operated since 1967, employs 85 people
 - Produces lithium carbonate
 - Uses surface evaporation ponds to concentrate lithium pumped from brine aquifers in valley
- **Geologic Model for a lithium brine deposit:**
 - Salar deposits – a salt flat that may represent the basin of a salt lake
 - Accumulations of saline groundwater that are enriched in dissolved lithium.
 - Exploration by drilling and sampling of brine aquifers

What was A.B. 52 necessary?

- ***Answer: To simplify permitting for lithium brine exploration, and to develop regulations to ensure drilling for lithium brines is protective of groundwater and geothermal resources.***
 - **Lithium is a locatable mineral with a placer claim under the 1872 mining law**
 - **Only statutory reference to “dissolved or entrained minerals” in NRS 534A. Can recover as a by-product of geothermal energy**
 - **Nevada did not have statutes or regulations for exploration of dissolved mineral brines, it has been regulated under water well drilling regulations**
 - **BLM, which permits the exploration project surface disturbance, has no statutory authority on water and asked for guidance from State on well regulations to reference in their notice-level permits**

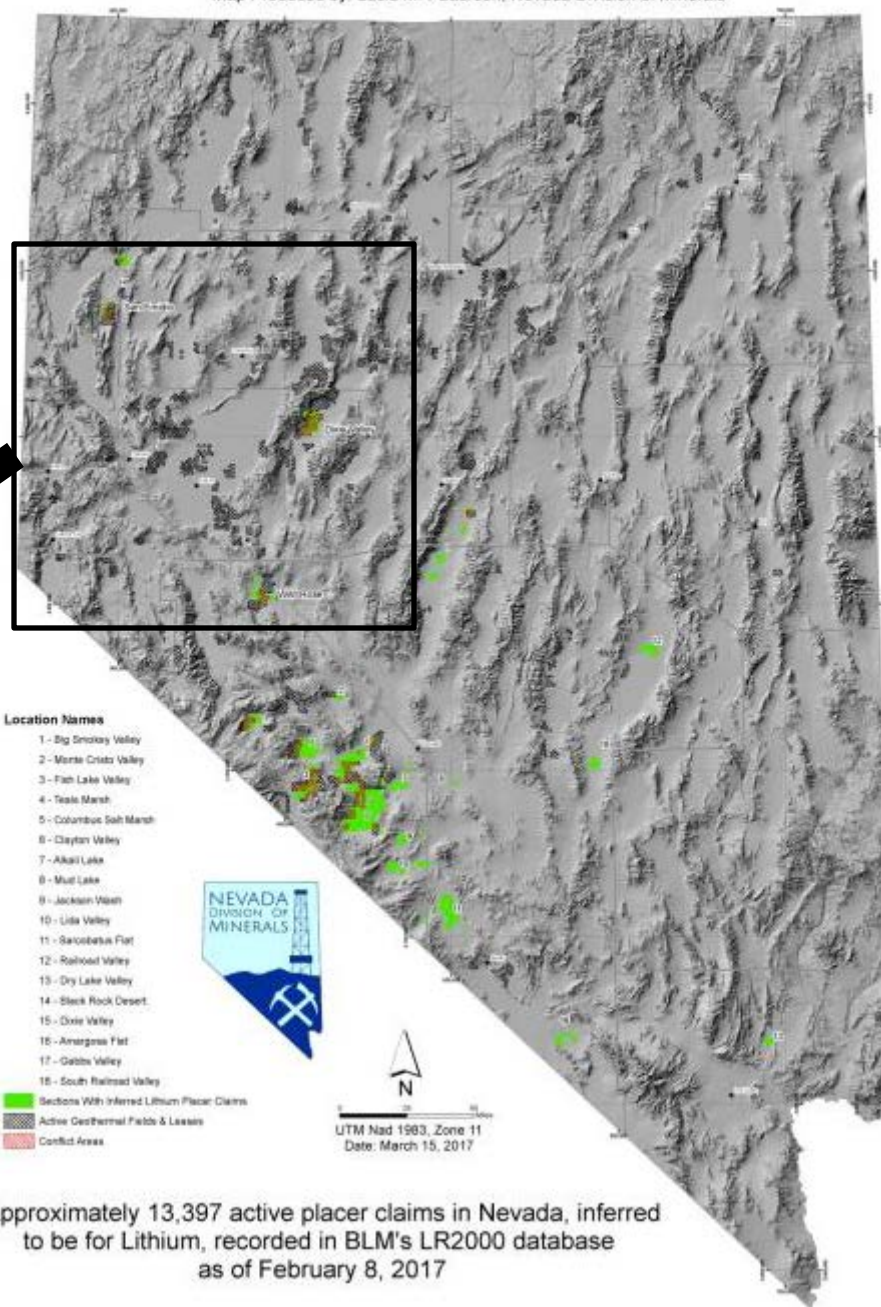
POSSIBLE RESOURCE CONFLICT AREAS

24% or 65,244 acres of inferred active lithium placer claims have cross over with active geothermal leases/fields



Inferred Active Lithium Placer Claims Vs. Geothermal Fields/Leases

Map Produced by: Lucia M. Patterson, Nevada Division of Minerals



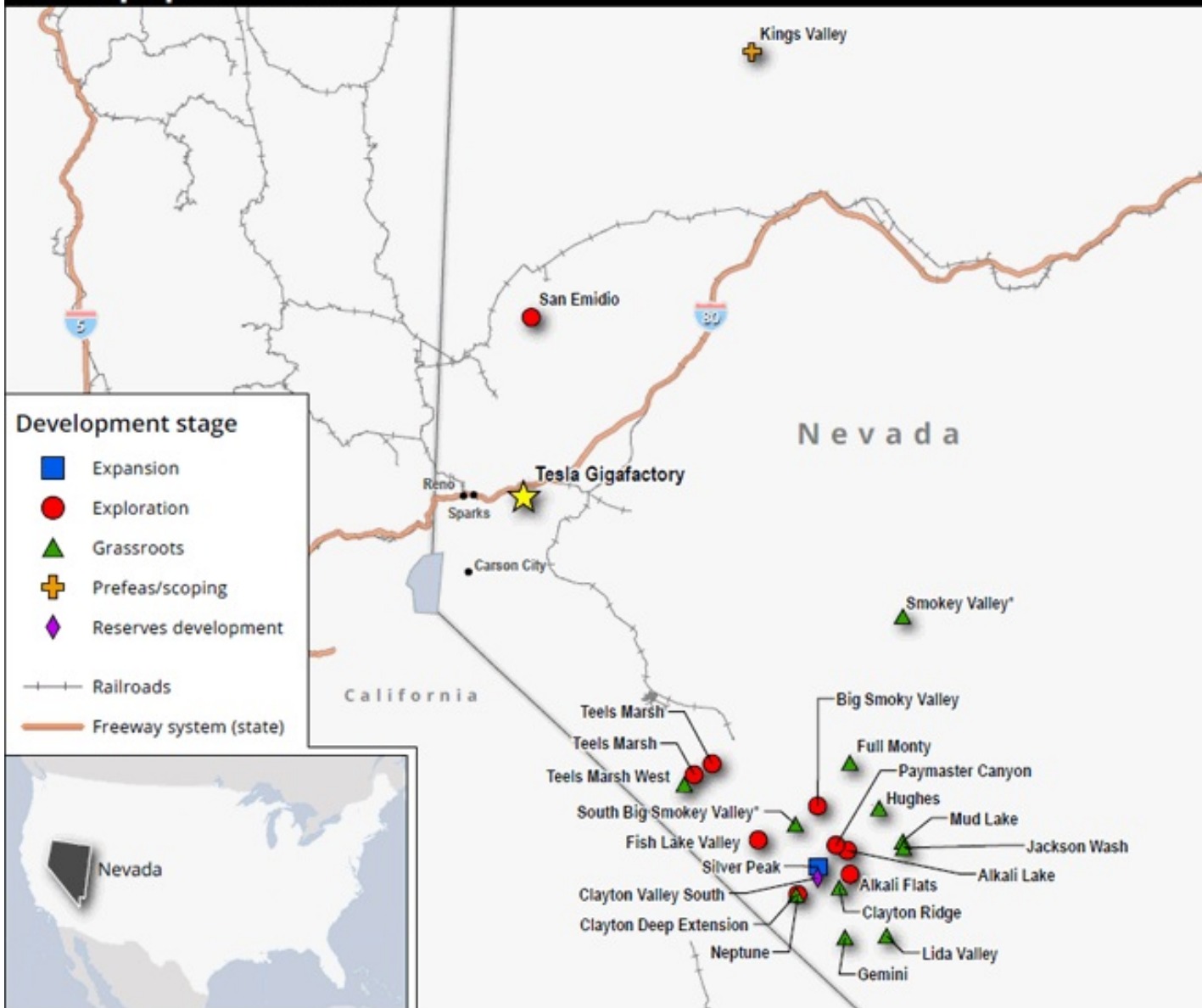
What does A.B. 52 address ?

- **A.B. 52 places regulation of dissolved mineral brine exploration boreholes and exploration wells within the Division of Minerals, which has expertise in regulating fluid minerals, boreholes and deep well drilling and completion.**
 - **This new statute, initially designated at NRS Chapter 507, has**
 - **Definitions of DMRE boreholes and wells (to be distinct from borehole and well definitions in the water well drilling regulations)**
 - **Allows for solution sampling of exploration boreholes**
 - **“DMRE Projects” are defined as a single notice or plan-level project on federal land or a designated project on non-federal lands**
 - **Each “project” can have any number of boreholes**
 - **Each “project” can have any number of wells, must be permitted, but a project is limited to 5 acre-feet . Mechanism in regs for “borehole-to-well conversion”.**
 - **Consultation with NDOM triggered when proposing boreholes or wells beyond a certain depth in areas with possible oil or geothermal resource conflicts.**
 - **Requires a licensed water well driller to drill boreholes or wells**
 - **Borehole and well plugging logs required to be submitted to NDOM**
 - **All forms will be on NDOM web site**

A.B. 52 does not:

- **Change procedures for appropriating water or create permanent water rights**
- **Determine who owns mineral rights**
- **Regulate production of dissolved mineral brines**
- **Change any regulations for permitting of surface disturbance or mining**
- **Allow for an exploration borehole or well to be used for mineral production**
- **Impede responsible exploration for lithium brines**
- **Allow for unlimited pumping or discharge of water in the exploration process**

Lithium properties in Nevada



Data as of March 11, 2016.

Only active primary lithium mining properties are included.

* Project owner spelling of project name.

Source: SNL Metals & Mining, a division of S&P Global Market Intelligence

Map credit: Alip Artates

Lithium brine exploration



Lithium brine exploration



Lithium brine exploration sampling



Schedule for regulation development

- Regulation team began meeting weekly on July 11th. *Regulation Development Team: Tim Wilson-NDWR, Bruce Holmgren-NDEP, Nick Brothers-NDEP, Lowell Price-NDOM, Courtney Brailo-NDOM, Mike Visser-NDOM, Rich Perry-NDOM, Bryan Stockton-AG*
- *Working draft of Regulations and relevant forms presented at Stakeholder meeting – Aug. 23rd.*
- *Request for review of relevant sections by Commission – Aug 24th.*
- *Second stakeholder meeting for comments and discussion – Sept 8th*
- *Submit to LCB for legal review – early October*
- *Public Workshop – early-mid Nov. (?)*
- *Public Hearing and possible approval – November 30, 2017 (at next CMR meeting)*
- *Interim Legislative Committee Possible Adoption – Dec-Jan.*
- *NDOM begins to regulate Dissolved Mineral Exploration 1/1/2018*
- *Roll-out and education to Industry, BLM, and licensed well drillers – Jan/Feb 2018*