



**BRIAN SANDOVAL**  
Governor

STATE OF NEVADA  
COMMISSION ON MINERAL RESOURCES  
**DIVISION OF MINERALS**  
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Carson City, Nevada 89703  
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**RICHARD PERRY**  
Administrator

**Las Vegas Office:** 2030 E. Flamingo Rd. #220, Las Vegas, NV 89119  
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**COMMISSION ON MINERAL RESOURCES**  
DCNR/Division of Water Resources-Tahoe Hearing Room Suite 2002  
901 S. Stewart Street Carson City, Nevada 89701-5250

Tuesday, November 1, 2016

1:00 P.M.

**AGENDA**

**CALL TO ORDER**

The Agenda for this meeting of the Commission on Mineral Resources has been properly posted for this date and time in accordance with NRS requirement.

**ROLL CALL**

**PLEDGE OF ALLEGIANCE**

**COMMENTS BY THE GENERAL PUBLIC**

Pursuant to N.R.S. 241, this time is devoted to comments by the public, if any, and discussion of those comments. No action may be taken upon a matter raised under this item on the agenda until the matter itself has been specifically included on a successive agenda and identified as an item for possible action. All public comments will be limited to 5 minutes for each person. **ACTION WILL NOT BE TAKEN**

**I. MINUTES**

- A. Approval of the August 25, 2016 meeting minutes

**FOR POSSIBLE ACTION**

**II. NEW BUSINESS**

- A. Presentation on Albemarle Corporation by Karen Narwold, Chief Administrative Officer of Albemarle. Albemarle owns and operates the Silver Peak lithium mine in Esmeralda County. 20 minutes.

**FOR DISCUSSION ONLY**

- B. Oil, Gas and Geothermal databases  
Demonstration - Lucia Patterson and Lowell Price  
15 minutes

**FOR DISCUSSION ONLY**

- C. Review of the 2016 Abandoned Mine Lands program  
Rob Ghiglieri will outline the work performed and use of new MESA-2 field units. 15 minutes

**FOR DISCUSSION ONLY**

- D. 2015 Major Mines of Nevada Publication  
This annual publication was recently completed and printed. Mike Visser will explain the process of how production data is collected, compiled and reviewed for this annual publication and how it meets the requirements of the statutes. 15 minutes

**FOR DISCUSSION ONLY**

- E. Presentation on Earth Science Teacher's Workshop  
and request for financial support for FY 2018-19.  
The Commission has provided \$15,000 per year from claim  
fee revenues to support of the annual teacher workshops, which  
are organized by the Nevada Mining Association Education Committee.  
The support is used for purchases of texts, hand lenses, mineral kits and  
bus transportation, which the Division orders and receives.  
The expenditure is included in the FY 2018-19  
budget, which begins July 1, 2017. A letter from the Chairperson  
of the Education Committee is included. Garrett Wake will do a  
presentation on the last two workshops and what is planned for 2017.  
20 minutes

**FOR POSSIBLE ACTION**

**III. OLD BUSINESS**

- A. Dissolved Mineral Resource bill  
Division staff drafted language for a bill to include the  
regulation of dissolved mineral resources in the geothermal  
resources chapter, NAC 534A. This is an agency bill through  
the Governor's office, assigned as BDR 258 for the 2017  
legislative session. Administrator Perry will provide a  
presentation and update on activity and answer questions.  
20 minutes

**FOR DISCUSSION ONLY**

- B. Update on proposed Mineral Withdrawals and Land Bills  
NDOM has prepared maps for use by industry and the public  
of the proposed withdrawals of federal lands that are currently  
being proposed or evaluated. Rich Perry and Mike Visser  
will explain the type of withdrawal proposed, active claims and  
leasable minerals that could be impacted, and where each proposed  
withdrawal is in the decision process.  
- BLM Sagebrush Focal Area  
- Navy Fallon Range Training Complex (FRTC) Expansion  
- Air Force Nevada Test and Training Range (NTTR) Expansion  
- Washoe County Lands Bill  
- Pershing County Lands Bill  
20 minutes

**FOR DISCUSSION ONLY**

- C. Oil, Gas and Geothermal drilling and production activity  
OGG Program Manager Lowell Price will present the YTD  
drilling and production activities in Nevada. 15 minutes

**FOR DISCUSSION ONLY**

**IV. STAFF REPORTS**

- 1) Mining/Reclamation Bond Pool – Mike Visser
- 2) Correspondence

**COMMENTS BY THE GENERAL PUBLIC**

Pursuant to N.R.S. 241, this time is devoted to comments by the public, if any, and discussion of those comments. No action may be taken upon a matter raised under this item on the agenda until the matter itself has been specifically included on a successive agenda and identified as an item for possible action. All public comments will be limited to 5 minutes for each person. **ACTION WILL NOT BE TAKEN**

**COMMISSION BUSINESS**



A. Determination of time and place of next CMR meeting

## **ADJOURNMENT**

### **NOTICE TO PERSONS WITH DISABILITIES**

Members of the public who are disabled and require special accommodations or assistance at the meeting are requested to notify the Division of Minerals, 400 W. King Street, suite 106, Carson City, NV 89701 or contact Valerie Kneefel at (775) 684-7043 or Email [Vkneefel@minerals.nv.gov](mailto:Vkneefel@minerals.nv.gov)

The Commission will be attending a field trip on Wednesday November 2, 2016. The Commission will tour the Baselite Concrete Product manufacturing plant in Carson City and Baselite quarry in Dayton, NV. The tour will begin at the production plant located at 2500 Boeing Way in Carson City at 9 AM. Members of the public may attend but must provide their own transportation and safety equipment. Advanced notification is required. Please call Valerie Kneefel at (775) 684-7043.

# **I. MINUTES**



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## MEETING MINUTES

**COMMISSION ON MINERAL RESOURCES**  
West Wendover City Hall Council Chambers #137  
1111 N. Gene L. Jones Way, West Wendover NV 89883

**Thursday August 25, 2016**

**1:00 P.M. MST**

### CALL TO ORDER

The Agenda for this meeting of the Commission on Mineral Resources has been properly posted for this date and time in accordance with NRS requirement.

### ROLL CALL

Richard DeLong  
Dennis Bryan  
Fred Gibson  
Arthur Henderson  
John Mudge  
David Parker by phone  
John Snow

### Staff Present:

Rich Perry  
Mike Visher  
Valerie Kneefel  
Bryan Stockton

### PLEDGE OF ALLEGIANCE

### COMMENTS BY THE GENERAL PUBLIC

There were no comments by the public.

### I. MINUTES

A. Approval of the May 19, 2016 meeting minutes

**MOTION: Minutes were approved by Dennis Bryan and**

**Seconded by Fred Gibson and unanimously passed**

### II. NEW BUSINESS

Draft language for a bill draft request (BDR) to enable the permitting and regulation of dissolved mineral resource wells within the geothermal statute (NRS 534A).

Rich gave a power point presentation:

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 after treating brines pumped from 4 aquifers

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. Ex: Clayton Valley originally had 400 ppm Li as Li chloride, salar de Atacama in Chile had up to 2500 ppm Li (Ihor Kunasz, verbal communications)

Preliminary Deposit model for Lithium brines, from USGS Open-File report 2013-1006:

All producing lithium brine deposits share a number of first-order characteristics:

- Arid climate
- Closed basin containing a playa or salar
- Tectonically-driven subsidence
- Associated igneous or geothermal activity
- Suitable lithium source-rocks
- One or more adequate aquifers
- Sufficient time to concentrate the brine

Lithium exploration in Nevada

- >8000 placer claims staked since 1/1/15 in playas, presumably for lithium brine
- 15 different hydrographic basins in Nevada
- 25 different exploration entities, mainly “Juniors”
- Typical initial exploration is drilling of boreholes, sampling both sediment and brines, using a method called “dual wall reverse rotary”. Sample buckets collect sediment and solution for off-site analysis.
- 9 exploration companies have contacted NDOM, some with question about “how do we drill a well to sample aquifers?”
- NDOM now has 4 Lithium exploration projects in the bond pool, all in the last 6 months.

Regulatory authority

- Lithium brines are a locatable mineral using a placer claim on Federal lands
- NOI's or POO's administered by BLM, BMRR also for reclamation if a POO
- Drilling of unlined boreholes, same as any mineral exploration, under NAC 534.4369 (NDWR regulations) cannot divert water and groundwater cannot be contaminated. Must be plugged within 60 days of drilling.
- A borehole that is completed with casing becomes a well (NAC 534.220) and must be completed according to NAC 534.360
- A well must have a water right before being drilled – NRS 534.050
- Dissolved or entrained minerals can be recovered in the process of removing geothermal energy – NRS 534A.010 (NDOM statute)
- A claimant cannot drill a geothermal well to remove energy or dissolved minerals unless they have a geothermal lease on Federal land
- In summary, one cannot legally drill a well to sample for dissolved mineral brines without a water right or a geothermal lease.

Proposed remedy: Add Dissolved Mineral Resource to Geothermal Statutes in NRS 534A

- Proposed a definition of dissolve mineral resource to NRS 534A
- In geothermal statutes, this would allow for drilling a cased well and reasonable use of water to sample without a water right
- Would require a water right for permanent consumptive use. i.e., if a process was built
- Would allow for reinjection of brine without a water right, but would require a UIC permit
- Proposed bill is now BDR 258, an agency policy bill, which is one of the Governor's 110 allotted bills.
- State Engineer (NDWR) supportive, does not want lithium exploration to be regulated using water law; results in protests and hearings.
- NDEP supportive, wants to ensure groundwater in basins is not contaminated by requiring casing and cement for wells.
- Industry: NVMA, mineral attorneys and those who contacted NDOM regarding this issue were sent copies of the proposed language for comments. Received several positive comments and one written letter in favor.

If bill is passed, rule-making in NAC 534A.170-690 would be required to address:

- Applications
- Fees
- Casing
- Bonding (if necessary)
- Well logs (no cuttings)
- Abandonment and plugging
- This would be done in Q3, 2017

John Mudge: asked for clarification on company Rich met with that may not be supportive of the bill.

Rich Perry: Albemarle is the Company, and is the new owner of Rockwood Lithium the operator of the Silver Peak lithium operation.

Dennis Bryan: made a statement that this is just for exploration, not production, right?

Rich Perry: stated that the next step would be developing the regulations to address some of these questions.

Art Henderson: asked, what are the economic impacts to Albemarle, would this bill make their water rights less valuable?

Rich Perry: No, but the perceived concern is that brines may be coming from outside their claim block.

John Snow: he had questions regarding fluids and rights....concerned we will be responsible to address someone who is harmed from drainage.

Rich DeLong: stated that these potential resources are on public land, so what will drive the issue is the Mining Law of 1872 and locatable minerals, not correlative rights.

Dennis Bryan: stated, I think the lithium brine production issue will get addressed in the courts.

Dave Parker: asked a question regarding ownership of mineral rights on the surface and ownership of geothermal.

Rich DeLong: stated that when there is a claim staked, the federal government no longer owns the rights.

Regarding geothermal, the BLM maintains the rights.

Rich Perry: if we are talking about private property, the owner owns the mineral rights and geothermal rights.

Owner of dissolved mineral, he stated that he believes it exists in law now.

Dave Parker: asked for clarification on NRS 534A.050 and should we add the term "dissolved mineral" as well.

John Snow: asked Rich Perry to read the NRS to make sure he understands what Parker wants to change.

Rich Perry: he read NRS534A.050 for the record.

Rich Perry: stated that if it is private property there is no locatable mineral

Bryan Stockton: stated that if you own the mineral rights then you own the lithium.

John Snow: Good point. If I own the land, mineral and geothermal rights I can choose the route and terms I negotiate with an operator.

Bryan Stockton: under definition on Geothermal don't you have to

Dennis Bryan: asked if you own the mineral rights on private property don't you also own the geothermal?

John Snow: in the absence of a prior conveyance, yes

Dennis Bryan: asked then why are we questioning this?

Dave Parker: stated that we should then take out .050 altogether, because it is a given, or add mineral resources.

Rich Perry: said we will take a look at it.

Art Henderson: what is our timeline?

Rich Perry: stated that this is a Bill and it is through the Governor's office and then LCB and then the legislature.

The Commission doesn't have to approve any changes. It's already in the system.

Art Henderson: asked, don't we need to approve changes?

Bryan Stockton: stated that it's a Bill being supported by the Governor. The Governor has to agree to any changes at this point. You can suggest changes once it gets to the Legislature. If it doesn't get through the Legislature by a certain deadlines or then it dies.

Dennis Bryan: I think it's important to realize that industry came to us with specific questions about making their exploration less onerous and this bill would assist exploration. Other mining issues would be addressed in other venues or at other agencies.

Rich Perry: stated that this is a bill for the Legislature, it is a BDR.

John Snow: will the committees ask about the economic impact to the Division?

Bryan Stockton: said that usually there is a fiscal note attached to the Bill and it will be addressed there.

John Snow: stated that we don't currently regulate mining in 534A, but if we go down that path I have concerns about the technical details that will be involved in those new regulations and new permits.

Rich Perry: we are only interested in permitting the well just like geothermal, other surface disturbances are regulated by the BLM.

John Snow: said that he is not in favor of allowing the BLM to run and regulate this whole program.

John Mudge: asked if Rich Perry scoured the law to see if there is anything we could do for changes so we wouldn't have to go through this legislative process.

Rich Perry: Yes, but there wasn't a way to get there without new language.

Art Henderson: this is for possible action, what possible action can we do?

Rich Perry: stated that the motion in the context to endorse the current language with any concerns or anything we wanted to have researched as Bryan Stockton said there is language we proposed but there may be additional changes after it comes back from LCB.

John Snow: question on testing from multiple zones, would we be involved in the technical aspects of design and testing of these zones.

Rich Perry: said that in the Geothermal chapter allows for a reasonable amount of water to test. Yes, we would get involved. It's no different than the MOU with NDEP we have now.

John Snow: Have you looked at whether this would meet EPA's criteria for class 5 injection well activity?

Rich Perry: Nobody is doing this, so it's kind of a step in the process.

Art Henderson: how do we protect the ground water, can they not drill a well now to explore before this goes through legislation?

Rich Perry: Correct, they cannot legally drill a well unless they have the water rights.

Art Henderson: agrees with John Snow; these wells need to be regulated to protect the ground water.

Rich DeLong: any recommendations from the Commission?

John Snow: Just for conversation, since the train is on the track it is going to be a bill and it is going to committee maybe we ought to be prepared to address the concerns brought up today.

Rich Perry: stated that we need to see what gets approved at the legislation first then we will have a chance to voice our concerns and discuss changes.

Rich DeLong: let's move forward.

Bryan Stockton: stated that this Commission's input will be very important to the legislature.

Art Henderson: stated, I'm not ready today to comment to endorse it or not.

Rich Perry: we will have time at our next meeting in November to discuss before legislation meets.

Rich DeLong: bring this back in November.

Dennis Bryan: suggest we come up with questions we want addressed before then.

John Snow: We could go through 534A from the operational standpoint if that is what is going to happen and address each and every one and decide which are applicable and apply emergency regulations.

Bryan Stockton: I think you mean temporary regulations. You can only have temporary regulations on even years. For example July 1, 2016 through July 1, 2017 you can only have temporary regulations. Temporary regulations expire on November 1 of odd years. On July 1, 2017 you can enact permanent regulations.

John Snow: given the impact lithium has and may have, can we promulgate temporary regulations?

Bryan Stockton: You can, but then you would be promulgating regulations twice.

Rich DeLong: the issue is timing. If it gets approved in February then yes I think temporary regulations may be appropriate. But if it doesn't get approved until June then let's just wait and do this once with permanent regulations in July.

Art Henderson: stated that our biggest problem, if changes are made to Chapter 534A, is it appears we may be giving authority to BLM.

Rich Perry: I see our authority no different than geothermal regulation. Drilling and operating of the well and not the process of production.

Art Henderson: asked to have more time to understand this Bill.

Rich DeLong: suggested to Rich Perry to explain and answer questions to Commission on the side.

John Mudge: wants to know if it does pass do we have enough authority to pass regulations. Is there enough flexibility within this boundary for us to change regulations?

Rich Perry: yes, absolutely.

Art Henderson: right now no one can explore for minerals of lithium or dissolved solids unless they have water rights. What is the timeline if this approved that they will be able to explore without a water right?

Rich Perry: They can explore for lithium with a borehole but not a well, right now. If the Bill is passed, then approximately 3 months of rulemaking before they can explore using a well without having to have a water right first.

Rich Perry: stated that we can't do any changes of the code until legislation approves.

Mike Visser: stated that if the bill is passed then the Division has the authority to permit the well. We can add conditions of approval and add them to the permit. That might take some time off the process.

John Snow: In mining, do you need to demonstrate by diligence if you have the right to drill on a claim, by that I

mean is it the claimant or can it be a partner, how does that work?

Mike Visser: there will be another component here because the BLM will be involved if it's on public land. A notice or claim needs to be filed. The BLM will have to approve the activity that is proposed.

### III. OLD BUSINESS

#### A. NDOM fiscal year 2016 recap and fiscal year 2017 forecast presentation.

Fiscal year 2016 closed June 30, 2016. The 2017 forecast includes impacts from changes in claim fees approved at the last CMR meeting.

15 minutes. Mike Visser

Mike Visser gave a power point presentation:

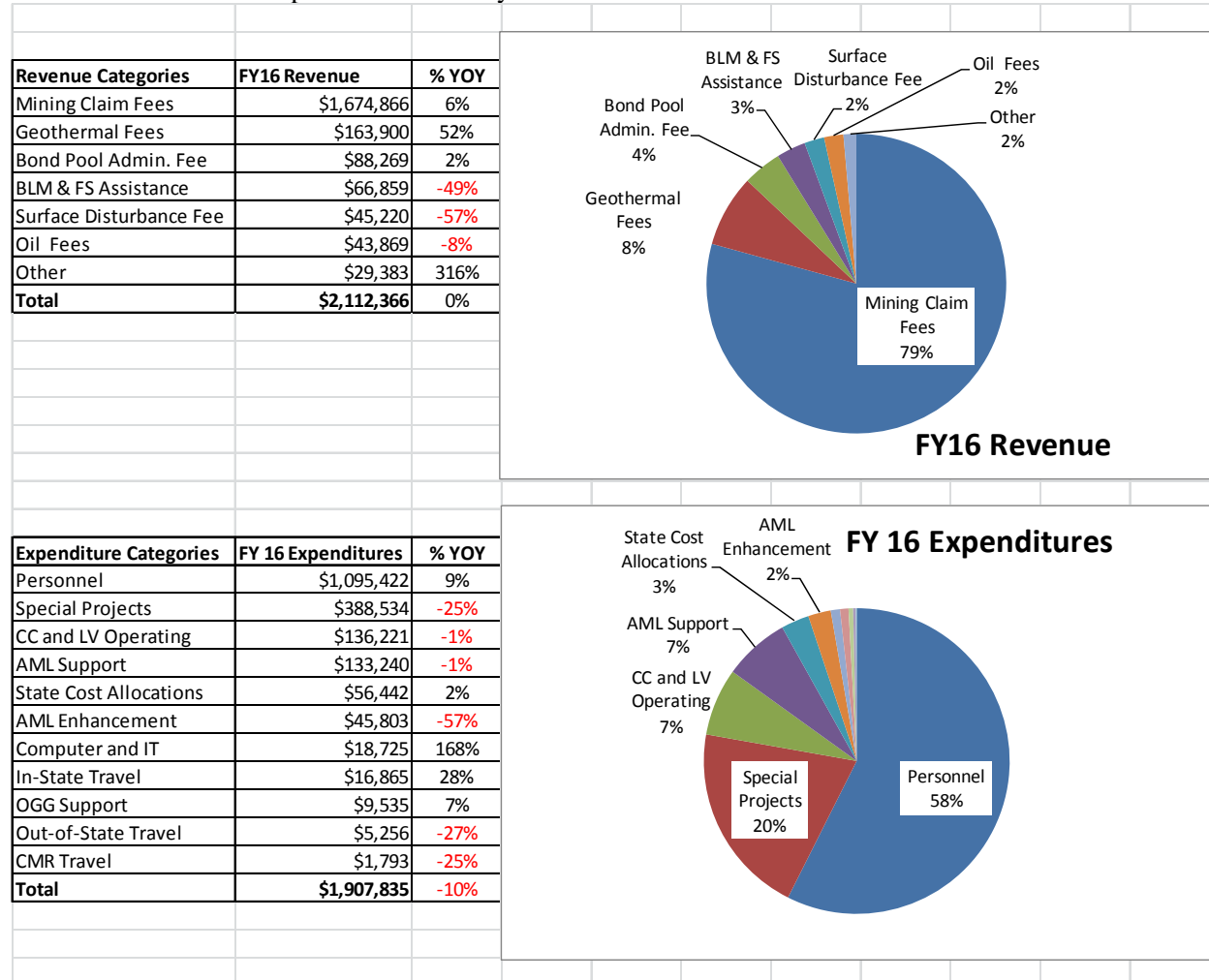
#### Fiscal Year Cumulative Mining Claim Revenue By Month

| Fiscal Year | JULY      | AUG.      | SEPT.       | OCT.        | NOV.        | DEC.        | JAN.        | FEB.        | MAR.        | APR.        | MAY         | JUNE        | YOY    | Total Claims |
|-------------|-----------|-----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------|--------------|
| 2016        | \$92,072  | \$219,020 | \$999,082   | \$1,158,219 | \$1,168,827 | \$1,415,769 | \$1,418,574 | \$1,420,520 | \$1,450,134 | \$1,453,118 | \$1,458,388 | \$1,674,866 | 5.6%   | 197,043      |
| 2015        | \$120,352 | \$250,079 | \$1,108,417 | \$1,280,687 | \$1,290,241 | \$1,531,683 | \$1,532,431 | \$1,533,349 | \$1,550,247 | \$1,553,571 | \$1,555,211 | \$1,585,539 | -4.4%  | 186,534      |
| 2014        | \$155,703 | \$306,646 | \$1,090,754 | \$1,290,496 | \$1,294,661 | \$1,602,233 | \$1,606,177 | \$1,607,656 | \$1,627,283 | \$1,631,235 | \$1,632,417 | \$1,657,789 | -10.7% | 195,034      |
| 2013        | \$90,253  | \$311,806 | \$1,199,622 | \$1,417,171 | \$1,437,104 | \$1,775,803 | \$1,781,575 | \$1,783,870 | \$1,812,217 | \$1,818,745 | \$1,825,571 | \$1,856,460 | -2.8%  | 218,407      |
| 2012        | \$26,248  | \$239,904 | \$1,055,539 | \$1,309,017 | \$1,324,445 | \$1,793,687 | \$1,802,901 | \$1,810,432 | \$1,843,795 | \$1,852,541 | \$1,857,012 | \$1,910,562 | 14.1%  | 224,772      |
| 2011        | \$18,504  | \$241,374 | \$602,803   | \$895,475   | \$966,603   | \$1,554,871 | \$1,562,053 | \$1,565,649 | \$1,609,424 | \$1,612,118 | \$1,618,145 | \$1,674,304 | 3.8%   | 196,977      |
| 2010        | \$34,315  | \$252,520 | \$866,626   | \$1,120,355 | \$1,151,704 | \$1,527,997 | \$1,532,639 | \$1,537,911 | \$1,566,170 | \$1,569,088 | \$1,574,207 | \$1,613,142 |        | 189,781      |

#### Analysis of early mining claim filings in advance of July 1, 2016 fee increase

| COUNTY        | Q4 FY11            | Q4 FY12            | Q4 FY13            | Q4 FY14            | Q4 FY15            | Q4 FY16             | % FY16 change over FY11-15 avg. | Change in # of FY16 claims over FY11-15 avg. | Variance Value      |
|---------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|---------------------------------|--|---------------------|
| Carson        | \$0.00             | \$0.00             | \$0.00             | \$0.00             | \$34.00            | \$8.50              | 25.0%                           | 0  | \$1.70              |
| Churchill     | \$1,674.50         | \$1,819.00         | \$127.50           | \$374.00           | \$2,524.50         | \$8,780.50          | 573.4%                          | 880  | \$7,476.60          |
| Clark         | \$3,978.00         | \$2,320.50         | \$1,300.50         | \$960.50           | \$1,479.00         | \$1,776.50          | -11.5%                          | (27)   | -\$231.20           |
| Douglas       | \$93.50            | \$408.00           | \$0.00             | \$340.00           | \$229.50           | \$93.50             | -56.3%                          | (14)   | -\$120.70           |
| Elko          | \$4,785.50         | \$17,085.00        | \$17,229.50        | \$3,051.50         | \$9,095.00         | \$61,064.00         | 495.8%                          | 5,978  | \$50,814.70         |
| Esmeralda     | \$9,180.00         | \$5,244.50         | \$4,318.00         | \$4,309.50         | \$3,510.50         | \$32,988.50         | 521.0%                          | 3,256  | \$27,676.00         |
| Eureka        | \$4,777.00         | \$3,901.50         | \$5,287.00         | \$1,360.00         | \$1,649.00         | \$30,583.00         | 800.9%                          | 3,199  | \$27,188.10         |
| Humboldt      | \$3,969.50         | \$8,075.00         | \$1,742.50         | \$2,669.00         | \$1,581.00         | \$33,260.50         | 822.0%                          | 3,489  | \$29,653.10         |
| Lander        | \$1,555.50         | \$1,870.00         | \$1,096.50         | \$4,029.00         | \$4,522.00         | \$24,922.00         | 853.2%                          | 2,624  | \$22,307.40         |
| Lincoln       | \$3,247.00         | \$654.50           | \$1,003.00         | \$170.00           | \$2,252.50         | \$2,057.00          | 40.4%                           | 70   | \$591.60            |
| Lyon          | \$1,011.50         | \$731.00           | \$578.00           | \$399.50           | \$382.50           | \$502.00            | -19.1%                          | (14)   | -\$118.50           |
| Mineral       | \$4,760.00         | \$3,179.00         | \$578.00           | \$1,198.50         | \$1,853.00         | \$1,572.50          | -32.0%                          | (87)   | -\$741.20           |
| Nye           | \$18,190.00        | \$8,296.00         | \$4,513.50         | \$4,845.00         | \$1,980.50         | \$21,037.50         | 178.1%                          | 1,585  | \$13,472.50         |
| Pershing      | \$5,831.00         | \$11,645.00        | \$833.00           | \$5,049.00         | \$3,068.50         | \$3,085.50          | -41.6%                          | (259)  | -\$2,199.80         |
| Storey        | \$68.00            | \$340.00           | \$204.00           | \$0.00             | \$51.00            | \$8.50              | -93.6%                          | (15)   | -\$124.10           |
| Washoe        | \$289.00           | \$59.50            | \$289.00           | \$977.50           | \$59.50            | \$2,507.50          | 648.7%                          | 256  | \$2,172.60          |
| White Pine    | \$1,470.50         | \$1,139.00         | \$1,360.00         | \$773.50           | \$765.00           | \$484.50            | -56.0%                          | (73)   | -\$617.10           |
| <b>Totals</b> | <b>\$64,880.50</b> | <b>\$66,767.50</b> | <b>\$40,460.00</b> | <b>\$30,506.50</b> | <b>\$35,037.00</b> | <b>\$224,732.00</b> | <b>273.4%</b>                   | <b>20,847</b>                                | <b>\$177,201.70</b> |

## FY 2016 revenue and expenditure summary



## FY14-16 actual and FY17 forecast revenue (Includes OGG and Mining Claim Fee Increases)

| Description                     | FY14 Actuals       | FY 15 Actuals      | FY16 Actuals       | FY17 Forecast      | Remarks   |
|---------------------------------|--------------------|--------------------|--------------------|--------------------|---|
| Balance Forward Previous Year   | 1,037,786          | 889,917            | 856,757            | 1,061,288          | FY16 Balance Fwd includes \$28,697 returned as unused by DCNR                                     |
| BLM Cooperative Agreement       | 50,000             | 110,000            | 49,000             | 50,000             |   |
| USFS Assistance Agreement       | 42,002             | 21,713             | 17,859             | 31,000             | FS Agreement ends 5/17  |
| Oil Production Fee              | 32,162             | 38,640             | 39,769             | 35,250             | Assumes \$0.15/bbl x 235k in FY17   |
| Oil Permit Fees                 | 2,800              | 2,000              | 4,100              | 2,500              | Assumes 2 conv. and 5 sundries in FY17  |
|                                 |                    |                    |                    |                    | FY16 \$177k increase (variance) due to early filings, if removed FY16 would have been -5.6 % YOY; |
| Mining Claim Fees               | 1,657,789          | 1,585,539          | 1,674,866          | 1,656,243          | forecasting 5.5% decline for FY17   |
| Geothermal Fees                 | 120,750            | 107,525            | 163,900            | 168,817            | Projecting 3% annual increase for FY17  |
| Surface Disturbance Fee (AML)   | 125,300            | 106,320            | 45,220             | 40,000             | Slight decline in FY17 based on decline in claims   |
| Copy Machines - Sales to Public | 0                  | 104                | 0                  | 0                  |   |
| Publication Sales (AML signs)   | 2,757              | 2,390              | 1,831              | 1,500              |   |
| BOA Travel Card Refund          | 0                  | 0                  | 26                 | 0                  |   |
| Excess Property Sales (truck)   | 0                  | 0                  | 21,604             | 0                  | One-time Insurance payout and salvage of totaled  |
| Medal lion Royalty Fee          | 1,550              | 616                | 98                 | 100                |   |
| Treasurer's Interest            | 3,076              | 3,947              | 5,824              | 5,800              |   |
| Transfer from Red. Bond Pool    | 90,859             | 86,498             | 88,269             | 83,000             | Steady decline tied to exploration activity   |
| <b>TOTAL</b>                    | <b>\$3,166,831</b> | <b>\$2,955,209</b> | <b>\$2,968,123</b> | <b>\$3,135,497</b> |   |



## FY14-16 actual and FY17 forecast expenditures

| Description  | FY14 Actuals       | FY15 Actuals       | FY16 Actuals       | FY17 Forecast      | Remarks   |
|--|--------------------|--------------------|--------------------|--------------------|---|
| Personnel (Sal., WC, PERS, OT)   | 1,033,398          | 1,009,184          | 1,095,422          | 1,039,724          | FY17 - 10 FTE's, 6.5 interns, 1 retirement payout   |
| Out-of-State Travel (Staff, CMR)   | 11,947             | 7,250              | 5,256              | 5,414              | Assumes 3% annual increase  |
| In-State Travel (Non-AML)  | 29,337             | 13,218             | 16,865             | 17,370             | Assumes 3% annual increase  |
| Carson Operating Expenses  | 105,893            | 100,628            | 103,609            | 123,259            | Assumes 3% annual increase, front desk P/T (25 hrs/week)  |
| CMR Travel (In-State)  | 2,911              | 2,381              | 1,793              | 1,847              | Assumes 3% annual increase  |
| Special Projects (Mackay, NBMG)  | 574,238            | 516,550            | 388,534            | 419,086            | FY17 - \$394,086 (Mackay), \$15k (NvMA Ed), \$10k NBMG publ/other   |
| Las Vegas Operating Expenses   | 33,541             | 34,658             | 32,612             | 33,590             | Assumes 3% annual increase  |
| Oil, Gas and Geothermal  | 0                  | 8,943              | 9,535              | 9,821              | Travel and equip. costs related to OGG; assumes 3% annual increase  |
| AML Support (per diem, trucks, fuel, AML supplies and travel, SOSA supplies) | 140,773            | 134,759            | 133,240            | 180,042            | Assumes 6.5 interns for FY17; each @ \$1,556/4 weeks; \$10k swag; 4 interns for 3 wks in winter; \$5k/yr increased vehicle repair costs; replacement truck in FY17 (\$35,000); 3% annual increase |
| Computer and IT  | 22,044             | 6,984              | 18,725             | 32,453             | FY17 Legislature approved budget  |
| AML Enhancements (contracts, equip.)   | 90,429             | 105,448            | 45,803             | 125,000            | Assumes \$120k contracted, plus \$5k materials  |
| Sagebrush Ecosystem Transfer   | 141,364            | 131,572            | 0                  | 0                  | FY15 transfer was last one  |
| Cost Allocations (State, Purchasing, AG)                                     | 91,040             | 55,575             | 56,442             | 112,160            | Leg. approved budget  |
| <b>Total</b>   | <b>\$2,276,915</b> | <b>\$2,127,150</b> | <b>\$1,907,835</b> | <b>\$2,099,767</b> |   |
| <b>Reserve - Balance Forward to Next Year</b>                                | <b>\$889,916</b>   | <b>\$828,059</b>   | <b>\$1,061,288</b> | <b>\$1,035,731</b> |   |

Mike Visser: Went through his spreadsheets, explaining some of the changes in revenue and expenditures. Mentioned that the nominal increase in the bond pool activity was largely limited to lithium projects. Projecting 3% increase for inflation applied to most expenditure categories. He said that we are proposing 7 interns for next year with possibly one of those in the office doing more data entry. We expect to continue the \$15k Mining Association's Education Committee contribution and the \$10k to NBMG, temporary help for the front desk at 25 hours/week. Also, one more truck needs to be purchased, ordered this Fall and received in Spring of 2017.

Rich DeLong: is that the last vehicle we will purchase?

Mike Visser: yes, after this we migrate to Fleet Services for replacement trucks.

Computer and IT goes up because of the 5 year replacement cycle for equipment.

### B. Presentation of 2018-19 biennium budget and plan.

During the May 2016 meeting draft budget assumptions were presented to the CMR and priorities were developed. The budget has been prepared based on current forecast assumptions and priorities developed by the CMR. Budgets are due to the Finance Office by September 1, 2016. 30 minutes. Mike Visser and Rich Perry

Rich Perry gave a power point presentation (see PP).

- Base budget built from FY 2016 actuals
- Claim fee and geothermal fee increases approved in 2016 are included
- Assumes 5.5% decrease in claims in FY 2017 (actual), 5% decrease in 2018 and 2019
- Assumes 3% annual increases in geothermal fees 2018-2019 ~ \$175K/YR
- Oil production and permit fees declining 5% per year in '18-'19 ~\$45K/YR
- BLM Cooperative agreement \$50K/YR '18-'19
- 11 F/T staff, but one vacancy to remain unfilled until 2018. Front desk ½ time staff from Manpower.
- \$2 /Claim fee payment to UNR-Mackay though current 5 year agreement, final payment February, 2018 (2 more years of payments).
- Contracted AML work increase from \$50k to \$125K/YR in 2018-19
- Minimum reserve increased from \$750K to \$900K (~1/2 YR OP. Cost)
- NBMG "directed reports and deliverables" from \$10K in 2017 to \$95K/YR in 2018 and 2019. (*Annual MI report, updated maps, scanning and archiving, yearly Exploration Survey report, a Critical Minerals (including thorium) study, special maps as needed*)
- 7 AML interns 14 weeks in summer, 3 weeks in winter

- New truck from Fleet Services in 2019
- PDAC Space and Display beginning 2018 \$35K + travel for 2 NDOM staff (Task Force recommendations)
- Stay-Out-Stay-Alive (S.O.S.A.) rebranding materials and new video in 2019 at \$80K (current video is 15 years old).
- Education Committee teacher workshops 2X/yr. \$15K each in '18 and '19.
- New trade show exhibit displays \$15K in 2018, \$5K in 2019

#### Contingency Plans

If claim revenues are significantly less than budgeted:

- Reduce AML contracted work
- Do not fill the remaining vacancy
- Defer S.O.S.A. video and re-branding

If claim fee revenues are significantly more than budgeted:

- Increase contracted AML closure activity
- decrease claim fee below current \$10 through rule-making

### BUDGET KICKOFF 2017 – 2019 Executive Budget

## Budget Cycle

- Agency Request
  - Due 5:00PM Thursday September 1, 2016
- Governor Recommends
  - Budget Message and Summary
  - Line Item Detail
  - Economic Development Incentives
  - Recommended Legislation
- Legislatively Approved
  - Session starts February 6, 2017
  - Session ends June 5, 2017
- Resources on the Budget Division website ([www.budget.nv.gov](http://www.budget.nv.gov))

Rich Perry: Stated that we are in better shape than we expected to be, largely because we received more claim fees due to the early filers. Recap on priorities and core functions. Went through 2018-19 budget assumptions-revenues. We're instructed to build this off of the 2016 actuals. We projected a 5% decrease for claim fee revenue. We can take in more revenue than we project but we need to be more exact on the expenditures. We would like to eventually keep the reserve at around \$900,000, about 6 months operating expenses.

Rich DeLong: asked on FY 18/19 is there an expected payout for retirement?

Rich Perry: not in this budget, but it is forecast and shown in the 2017 budget.

Rich DeLong: stated, let's take a 10-minute break, so everyone has a chance to review this and come back to ask any questions they may have.

**CMR recessed at 3:01 pm.**

**CMR reconvened at 3:15 pm.**

John Mudge: said it was a good presentation. I have two conflicting opinions: it would be nice to get the \$2/claim back to the claim holder as we unfold the Mackay payment and really nice to get more money into AML work while getting more money back into the reserve.

Rich DeLong: entertains a motion to approve the budget.

**MOTION: Dennis Bryan approved and John Snow seconded. Unanimously passed.**

### **C. BLM proposed mineral withdrawal update.**

NDOM developed maps and backup information on areas of high mineral potential to assist the Governor's office. NDOM has acted as a cooperating agency in the EIS process, with the intent of removing these areas of high mineral potential from the withdrawal

Rich Perry gave a PP presentation on proposed mineral withdrawal update.

#### **Chronology of Mineral Withdrawal**

- BLM issues Record of Decision on "Nevada and NE CA Greater Sage Grouse FEIS and LUPA".
- Eliminates oil/gas, geothermal and wind energy projects on almost 2.8 million acres of NV along Idaho border.
- Segregates 2.8M acres (called the Sagebrush Focal Areas) to new mineral claims. Existing claims valid, but a mineral analysis would be needed if ultimately removed. Can do this under FLPMA for 2 years.
- All this driven by USFWS, to "avoid" listing the sage grouse as an endangered species.
- Separate EIS begun by BLM for mineral withdrawal.
- During this process CMR issued a policy recommendation letter to Governor Sandoval opposing the FEIS/LUPA on 7/8/15.
- Governor's office enlists NDOM and NDOW to develop a "Nevada Alternative" to the proposed SFA boundaries being used for the mineral withdrawal. NDOM enlists NBMG for map of "high mineral potential" in SFA. NDOW develops maps of sage grouse lek populations.
- Governor Sandoval issued letter 1.15.16 to BLM Director Kornze stating that Nevada did not want a mineral withdrawal at all, the Nevada Sage Grouse Conservation Plan would address the issue, but if withdrawal application was approved, Nevada proposed different boundaries. The "Nevada Alternative" was introduced in this letter.
- 12 areas of high mineral potential were proposed to be removed from the MW, 4 areas of low habitat value also proposed to be removed, and 2 areas of high sage grouse populations were proposed to be added. Net acreage slightly less than original SFA-MW proposed boundaries.
- Governor's office holds meetings with USFWS, BLM, NDOM and NDOW to discuss alternatives.
- NDOM, NDOW, and several NV counties, through NACO, become Cooperating Agencies in the MW EIS process.
- NDOM comments on EIS process as C.A. on Scoping Report, (April, 2016), Workshop summary (June 2016), and Impact Analysis Plan (June, 2016).

Presented a chronology of the mineral withdrawal. Governor enlisted NDOM and NDOW to develop a Nevada Alternative to proposed SFA boundaries being used for Mineral withdrawal. Purpose was to change the boundaries so not to interfere with mineral entry in areas of mineral potential. Went on to describe potential outcomes. In the short term draft EIS chooses the Nevada Alternative and in the final EIS there is no MW or the Nevada Alternative.

John Mudge: which BLM office is managing this?

Rich Perry: out of Denver, and we join the conference call. EIS is a multiple state but it is divided regionally, so Nevada and California are combined in one. We have a really good plan.

Dennis Bryan: congratulates division staff for a good job in working with the Governor's office.

Dave Parker: how many alternatives are being proposed right now?

Rich Perry: 3 primary alternatives.

## **IV. STAFF REPORTS**

### **1) Mining/Reclamation Bond Pool – Mike Visser**

Mike went through bond pool status report. Last quarter saw a significant increase on the bond for what was formerly called NV Rae Gold now New Gold Nevada. The Bond Pool is down to 89 notice level bonds. The Bond Pool account is at 126% of obligation amount. Had to file a termination letter this past Tuesday. Western Pacific Clay failed to make the quarterly premium payment; had been bonded since 1997. The \$209,900 bond is now held and made available the BLM and NDEP for reclamation work at the property.

Rich DeLong: asked if this was the property near Salt Wells?

Mike Visser: answered yes.

## 2) Update on 2016 Summer Intern Program – Mike Visser

Mike gave an update on the summer AML interns. It was a stellar group of interns this year and Rob Ghiglieri did a phenomenal job. Mike displayed a map of areas of importance/ranking and reviewed the plan for 2016.

- 14 week program
- Increased emphasis on safety, with pre-employment drug-screening
- CPR and First Aid instruction by Garrett (certified instructor)
- Field-based 4WD orientation
- Increased staff supervision in the field

### Work Area Prioritization

- Analysis and rank of 7.5' topographic maps based on a number of parameters, including:
  - Number of mine features not already inventoried
  - Density of, and proximity to, maintained roads
  - Proximity to population and recreation areas
  - Number of high ranked hazards not permanently closed.
  - Average rank of orphan hazards needing securing
  - Intern specific logistics

Then he showed an intern program tracking sheet which shows mileage, securing's, etc... and then it compares the numbers to last years. The 2016 interns accomplished more this year than any other year and with a smaller crew. June 27<sup>th</sup> marked the inventory of the AML program's 20,000<sup>th</sup> hazard.

### 2016 Intern AML Program Accomplishments

- Inventoried 763 and secured 308 hazards
- Inventoried 9,162 non-hazards
- 166 re-visits
- Worked 61 field days in 11 counties and traveled a cumulative 19,756 miles
- Interns averaged 58 field hours per week
- Initiated use of MESA<sup>2</sup> tablets for field data collection
- New records for number of inventoried hazards and secured features

Rich DeLong: stated that you use to have 8 interns, is that right, is dropping back to 6 more productive?

Mike Visser: mentioned that 6 or 7 interns are easier to manage. If we go to 7 next year, hopefully we can have one in the office. It really depends on the team. Next meeting Rob can show you the tablets and our new database site.

John Snow: asked about the winter program.

Mike Visser: last year was our first time sending already seasoned interns to the Las Vegas area. A 10-day work hitch allowed for more work to be accomplished in the field. Found it to be a good way to get AML work done in Clark County. Still somewhat weather dependent.

Dennis Bryan: asked about hard closures vs fences. How often do you have to go back and re-secure?

Mike Visser: the fences usually last about 5 years largely due to weather and to a lesser extent vandalism. Even backfills need to be revisited as well, checked every 10 years. Gates or other semi-permanent closures also need to be checked depending on the ranking of the site.

John Mudge: stated that it was an impressive work this summer. Asked if there was any new technology in the future that can be applied?

Mike Visser: stated that there was a test case funded by Army Corps using Robison Engineering over the Wonder District in Churchill County with a fixed wing drone. You can get some great information and can give us pictures in some areas where we have no information. It would be one way to clear non-hazards remotely. LIDAR is also being used and we will be evaluating potential applications to AML. We would benefit from more contracted UTV work to reach areas we can't with our big trucks. A helicopter for a couple of days would be great to assess large numbers of claim assessment features, especially around Tonopah.

Dennis Bryan: stated that next time he would like to see the tablet technology demonstrated. Have you used the downhole camera much recently?

Mike Visser: answered, yes we used it in March to clear some shafts of biological habitat for backfill and then in April on several shafts in Goldfield for the claimant's assessment for potential use for backfill of waste rock from their proposed underground mining operation.

Mike Visser: talked about the oil gas and geothermal activity summary.

John Snow: stated that the BLM leases sales are experiencing protests and have had to be moved from their office to off-site facility with security. Asked how many wells have been shut in?

Mike Visser: stated, he didn't have numbers but thought it was 12-18 or so in FY16.

John Snow: indicated that he would rather Lowell be at the meetings to report the OGG activity.

### 3) Correspondence – Rich Perry

Rich Perry indicated Mike will be attending the IOGCC in October this year along with Commissioner Henderson. Commissioner Snow was appointed to two IOGCC subcommittees, Public Lands and Safety and Environmental. September 26-28<sup>th</sup> is the national Mine Expo in Las Vegas, where Garrett, Mike and Rich will be attending. He went through some letters in correspondence, including reclamation award letters. The reclamation awards will be presented on September 10<sup>th</sup> at the Nevada Mining Association annual meeting, which will be attended by the Governor. He reviewed letters submitted regarding the CERCLA 108-b bonding issue and showed off the new mining brochure developed by the Governor's Office of Economic Development with input from the Division.

## COMMISSION BUSINESS

### A. Determination of time and place of next CMR meeting

#### **Carson City – November 1 and 2 (Tuesday and Wednesday)**

Potential topics for agenda items – Mesa<sup>2</sup> tablet demo and geodatabase, update on dissolved mineral BDR, update and demo of OGG databases, specifics on PDAC goals and plans

## COMMENTS BY THE GENERAL PUBLIC

No comments from the Public

## ADJOURNMENT

Meeting adjourned at 4:45 PM

## **II. NEW BUSINESS**

**II. A. Presentation on Albemarle**  
**Corporation by Karen Narwold**

THIS SECTION IS INTENTIONALLY LEFT BLANK.  
HAND OUTS AND PRESENTATION WILL BE GIVEN AT THE  
MEETING.



## **II. B. Oil, Gas and Geothermal databases**

THIS SECTION IS INTENTIONALLY LEFT BLANK.  
HAND OUTS AND PRESENTATION WILL BE GIVEN AT THE  
MEETING.

## **II. C. Review of the 2016 Abandoned Mine Lands program**



# mesa<sup>2</sup>™

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 Windows 10



## Your Office, Anywhere

Introducing... your new office. In a sleek, ultra-rugged package that can go with you into the harshest environments out there. Running Windows® 8.1/10, the new Mesa 2 Rugged Tablet brings powerful functionality to your mobile data collection, featuring a vast, 7-inch, extra-bright display for easily viewing maps or large images, all-day battery power lasting up to 15 hours, and of course, the unmatched ruggedness that Juniper Systems is known for. Consider the Mesa 2 your office, anywhere.

 **JUNIPER**<sup>®</sup>  
systems

# Mesa 2 Rugged Tablet

The days of needing multiple devices to collect and analyze data are gone. Running a full Windows OS, you can carry out the entire data collection process from start to finish on your Mesa 2. With a racing-fast processor, extra-long battery life, and unbeatable ruggedness, the Mesa 2 is designed for maximum efficiency in the harshest environments. And while it features a larger display than any previous Juniper Systems device, the Mesa 2 is lightweight and ergonomic, minimizing fatigue while improving productivity. With all the functionality of a desktop computer packed into a tough, mobile device, the Mesa 2 will truly become your office, anywhere.



## ILLUMIVIEW™ HIGH-VISIBILITY DISPLAY

- Large, 7-inch display for easy viewing
- IllumiView technology provides extraordinary visibility
- Optically-bonded capacitive touch screen for needle-sharp imagery
- Chemically-strengthened Dragontrail™ glass for excellent impact & scratch resistance

## PERFORMANCE

- Powerful Windows 8.1/10 OS for office-to-field use
- Plenty of memory - 4 GB RAM & up to 128 GB flash storage



## EXPANDABLE BATTERY

- All-day battery runs 8–10 hours for minimal downtime
- Optional expansion provides additional 4–5 hours
- Operates in extreme temperatures from -4 F to 122 F (-20 C to 50 C)

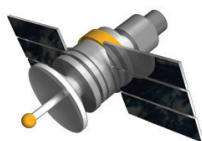
## JUNIPER RUGGED™

- Maximum protection for your data
- Dustproof & waterproof (IP68 rating)
- Designed to MIL-STD-810G for ultra-ruggedness
- 2-year warranty



## READY FOR ANYTHING

- Long-range Bluetooth® Smart Ready, Wi-Fi®, 4G LTE, serial & USB connectivity
- High-performance GNSS receiver
- 8 MP rear, 2 MP front camera
- 1D/2D barcode scanner & UHF RFID



## Applications

- Natural Resources
- Utilities & Public Services
- Industrial
- Agriculture
- Geomatics
- Military
- Oil & Gas
- Construction
- Public Safety



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MKTG0019





The Mesa 2 Rugged Tablet brings with it a whole new data collection experience. As the first Juniper Systems device to run a full Windows® operating system, the Mesa 2 allows you to collect and analyze your data from start to finish, without ever touching a desktop. The following specifications describe the inner workings of the Mesa 2, ensuring absolute ruggedness and reliability, and enabling it to become your office, anywhere.

#### PROCESSOR

- Quad-core Intel® Atom™ Z3745 processor

#### OPERATING SYSTEM AND SOFTWARE

- Microsoft® Windows 10
- Multiple languages supported (English, French, Spanish, German, Portuguese)

#### MEMORY AND DATA STORAGE

- 4 GB RAM (LPDDR3)
- 64 GB or 128 GB flash storage options
- User-accessible MicroSDXC card slot

#### GRAPHICS

- Intel® HD Graphics



#### DISPLAY

- Active viewing area: 7" (178 mm)
- Resolution: WXGA (1280 x 800)
- High-visibility backlit LCD for best-in-class sunlight view-ability
- Portrait or landscape orientation with automatic screen rotation

#### TOUCH SCREEN

- Projected capacitive multi-touch interface for use with gloves, small tip stylus, and in wet conditions
- Optically bonded for increased visibility and strength
- Chemically-strengthened Dragontrail™ High Ion-Exchange (HIE™) cover glass for excellent impact and scratch resistance

#### KEYBOARD

- Adjustable LED backlit keys
- Four-way directional navpad
- Windows/home key
- Power key
- Enter key
- Three user-programmable function keys
- OEM configurable/customizable



#### PORTS

- USB 3.0 x 1
- 3.5 mm audio jack
- 12 VDC power input jack
- Docking port connections (Pwr, USB 2.0, & HDMI)
- Loud output speaker for noisy environments
- Dual digital microphone input for improved clarity
- Optional RS-232 9-Pin D-Sub connector with 5VDC power output

#### BATTERY

- Removable Li-Ion battery, 39 Whr
- Operates 8–10 hours on one charge
- Removable battery, easily changeable in field
- Optimized for strong performance in cold temperatures
- Excellent lifecycle performance
- Optional internal 19-Whr battery provides hot-swap capability and an additional 4–5 hours runtime

#### PHYSICAL

- Size: 5.40" w x 8.48" l x 1.36" d (137 x 215 x 35 mm)
- Weight: 1.5–2 lbs (680–907 g) depending on battery configuration
- Durable, chemical- and shock-resistant design
- Easy-to-grip, impact-absorbing, overmolded bumpers
- Lightweight and ergonomic design

#### JUNIPER RUGGED™

- IP68 waterproof and dustproof
- Operating temperature: -4 F to 122 F (-20 C to 50 C)
- Storage temperature: -22 F to 158 F (-30 C to 70 C)
- Shockproof: multiple drops from 4' (1.2–1.5 m) onto concrete
- Designed for MIL-STD-810G test procedures: Method 500.5 Low Pressure (Altitude); Method 501.5 High Temperature; Method 502.5 Low Temperature; Method 503.5 Temperature Shock; Method 506.5 Rain; Method 507.5 Humidity; Method 510.5 Sand and Dust; Method 512.5 Immersion; Method 514.6 Vibration; Method 516.6 Shock

#### WIRELESS CONNECTIVITY OPTIONS

- Long-range Bluetooth® Smart Ready Smart Ready wireless technology, v4.0 +EDR, Class 1.5, BLE support
- Wi-Fi® 802.11 a/b/g/n, 2.4 GHz and 5 GHz
- 4G LTE, support for GSM or Verizon Networks

#### CAMERA (GEO MODELS)

- Rear: 8 MP with LED illumination
- Front: 2 MP
- Juniper Geotagging™: embed photo with date, time, and GNSS position

#### GPS/GNSS (GEO MODELS)

- 2 to 5 meter typical accuracy
- uBlox NEO-M8N GNSS receiver and integrated antenna
- Integrated real-time SBAS receiver (WAAS, EGNOS, etc.)
- 72 GNSS tracking channels
- Optional: uBlox NEO-M8T w/post-processing capability and external GNSS antenna pass-through connection for sub-meter accuracy

#### BARCODE 1D/2D IMAGER (BARCODE MODELS)

- Optional built-in barcode imager and decoder
- Symbolologies: all common 1D and 2D (PDF 417, MicroPDF417, Composite, RSS, TLC-39, Data matrix, QR code, Micro QR code, Aztec, MaxiCode, Postal codes, etc.)
- Programmable trigger buttons
- Visible aiming bullseye with low-light illumination
- Barcode Connector™ Utility, wedge and configuration, SDK support available

#### UHF RFID (RFID MODELS)

- Optional built-in UHF RFID module and internal antenna
- Region-specific frequency configurations (859–873 MHz & 915–930 MHz)
- EPCglobal Gen 2 (ISO 18000-6C) protocol support
- Wide output range (0 dBm to +27 dBm)

#### OTHER FEATURES

- Ambient light sensor
- Compass
- Accelerometer
- Gyroscope
- TPM (Trusted Platform Module) v2.0

#### CERTIFICATIONS AND STANDARDS

- FCC Class B
- CE Marking (applicable EMC, R&TTE, and LVD directives)
- Industry Canada
- EN60950 Safety
- RoHS 2 Compliant
- Optional Class I, II, & III, Division 2



#### STANDARD ACCESSORIES

- Standard removable battery
- AC wall charger with international plug kit
- Capacitive small-tip stylus w/tether
- Quick Start Guide
- Hand strap
- Connector port dust cover
- 2-year warranty



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## **II. D. 2015 Major Mines of Nevada**

### **Publication**

**REGISTRY FORM**  
**Nevada Division of Minerals**  
400 W. King Street, Suite 106, Carson City, NV 89703  
(775) 684-7040 \* Fax (775) 684-7052 \* E-Mail: ndom@minerals.nv.gov

MSHA No. \_\_\_\_\_ Date Submitted \_\_\_\_\_

Report Year \_\_\_\_\_ Submitted by \_\_\_\_\_

Operation Name: \_\_\_\_\_  
(Name of mine, mill, etc.)

Operator Name: \_\_\_\_\_  
(Name of company, corporation, partnership, or individual)

Operation Mailing Address: \_\_\_\_\_

Operation Telephone No.: \_\_\_\_\_ Operation Fax No.: \_\_\_\_\_

Home Office Mailing Address: \_\_\_\_\_  
(if different from above)

Home Office Telephone No.: \_\_\_\_\_ Home Office Fax No.: \_\_\_\_\_

Email Address: \_\_\_\_\_

Website Address: \_\_\_\_\_

Location of Operation: County: \_\_\_\_\_ Township: \_\_\_\_\_  
Range: \_\_\_\_\_ Section: \_\_\_\_\_

Current Mine Status: (Please check one. If in temporary or permanent shut down, please enter the date of occurrence.)

☐ Development

☐ Production

☐ Temporary Shut Down → Temporary Shut Down Date \_\_\_\_\_

☐ Permanent Shut Down → Permanent Shut Down Date \_\_\_\_\_

Date or Planned Date Commencement: \_\_\_\_\_

Mining Method: \_\_\_\_\_  
(open pit, underground, placer, etc. If multiple methods exist, please indicate percentage of production from each.)

Type of Process: \_\_\_\_\_  
(heap leach, milling, gravity, etc. If multiple methods exist, please indicate percentage of production from each.)

Is processing facility available for custom milling? \_\_\_\_\_

Commodity/Commodities To Be Produced: \_\_\_\_\_



# ANNUAL STATUS AND PRODUCTION REPORT – NON-METALLICS

## Nevada Division of Minerals

400 W. King Street, Suite 106, Carson City, NV 89703  
(775) 684-7040 \* Fax (775) 684-7052 \* E-Mail: ndom@minerals.nv.gov

MSHA No. \_\_\_\_\_ Date Submitted \_\_\_\_\_

Report Year \_\_\_\_\_ Submitted by \_\_\_\_\_

Operation Name: \_\_\_\_\_  
(Name of mine, mill, etc.)

Operator Name: \_\_\_\_\_  
(Name of company, corporation, partnership, or individual)

Operation Mailing Address: \_\_\_\_\_

Operation Telephone No.: \_\_\_\_\_ Operation Fax No.: \_\_\_\_\_

Home Office Mailing Address: \_\_\_\_\_  
(if different from above)

Home Office Telephone No.: \_\_\_\_\_ Home Office Fax No.: \_\_\_\_\_

Email Address: \_\_\_\_\_

Website Address: \_\_\_\_\_

Location of Operation: County: \_\_\_\_\_ Township: \_\_\_\_\_  
Range: \_\_\_\_\_ Section: \_\_\_\_\_

Current Mine Status: (Please check one. If in temporary or permanent shut down, please enter the date of occurrence.)

☐ Development

☐ Production

☐ Temporary Shut Down → Temporary Shut Down Date \_\_\_\_\_

☐ Permanent Shut Down → Permanent Shut Down Date \_\_\_\_\_

Date or Planned Date Commencement: \_\_\_\_\_

Mining Method: \_\_\_\_\_  
(open pit, underground, placer, etc. If multiple methods exist, please indicate percentage of production from each.)

Type of Process: \_\_\_\_\_  
(heap leach, milling, gravity, etc. If multiple methods exist, please indicate percentage of production from each.)

Is processing facility available for custom milling? \_\_\_\_\_

|                     | Commodity 1 | Commodity 2 | Commodity 3 |
|---------------------|-------------|-------------|-------------|
| Commodity Produced: |             |             |             |
| Primary Use(s):     |             |             |             |

|                                 | Commodity 1 | Commodity 2 | Commodity 3 |
|---------------------------------|-------------|-------------|-------------|
| Commodity Mined:                |             |             |             |
| Mined Amount:                   |             |             |             |
| Mined Unit (tons, ozs, etc.):** |             |             |             |
| Mined Remarks:                  |             |             |             |

|                                     | Commodity 1 | Commodity 2 | Commodity 3 |
|-------------------------------------|-------------|-------------|-------------|
| Commodity Processed:                |             |             |             |
| Processed Amount:                   |             |             |             |
| Processed Unit (tons, ozs, etc.):** |             |             |             |
| Processed Remarks:                  |             |             |             |

|                                   | Commodity 1 | Commodity 2 | Commodity 3 |
|-----------------------------------|-------------|-------------|-------------|
| Commodity Shipped:                |             |             |             |
| Shipped Amount:                   |             |             |             |
| Shipped Unit (tons, ozs, etc.):** |             |             |             |
| Shipped Remarks:                  |             |             |             |

**NOTE: --- Please enter the amount and whether it is in tons, ounces, pounds, yards, etc. for Mined, Processed, and Shipped quantities. ---**

**Administrative Staff Name(s):**

Operations Manager: \_\_\_\_\_  
 Mine Manager: \_\_\_\_\_  
 Mill Manager: \_\_\_\_\_

**Total Number of Employees for the Facility:** \_\_\_\_\_ **Company** \_\_\_\_\_ **Contractor(s)** \_\_\_\_\_  
**Total Employees** \_\_\_\_\_

# ANNUAL STATUS AND PRODUCTION REPORT – METALLICS

## Nevada Division of Minerals

400 W. King Street, Suite 106, Carson City, NV 89703  
(775) 684-7040 \* Fax (775) 684-7052 \* E-Mail: ndom@minerals.nv.gov

MSHA No. \_\_\_\_\_ Date Submitted \_\_\_\_\_

Report Year \_\_\_\_\_ Submitted by \_\_\_\_\_

Operation Name: \_\_\_\_\_  
(Name of mine, mill, etc.)

Operator Name: \_\_\_\_\_  
(Name of company, corporation, partnership, or individual)

Operation Mailing Address: \_\_\_\_\_

Operation Telephone No.: \_\_\_\_\_ Operation Fax No.: \_\_\_\_\_

Home Office Mailing Address: \_\_\_\_\_  
(if different from above)

Home Office Telephone No.: \_\_\_\_\_ Home Office Fax No.: \_\_\_\_\_

Email Address: \_\_\_\_\_

Website Address: \_\_\_\_\_

Location of Operation: County: \_\_\_\_\_ Township: \_\_\_\_\_  
Range: \_\_\_\_\_ Section: \_\_\_\_\_

Current Mine Status: (Please check one. If in temporary or permanent shut down, please enter the date of occurrence.)

☐ Development

☐ Production

☐ Temporary Shut Down → Temporary Shut Down Date \_\_\_\_\_

☐ Permanent Shut Down → Permanent Shut Down Date \_\_\_\_\_

Date or Planned Date Commencement: \_\_\_\_\_

Mining Method: \_\_\_\_\_  
(open pit, underground, placer, etc. If multiple methods exist, please indicate percentage of production from each.)

Type of Process: \_\_\_\_\_  
(heap leach, milling, gravity, etc. If multiple methods exist, please indicate percentage of production from each.)

Is processing facility available for custom milling? \_\_\_\_\_



## **Statutes and administrative code relevant to the Division's Mines Registry and Annual Status and Production Reports.**

### **Nevada Revised Statute Chapter 513 – Commission on Mineral Resources**

[NRS 513.073](#) **Encouragement of exploration; collection and dissemination of educational information; maintenance of register of operations; record of annual production; administration of chapter 522 of NRS and regulations of Commission.** The Division shall:

1. Encourage and assist in the exploration for and the production of oil, gas, geothermal energy and minerals within this State.
  2. Collect and disseminate throughout the State information calculated to educate persons engaged in those enterprises and benefit those enterprises in this State, and any information pertaining to any program administered by the Division.
  3. Maintain a register of all mining operations and operations for the production of oil, gas and geothermal energy in this State.
  4. Record annually the production of each registered mining operation and operation for the production of oil, gas and geothermal energy in this State.
  5. Administer the provisions of [chapter 522](#) of NRS.
  6. Administer any regulations adopted by the Commission.
- (Added to NRS by 1983, 2068; A [1993, 1682](#))

---

### **Nevada Administrative Code Chapter 513 – Registration and Records of Mining Operations**

**NAC 513.010 Definitions.** ([NRS 513.063](#)) As used in [NAC 513.010](#) to [513.120](#), inclusive, unless the context otherwise requires, the words and terms defined in [NAC 513.020](#) to [513.050](#), inclusive, have the meanings ascribed to them in those sections.

(Added to NAC by Comm'n on Mineral Resources, eff. 2-18-88)

**NAC 513.020 “Administrator” defined.** ([NRS 513.063](#)) “Administrator” means the Administrator of the Division of Minerals of the Commission on Mineral Resources.

(Added to NAC by Comm'n on Mineral Resources, eff. 2-18-88)

**NAC 513.030 “Mine” defined.** ([NRS 513.063](#)) **“Mine” means:**

1. Any area where:
  - (a) Development is conducted to prepare or open any deposit of minerals; or
  - (b) Minerals are extracted from a surface or subsurface deposit; or
2. Any beneficiation plant, mill, smelter, refinery or other facility used to treat or reduce any mineral or mineral commodity, whether or not contiguous to an area where exploitation or extraction of mineral commodities occurs.

(Added to NAC by Comm'n on Mineral Resources, eff. 2-18-88)

**NAC 513.040 “Operator” defined.** ([NRS 513.063](#)) “Operator” means any person operating, controlling or supervising a mine and owning the right to do so, and includes any person charged with the responsibility for the operation of a mine.

(Added to NAC by Comm'n on Mineral Resources, eff. 2-18-88)

**NAC 513.050 “Person” defined.** ([NRS 513.063](#)) “Person” means a natural person, any form of business or social organization and any other legal entity including, but not limited to, a corporation, partnership, association, trust, unincorporated organization, government, governmental agency or political subdivision of a government.

(Added to NAC by Comm'n on Mineral Resources, eff. 2-18-88)

**NAC 513.060 Waiver or alteration of provisions.** ([NRS 513.063](#)) The Administrator may waive or alter any provision of [NAC 513.010](#) to [513.120](#), inclusive, if the intent of that provision would not be carried out by its strict application.

(Added to NAC by Comm'n on Mineral Resources, eff. 2-18-88)

**NAC 513.070 Confidentiality of information.** ([NRS 513.063](#))

1. Except as otherwise provided in subsection 4, any information submitted to the Administrator pursuant to the provisions of [NAC 513.010](#) to [513.120](#), inclusive, may be classified as confidential by the person submitting the information. If the person submitting the information wishes the Administrator to consider the information confidential, the claim must be asserted at the time of submission by stamping or writing confidential business information on each page containing the information.

2. If a claim is asserted, the information so kept must remain confidential except that the information may be used in connection with other data if use of that information would not disclose the identity of the confidential information.

3. If a claim is not made at the time of submission, the Administrator may make the information available to the public without further notice.

**4.** The Administrator will not classify as confidential any information required to be submitted to him or her pursuant to the provisions of [NAC 513.010](#) to [513.120](#), inclusive, if the information relates to:

- (a) The name and address of the person conducting the operation of the mine;
- (b) The annual production of the commodity;
- (c) The amount of the tax on the net proceeds of a mine and the amount of the tax on the property of the operation; or
- (d) The number of persons employed by a mine.

(Added to NAC by Comm'n on Mineral Resources, eff. 2-18-88)

**NAC 513.080 Forms for submission of information.** ([NRS 513.063](#)) The information required pursuant to the provisions of [NAC 513.010](#) to [513.120](#), inclusive, must be submitted on forms provided by the Administrator.

(Added to NAC by Comm'n on Mineral Resources, eff. 2-18-88)

**NAC 513.090 Preparation and maintenance of records and reports.** ([NRS 513.063](#)) Each operator shall prepare and maintain such records and reports as the Administrator may require.

(Added to NAC by Comm'n on Mineral Resources, eff. 2-18-88)

**NAC 513.100 Registration of mines.** ([NRS 513.063](#)) Each operator of a mine which:

1. Is in operation on February 18, 1988, shall submit to the Administrator a completed form for registration within 90 days after February 18, 1988.

2. Begins operations after February 18, 1988, shall submit to the Administrator a completed form for registration within 30 days after the date on which operations began.

(Added to NAC by Comm'n on Mineral Resources, eff. 2-18-88)

**NAC 513.110 Notice required to open or close mine.** ([NRS 513.063](#))

1. Each operator shall notify the Administrator, in writing, before opening or closing a mine.

2. The notice must include:

- (a) The name and location of the mine;
- (b) The name, address and telephone number of the owner of the mine;
- (c) The name, address and telephone number of the operator;
- (d) If opening a mine, a statement whether the operation of the mine will be continuous or intermittent; and

(e) If closing a mine, a statement whether the closing of the mine is temporary or permanent.

(Added to NAC by Comm'n on Mineral Resources, eff. 2-18-88)

**NAC 513.120 Annual reports by operators.** ([NRS 513.063](#)) On or before April 15 of each year, each operator shall submit to the Administrator a report relating to the annual status and production of the mine for the preceding calendar year.

(Added to NAC by Comm'n on Mineral Resources, eff. 2-18-88)

**II. E. Presentation on Earth Science**  
**Teacher's Workshop**



*The Champion of the  
21<sup>st</sup> Century Mining Industry!*

201 West Liberty Street Suite 300 Reno, NV 89501  
Tel: 775 829 2121 www.NevadaMining.org

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Newmont  
Randy Griffin  
Lhoist North America  
Bruce Hansen  
General Moly  
William Hofer  
Jerritt Canyon Gold  
Jeff Jenkins  
Franco-Nevada  
Gregg Jones  
EP Minerals  
Jack McMahon  
Elko Mining Group  
Randy Miller  
Broadbent  
Lee Morrison  
Klondex Gold & Silver  
Joel Murphy  
Rye Patch Mining US, Inc.  
Duane Peck  
Silver Standard  
Robby Ruesch  
KGHM International  
Tony Sanchez  
NV Energy  
Robert Stepper  
Coeur Rochester Mine  
Jeff Thompson  
University of Nevada  
Stefan Wenger  
Royal Gold

October 17, 2016

Richard Perry, Administrator  
Nevada Division of Minerals  
400 W. King Street, #106  
Carson City, NV 89703

Re: Request for Financial Support of the Nevada Earth Science Teachers' Workshops

Dear Mr. Perry and the Nevada Commission on Mineral Resources:

I am writing to request continued financial support for the Nevada Earth Science Teacher's Workshops from the Nevada Commission on Mineral Resources. The workshop is co-sponsored by the Nevada Division of Minerals and the Nevada Mining Association.

Previously, the Commission has generously agreed to three year financial commitments to help fund the teacher workshops, providing \$15,000 annually. This funding has been used to purchase the necessary materials required to host earth science workshops for educators in both northern and southern Nevada every year. These materials include educational rock boxes, earth science reference books (distributed to all attendees) and other educational materials that help teachers take what they have learned at the workshop back into their classrooms. Recognition is given to the Nevada Division of Minerals in all advertising opportunities to ensure that attendees are aware of the support received, and the partnership between the Division and the Nevada Mining Association.

We are requesting a continuation of this funding, at the rate of \$15,000 per year for a period of three years, totaling \$45,000 in support of the Nevada Earth Science Teacher's Workshops for 2018-2020. This funding will be applied towards the same resources and materials as in previous years.

We appreciate your consideration of this request and look forward to your continued support.

Sincerely,

A handwritten signature in blue ink, appearing to read "Pamela Smith", is written over the word "Sincerely,".

Pamela Smith, Chair,  
Nevada Mining Association Education Committee



# NDOM & NMA EARTH SCIENCE EDUCATION WORKSHOPS

PRESENTED TO THE NEVADA COMMISSION ON MINERAL RESOURCES DURING THE NOVEMBER,  
2016 MEETING

Presented by: **Garrett Wake**  
Chief of Southern Nevada Operations  
[gwake@minerals.nv.gov](mailto:gwake@minerals.nv.gov)  
(702) 486 – 4344

## Workshop Highlights



- ⇒ Your choice of classroom sessions
- ⇒ One PDE credit or university credit
- ⇒ Beginner and advanced sessions
- ⇒ Activities meet STEM guidelines
- ⇒ More than just science! Activities include language arts, mathematics and social studies
- ⇒ Half-day field trip to a working mine or geologic site of interest
- ⇒ Full-day optional post-workshop tour to a working mine or geologic site
- ⇒ Continental breakfasts, lunches, and an opportunity to learn gold panning
- ⇒ A bag full of educational materials and other priceless goodies.



## When and Where?

Our workshops are held twice a year: one in Las Vegas during the Clark County School District spring break and one in various northern Nevada locations during summer. Previous northern Nevada workshops have been held in Reno, Carson City, Fallon, Winnemucca, Elko, Tonopah and Ely.

The workshops last for two full days plus an optional post-workshop field trip day to a working mine or geologic site of interest.

**For more information on upcoming workshops or to request information, please contact us at:**

### Nevada Mining Association

201 W. Liberty Street, Ste. 300  
Reno, NV 89501

Tel: 775-829-2121

Fax: 775-852-2631

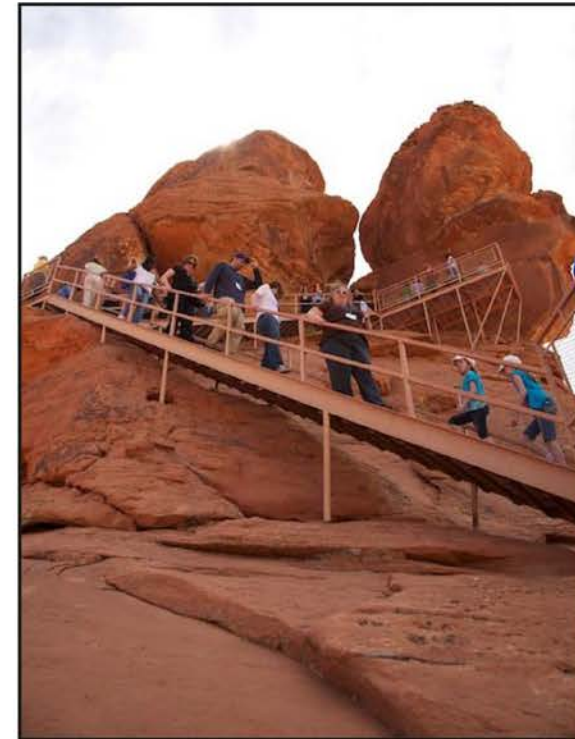
[education@nevadamining.org](mailto:education@nevadamining.org)

Or visit us on the web at:  
[www.nevadamining.org](http://www.nevadamining.org)

# NEVADA

## Mining Association

*Nevada Commission on Mineral Resources*  
***Division of Minerals***



## *Earth Science Education Workshops*

**Dig up more at**  
[www.nvmineraleducation.org](http://www.nvmineraleducation.org)



## Who are we?

Our Education Committee is made up of expert mining, minerals and geology staff as well as teachers and volunteers who are very passionate about earth science and the minerals industry. We thrive on sharing our knowledge and enjoy having fun while doing it. In addition to the Nevada Mining Association's member companies and the Nevada Division of Minerals, our staff comes from the Nevada Bureau of Mines and Geology, the W. M. Keck Earth Science and Engineering Museum, and the Bureau of Land Management. All of those different agencies are the backbone of making the workshops successful.



## What do we offer?

The Nevada Mining Association and the Nevada Division of Minerals partner together to host educational workshops for teachers and educators in an effort to offer earth science projects and learning tools to take back to their classrooms for their students.



Our workshops offer standards-based activities for YOUR classroom plus FREE educational materials including:

- ⇒ Rock and mineral boxes with samples from Nevada
- ⇒ Activities that are correlated to the Nevada State Science Standards, as well as other English language arts, social studies and mathematics standards
- ⇒ Maps, posters and other background information

## Workshop Activities

Workshop activities are constructed to fit within the Nevada State Science Standards and can be applied to many other areas of the curriculum. Some of our most requested activities include:

- ♦ Cupcake core drilling
- ♦ Edible geology
- ♦ Making concrete
- ♦ Operation chemistry
- ♦ Rock and mineral identification
- ♦ Paste with a taste - What minerals are in toothpaste?
- ♦ Topographic Maps
- ♦ Sessions meet STEM guidelines
- ♦ Plus much more...



For more activities please visit:  
[www.nvmineraleducation.org](http://www.nvmineraleducation.org)





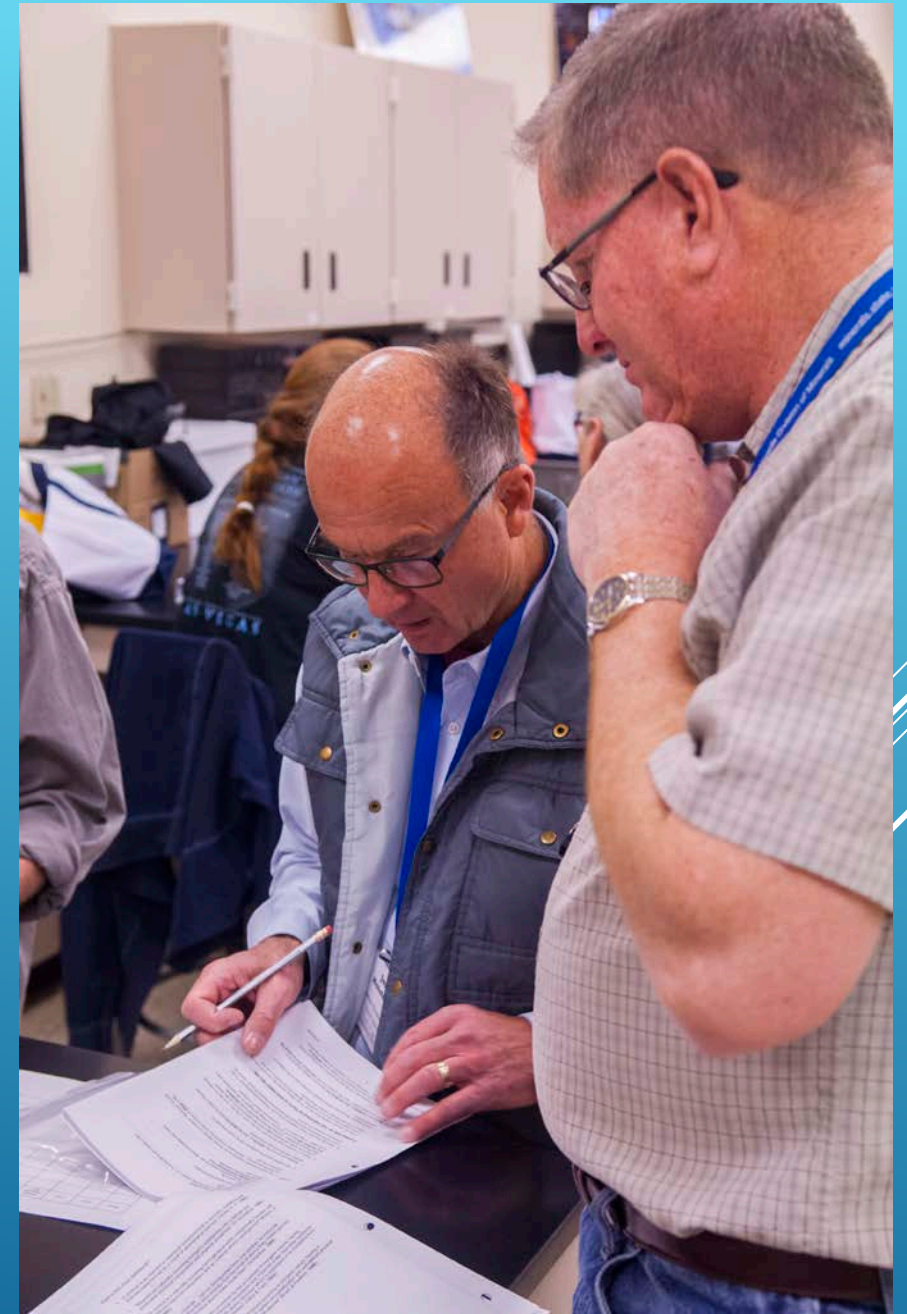


# WHY OUR WORKSHOPS ARE IMPORTANT

- Promotes positive impacts of the mining industry
  - Most people don't make the obvious connection between the things they use and own, and the raw materials used to create them. Minerals are used to make, or are contained in virtually everything we own.
  - Reiterating and reinforcing this connection leads to the realization that mining is not only important, it is essential.
  - Mining companies abide by strict regulations and most do an excellent job of remediation/reclamation, not to mention provide thousands of well-paying jobs, provide significant income to the State and provide us with the essential minerals we need.
- Shows the industry cares about the local communities
  - Teaching educators about the importance of earth science, minerals education and mining allows the "trickle-down" of information to their students – effectively reaching a much broader audience.
  - The amount of money needed to fund these workshops compared to the quality and quantity of information passed on to these teachers, and then on to countless students over several years is money well invested and will pay dividends.
- Spurs interest in careers in mining and related industries
  - Earth science, and minerals education especially aren't focused on in most curriculums. These workshops are one of few places educators can learn ways to bridge and incorporate minerals and mining studies into the classroom.

# WHAT EDUCATORS TAKE AWAY

- A general understanding of topics, including:
  - Rocks and minerals education: what we use certain rocks and minerals for, how they're identified, where and how they form, are found and mined;
  - The life cycle of a mine, from startup through reclamation;
  - Nevada's natural resources: an overview;
  - How minerals are extracted from ore; and many more topics!
- A mineral kit and a rock kit, along with tools needed for identification
  - Teaching educators about how to identify rocks and minerals is great, but allowing them to take kits back to the classroom and allow students to apply theory with hands-on application is priceless.
  - All rocks and minerals acquired here in Nevada, and are either donated by active mines, or are collected from known locations across the state. There's no better way to teach about Nevada's vast mineral wealth than to show it!
- Hands-on projects and activity guides
  - We not only teach educators how to convey this information, but provide them with step-by-step instructions on how to conduct these activities in the classroom.
  - Some student favorites include: birdseed mining, cupcake core drilling and "paste with a taste". All of these activities are great tools for educators to use showing students the importance of mining and minerals, while creating a fun and memorable experience.



# 2017 PROPOSED CLASS CURRICULUM

| 28th Annual Southern Nevada Earth Science Education Workshop 2017<br>Class/Session Plan Chart For Tuesday, April 11, 2017 updated 8/12/2016 |                               |  |  |  |   |
|---|-------------------------------|--|--|--|---|
| Room#   | Session 1<br>8:15 – 9:45 a.m. | Session 2<br>9:55 - 11:25 a.m.   | Session 3<br>12:20 - 1:50 p.m.         | Session 4<br>2:00 - 3:30 p.m.                                      | Session 5<br>3:40-5:10pm                      |
| 302<br>H2O/Desks  | ---                           | Crystal Gardens and Stepping Stones; Make it and Take it<br>K-6<br>Sam | ---                                    | Nevada's Natural Resources<br>K-12<br>Patti/Sean                   |   |
| 304<br>H2O/(?)  | ---                           | ---  | ---                                    | When Rocks Sing - Petroglyphs<br>K-6<br>Maria/Sam                  | When Rocks Sing - Petroglyphs<br>K-6<br>Maria |
| 306<br>-/Tables   | Minerals<br>K-8<br>Rich/Jon   | Critical Elements of Energy<br>6-12<br>Rich/Jon                        | Rocks and Geology<br>K-8<br>Rich/Jon   | ---  | Finding Your Way<br>4-12<br>--                |
| 308<br>H2O/(?)  | Minerals<br>K-8<br>DD         | ---  | Rocks and Geology<br>K-8<br>DD         | Crazy Crystals<br>6-12<br>DD                                       | Exploring Your Watershed<br>6-12<br>DD/Ginger |
| 311<br>-/Tables   | Minerals<br>K-6<br>Garret/Rob | Under the Earth<br>4-12<br>Rob G.                                      | Rocks and Geology<br>K-6<br>Garret/Rob | Fault and Fold Modeling<br>6-12<br>Garrett                         | ---   |
| 312<br>H2O/(?)  | ---                           | One in a Million<br>3-8<br>John/Joe                                    | ---                                    | ---  | Geothermal Energy<br>6-12<br>Rob/Rich         |
| 313<br>-/Desks  | Minerals<br>9-12<br>Lucia P.  | Geologic Time and Fossils<br>K-8<br>DD/Lucia P.                        | Rocks and Geology<br>9-12<br>Lucia P.  | Extraction: Where does Au, Ag and Cu come from?<br>3-8<br>Lucia P. | Cupcake Core Drilling<br>5-12<br>Lucia /Terry |
| 316<br>-/Tables   | Minerals<br>K-8<br>Terry J    | ---  | Rocks and Geology<br>K-8<br>Terry J.   | ---  | ---   |
| 320<br>-/Tables   | ---                           | The Circle of Mine Life/Reclamation<br>3-12<br>Pamela/Ginger/Shar      | ---                                    | Economics of Mining<br>4-12<br>Joe/Terry                           | ---   |
| 402 HE<br>H2O/Tables  | ---                           | ---  | ---                                    | ---  | Edible Geology<br>K-8<br>Sam                  |



# 2016 SOUTHERN NEVADA COMMENTS

How has the information received at the workshop changed your perception of the mining industry? *Careers. I had not thought about the extent that mining gives back to communities. I knew they did some.*

How has the information received at the workshop changed your perception of the mining industry? *Each year my perception is strengthened more positively. Without mining, many of our daily conveniences wouldn't be.*

How has the information received at the workshop changed your perception of the mining industry?

*Mining industry is Awesome!*

How has the information received at the workshop changed your perception of the mining industry? *I do a yearly unit on NV-Mining-using a good deal of the activities I have learned throughout the year I have attended.*

I heard about the workshop from--

How has the information received at the workshop changed your perception of the mining industry?

*The focus on safety!*



# 2016 SOUTHERN NEVADA COMMENTS

How has the information received at the workshop changed your perception of the mining industry?

It is not just drilling and mining. It's understanding minerals and rocks and land formations and time periods.

How has the information received at the workshop changed your perception of the mining industry?

It has completely opened my eyes! I never knew all that goes into our mining in Nevada. Super cool!

How has the information received at the workshop changed your perception of the mining industry?

I am very impressed with the mining industry wanted to inform teachers and help them teach

How has the information received at the workshop changed your perception of the mining industry?

Reinforced my belief that if it isn't grown it's mined! (u)

How has the information received at the workshop changed your perception of the mining industry?

mining is extremely important! It is not an outdated practice that ended when the Gold rush finished.



# 2016 SOUTHERN NEVADA COMMENTS

How has the information received at the workshop changed your perception of the mining industry?

Before today I was unaware how much minerals are used in our everyday lives.

How has the information received at the workshop changed your perception of the mining industry?

I didn't realize how ~~the~~ minerals are used to create everyday products from mines.

How has the information received at the workshop changed your perception of the mining industry?

I didn't realize how much mining is part of everything we utilize: food, clothing, appliances, etc., in our everyday life.

How has the information received at the workshop changed your perception of the mining industry?

It opened my eyes about how important it is to understand mining.

How has the information received at the workshop changed your perception of the mining industry?

I learned more about reclamation & what is necessary & required for mines to operate.

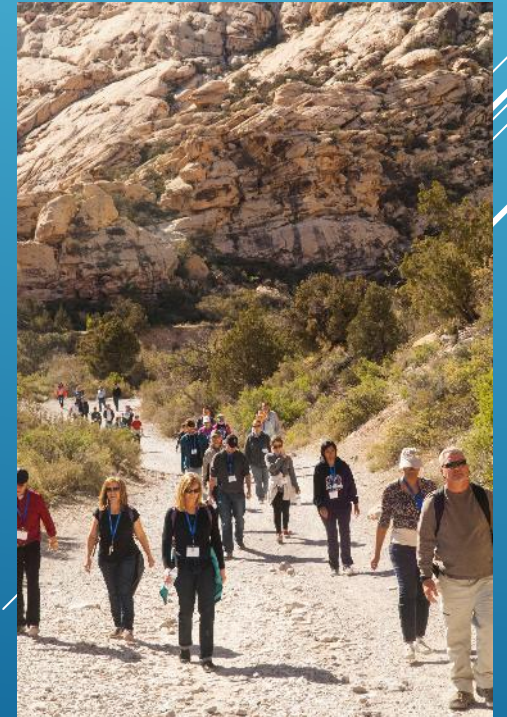


# 2016 SOUTHERN NEVADA WORKSHOP PHOTOS



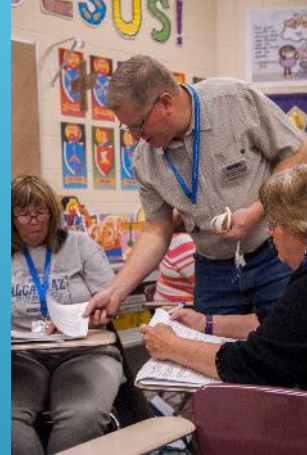


# 2016 SOUTHERN NEVADA WORKSHOP PHOTOS



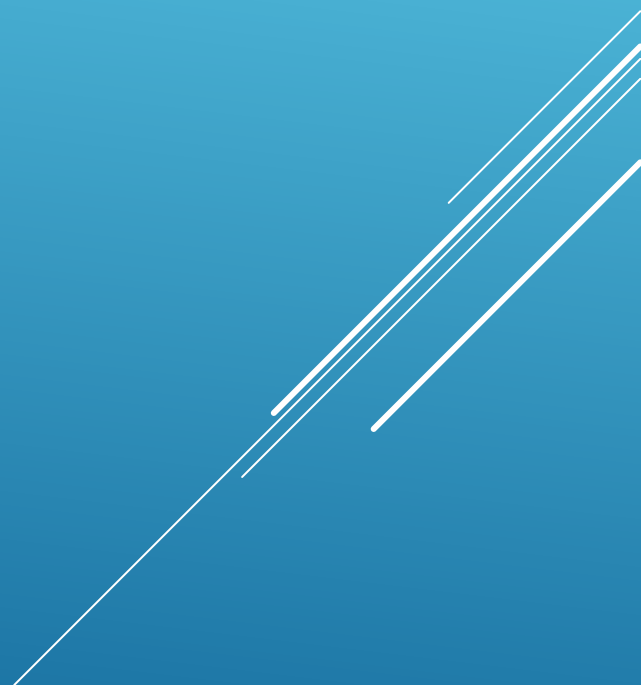


# 2016 SOUTHERN NEVADA WORKSHOP PHOTOS





PLACEHOLDER FOR VIDEO  
OF INTERVIEWS



# NDOM & NMA EARTH SCIENCE EDUCATION WORKSHOPS

PRESENTED TO THE NEVADA COMMISSION ON MINERAL RESOURCES DURING THE NOVEMBER,  
2016 MEETING

Questions or comments?

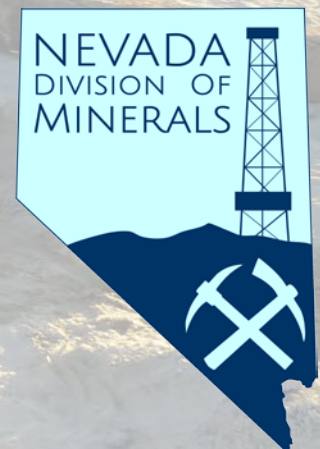
Presented by: **Garrett Wake**  
Chief of Southern Nevada Operations  
[gwake@minerals.nv.gov](mailto:gwake@minerals.nv.gov)  
(702) 486 – 4344

### **III. OLD BUSINESS**

### **III. A. Dissolved Mineral Resource bill**



# *Dissolved Mineral Resource Bill Draft for 2017 Legislative Session BDR 258*



# Background

- **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 after treating brines pumped from 4 aquifers
- **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.
  - All producing lithium brine deposits share a number of first-order characteristics: USGS Open-File report 2013-1006





**Cross-section of lithium-Bearing aquifers in Clayton Valley. From *“Hydrogeology Of Clayton Valley Brine Deposits, Esmeralda County, NV. By Danny Zampirro, 2003. NBMG Special Publication 33, p. 271-280***

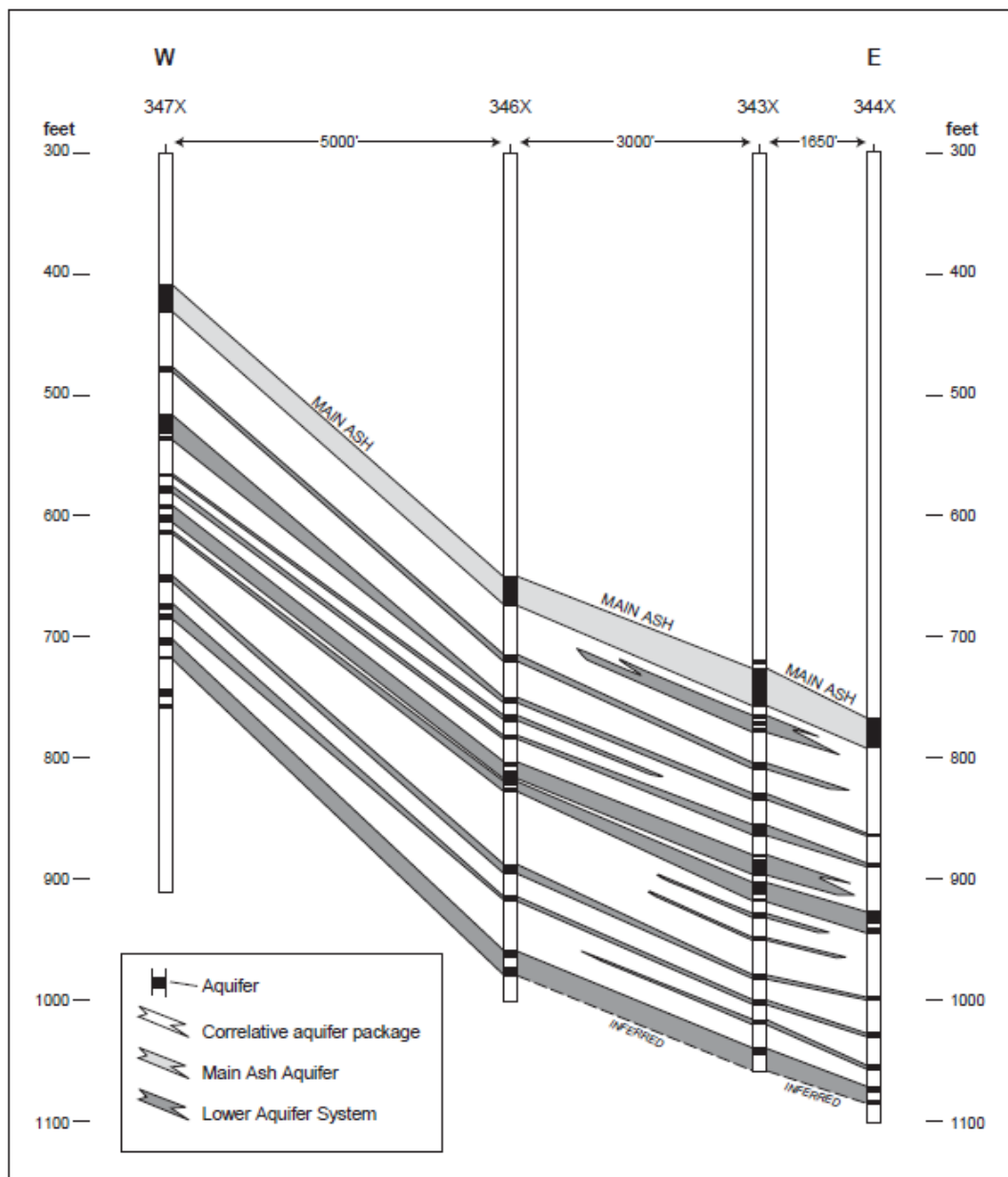
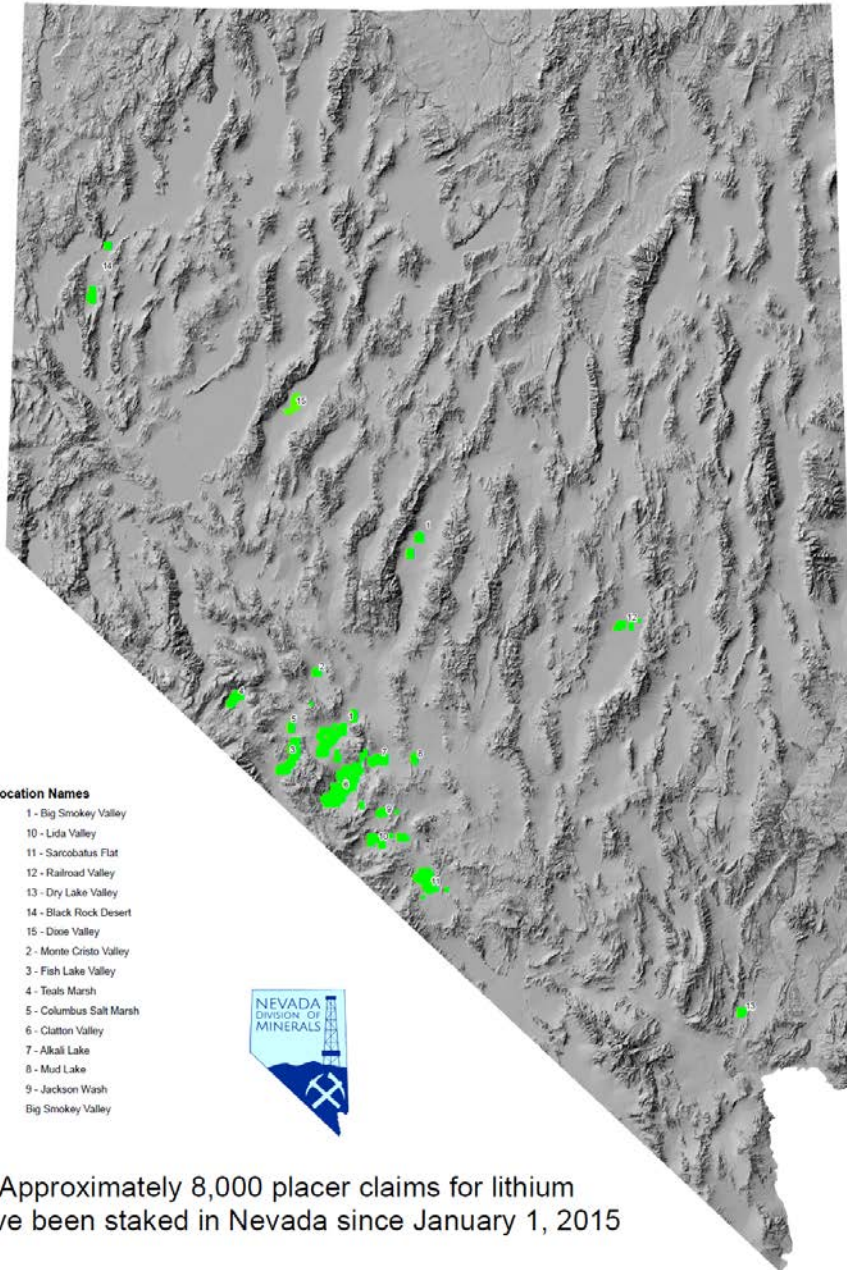


Figure 6. Generalized cross section of the Main Ash and Lower Aquifer System, looking north (depths in feet below the playa surface, modified from a figure drafted by M.W. Hardy, 1993).

# Lithium exploration in Nevada

- >8000 placer claims staked since 1/1/15 in playas, presumably for lithium brine
- 15 different hydrographic basins in Nevada
- 25 different exploration entities, mainly “Juniors”
- Typical initial exploration is drilling of boreholes, sampling both sediment and brines, using a method called “dual wall reverse rotary”.
- Issues: Open boreholes in unconsolidated playa sediments are unstable, unable to sample multiple aquifers without casing holes and doing packer tests. Boreholes penetrating artesian aquifers connecting brine and fresh water aquifers.

# Nevada Placer Lithium Claims Staked Since 2015



Approximately 8,000 placer claims for lithium  
have been staked in Nevada since January 1, 2015



# Lithium Exploration in Nevada

## -continued

- **9 exploration companies have contacted NDOM in the past year, some with question about “how do we drill a well to sample aquifers?”**
  - **Unless a lithium claim holder has a geothermal lease and can apply for a geothermal temperature-gradient or observation well, NDOM can only refer them to the water well drilling regulations in NAC 534.010 to 534.450 (NDWR).**

# Regulatory authority

- Lithium brines are a locatable mineral using a placer claim on Federal lands
- NOI's or POO's administered by BLM, BMRR also for reclamation if a POO
- Drilling of unlined boreholes, same as any mineral exploration, under NAC 534.4369 (NDWR regulations). Can not divert water and groundwater can not be contaminated. Must be plugged within 60 days of drilling.
- A borehole that is completed with casing becomes a well (NAC 534.220) and must be completed according to NAC 534.360
- A well must have a water right before being drilled – NRS 534.050



# Regulatory authority

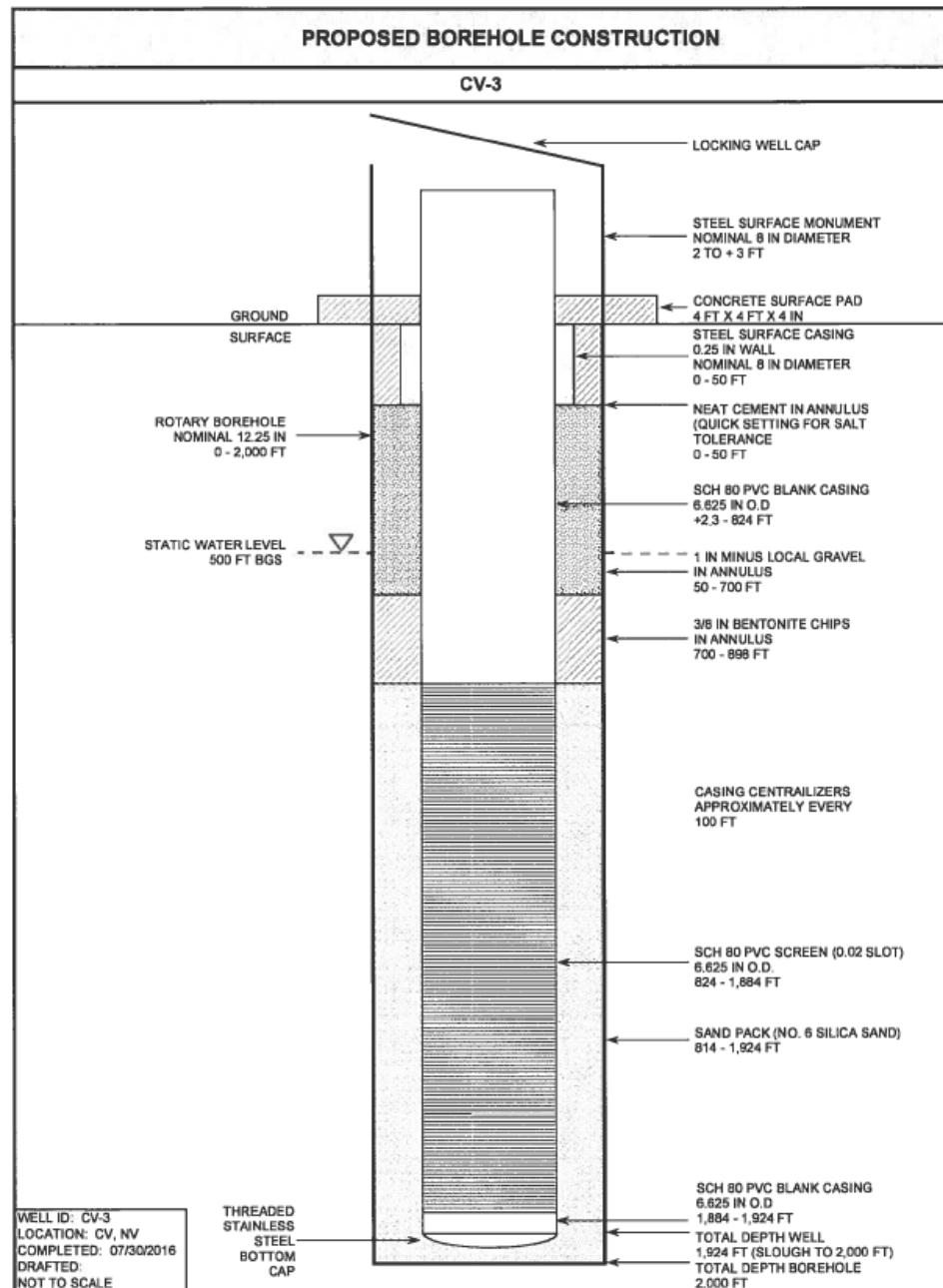
- Dissolved or entrained minerals can be recovered in the process of removing geothermal energy – NRS 534A.010 (NDOM statute)
- A claimant can not drill a geothermal well to remove energy or dissolved minerals unless they have a geothermal lease on Federal land
- In summary, one can not legally drill a well to sample for dissolved mineral brines without a water right or a geothermal lease.



## **Proposed remedy: Add Dissolved Mineral Resource to Geothermal Statutes in NRS 534**

- **Proposed a definition of dissolve mineral resource to NRS 534A**
- **In geothermal statutes, this would allow for drilling a cased well and reasonable use of water to sample without a water right**
- **Would require a water right for permanent consumptive use. ie: if a process was built**
- **Would allow for reinjection of brine without a water right, same as geothermal, but would require a UIC permit**

Example of a lithium-brine exploration well proposed by a Nevada exploration Entity.





# **Proposed remedy: Add Dissolved Mineral Resource to Geothermal Statutes in NRS 534**

- **BDR 258 is an agency policy bill through the Governor's office**
- **State Engineer (NDWR) is supportive, this would resolve an issue that is consuming time with applications and protests for water rights that are only being used to sample brine aquifers for lithium**
- **NDEP is supportive, wants to ensure groundwater in basins is not contaminated by requiring casing and cement seals to ensure no contamination between fresh and brine aquifers**
- **Industry: NVMA, mineral attorneys and those who contacted NDOM were contacted for comments**

# Proposed language

NRS 534A.010

*NRS 534.XXX*

NRS 534A.031

“Geothermal resource” defined.

*“Dissolved mineral resource” defined.*

Exploration and subsurface information: Filing with Division of Minerals of Commission on Mineral Resources; confidentiality; release to State Engineer or other agency.

NRS 534A.040

Applicability of procedures for appropriation.

NRS 534A.050

Ownership of geothermal resources.

NRS 534A.060

Permit required to drill or operate geothermal *or dissolved mineral* well or drill exploratory well; application.

NRS 534A.070

Approval or rejection of application for permit to drill exploratory well; review of application for permit to drill or operate geothermal *or dissolved mineral* well; hearing; conditions.

NRS 534A.080

Fees; use of money.

NRS 534A.090

Regulations of Commission on Mineral Resources.

# Proposed language

NRS 534.XXX “Dissolved mineral resource” defined. As used in this chapter, unless the context otherwise requires, “dissolved mineral resource” shall include all dissolved or entrained minerals that may be obtained from the medium or brine in which it is found which is not used for purposes of recovering the heat from the medium or brine, but excluding hydrocarbons and helium.

## **Proposed remedy: Add Dissolved Mineral Resource to Geothermal Statutes in NRS 534 (cont)**

- **If bill is passed, rule-making in NAC 534A.170-690 would be required to address:**
  - Applications, design of well
  - Casing and cement seals
  - Abandonment and plugging
- **Soonest this could happen is Q3 2017, public hearings required, and final regulations would have to be approved by the Commission on Mineral Resources, with final adoption by the interim Legislative Committee**





# Arguments in favor of this bill

- **Exploration for a locatable mineral under the mining law of 1872 should not be regulated by Nevada water law or geothermal leases.**
- **Allows exploration entities the ability to discover a deposit using cased wells, then if water is needed to process, acquire consumptive water rights (similar to geothermal). Developing Li-extraction technology does not utilize evaporation, but rather SX-EW and ion-specific exchange and re-injection of brines.**
- **NDOM is best suited to regulate dissolved mineral brine wells, as the regulator of geothermal, oil, gas wells in Nevada. Would ensure fresh water is protected and obsolete wells are plugged and abandoned properly.**
- **BLM would rely on NDOM for permitting of dissolved mineral brine wells on federal lands as condition of NOI's or PoO's.**

### **III. B. Update on proposed Mineral**

### **Withdrawals and Land Bills**



# USGS Mineral-Resource Assessment of Sagebrush Focal Areas in the Western United States

**U**.S. Geological Survey (USGS) scientists have completed an assessment of the mineral-resource potential of nearly 10 million acres of Federal and adjacent lands in Idaho, Montana, Nevada, Oregon, Utah, and Wyoming. The assessment of these lands, identified as Sagebrush Focal Areas, was done at the request of the Bureau of Land Management. The assessment results will be used in the decision-making process that the Department of the Interior is pursuing toward the protection of large areas of contiguous sagebrush habitat for the greater sage-grouse (*Centrocercus urophasianus*) in the Western United States. The detailed results of this ambitious study are published in the five volumes of USGS Scientific Investigations Report 2016–5089 and seven accompanying data releases.



Sagebrush lands in southwestern Wyoming (photograph by Anna Wilson, USGS).

At the request of the Bureau of Land Management (BLM), the U.S. Geological Survey (USGS) assessed the mineral-resource potential of nearly 10 million acres of Federal and adjacent lands in the Western United States. The assessment results will be used in the decision-making process that the Department of the Interior is pursuing toward the protection of large areas of contiguous sagebrush habitat for the greater sage-grouse (*Centrocercus urophasianus*). The request for USGS involvement was made in October 2015, with the need to provide preliminary results to BLM by mid-July 2016 so that those results could be used by BLM to inform the National Environmental Policy Act process and aid in environmental impact statement preparation. The results of the assessment are published in the five volumes of USGS Scientific Investigations Report (SIR) 2016–5089 (chapters A–E) and seven accompanying data releases (<http://dx.doi.org/10.3133/sir20165089>).

## What was Studied and Where?

The USGS Sagebrush Mineral-Resource Assessment (SaMiRA) evaluated the potential for deposit types that contain locatable minerals and describes the occurrence of leasable and salable minerals within study areas that include Western lands being considered for withdrawal from mineral entry under U.S. mining laws. The proposed withdrawal areas lie within seven Sagebrush Focal Areas (SFAs) in Idaho, Montana, Nevada, Oregon, Utah, and Wyoming. In addition to the seven SFAs, two areas in Nevada, referred to in the report as the “Nevada additions,” were included in the USGS assessment to help inform the Department of the Interior’s analysis of alternatives. These areas were identified by the State of Nevada as potential substitute areas to be considered for withdrawal in lieu of other areas within the boundaries of the SFAs that have been identified for potential withdrawal.

The USGS study areas are Public Land Survey System townships that include the lands proposed for withdrawal. Larger study areas were chosen because of the complex shapes of the BLM proposed withdrawal areas. Inclusion of private or other lands in the assessment has no implications regarding land values, management alternatives, or recommendations for disposition. Native American lands were excluded from study.

## How was This Study Accomplished?

A team of 61 USGS experts in regional geology, geochemistry, geophysics, mineral deposits, and assessment methods conducted the assessment with input from State Geological Surveys and other agencies. Mineral-resource potential was assessed qualitatively, following the approach prescribed in BLM Manual Sections 3031 and 3060, using

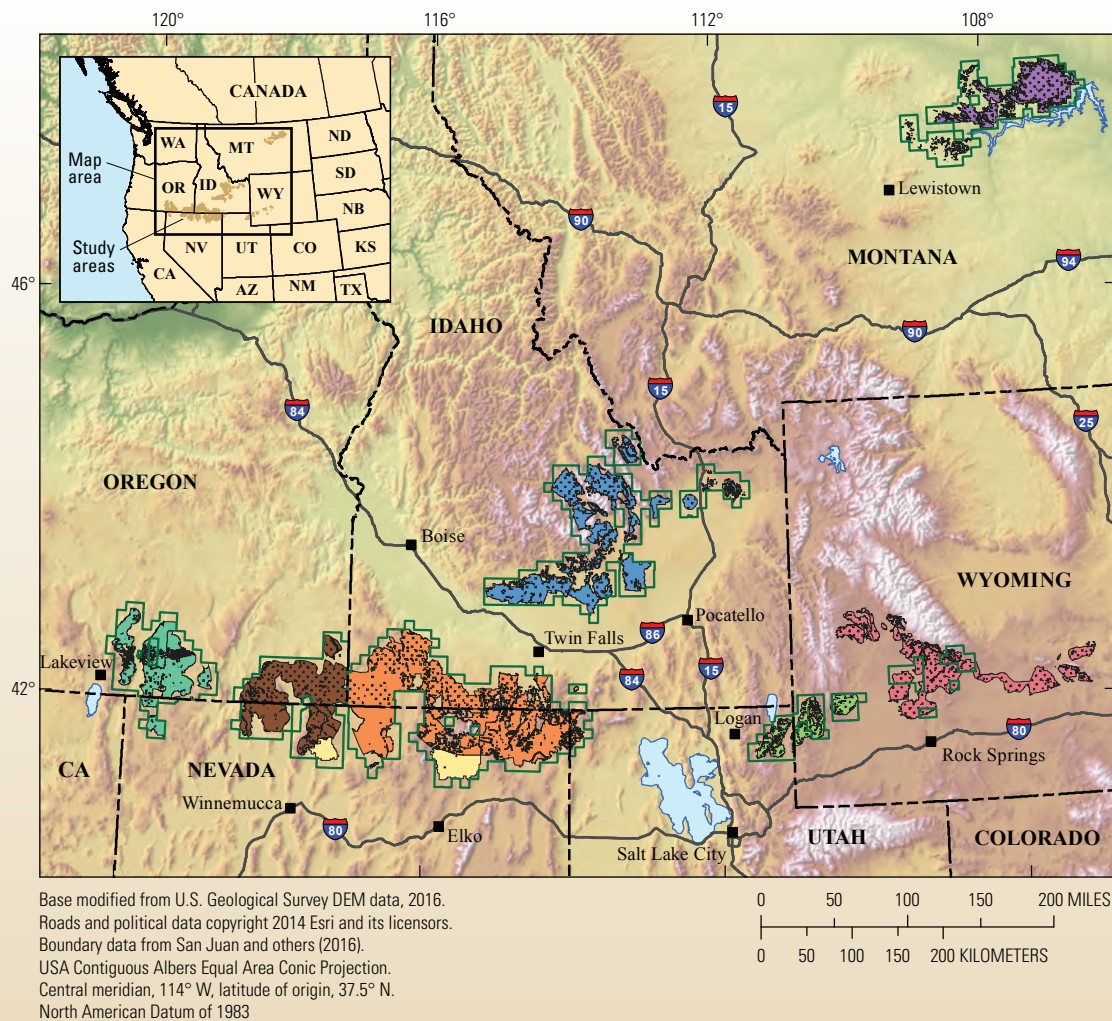
(continued on last page)

## Mineral-Deposit Terms

**Leasable minerals**—A mineral or mineral commodity that is leasable by the Federal Government under the Mineral Leasing Act of 1920 and similar legislation. This includes coal, oil and gas, oil shale and tar sands, potash, phosphate, sodium, and geothermal steam.

**Salable minerals**—Mineral commodities that are sold by contract from the Federal Government under the Materials Act of 1947, as amended. These are generally construction materials and aggregates, such as sand and gravel.

**Locatable minerals**—All valuable minerals (not leasable or salable), acquired through the General Mining Act of 1872, as amended, including antimony, copper, gemstone, gold, lithium, molybdenum, silver, tungsten, zeolite, zinc, and other commodities.



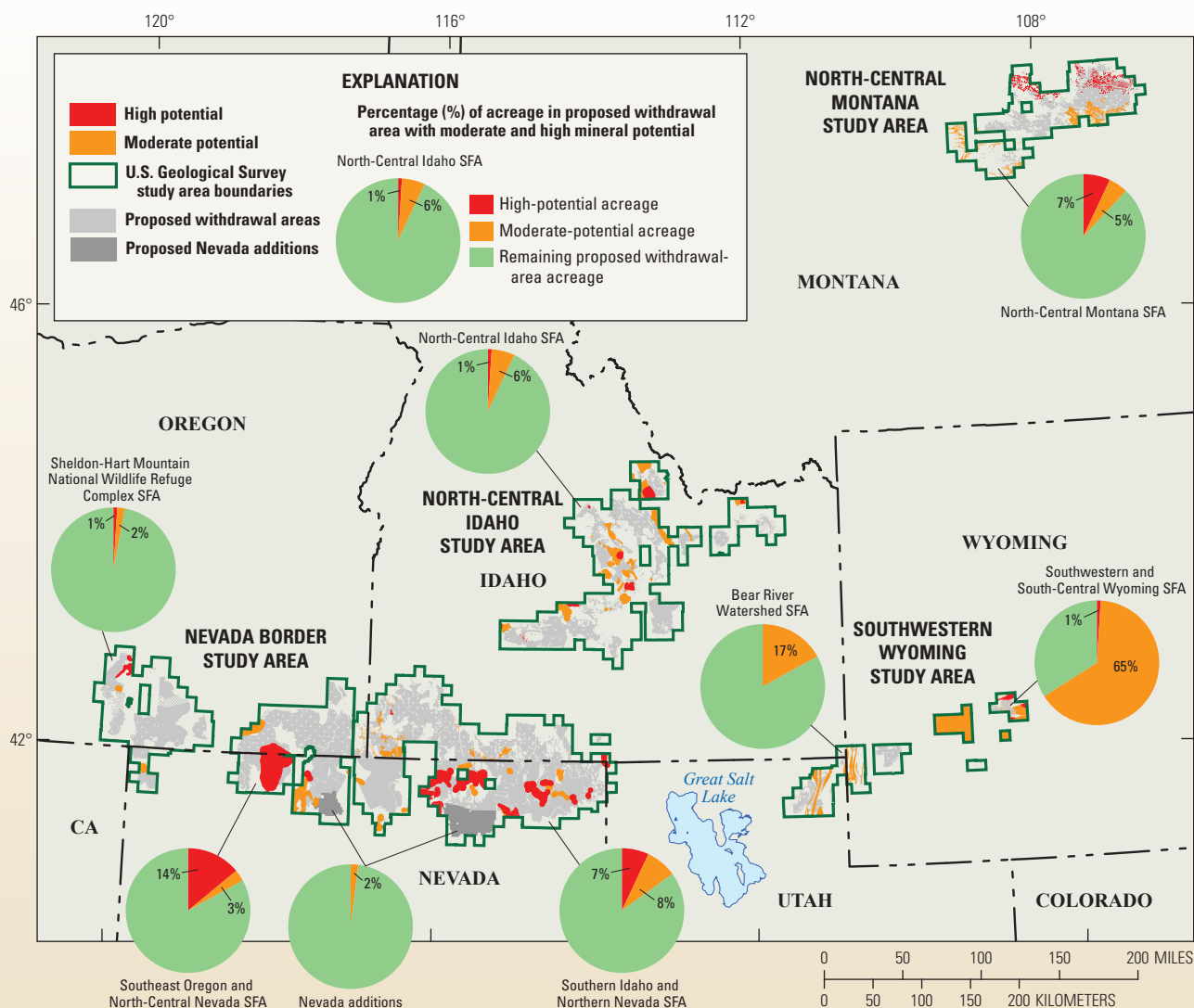
### EXPLANATION

- |  |   |
|--|---|
| <span style="border: 1px solid green; display: inline-block; width: 20px; height: 10px;"></span> U.S. Geological Survey study area boundary      | <span style="background-color: #4682B4; display: inline-block; width: 20px; height: 10px;"></span> Sheldon-Hart Mountain National Wildlife Refuge Complex SFA |
| <span style="background-color: #90EE90; display: inline-block; width: 20px; height: 10px;"></span> Bear River Watershed SFA                      | <span style="background-color: #FF8C00; display: inline-block; width: 20px; height: 10px;"></span> Southern Idaho and Northern Nevada SFA                     |
| <span style="background-color: #800080; display: inline-block; width: 20px; height: 10px;"></span> North-Central Montana SFA                     | <span style="background-color: #FF6347; display: inline-block; width: 20px; height: 10px;"></span> Southwestern and South-Central Wyoming SFA                 |
| <span style="background-color: #4169E1; display: inline-block; width: 20px; height: 10px;"></span> North-Central Idaho SFA                       | <span style="background-color: #FFFF00; display: inline-block; width: 20px; height: 10px;"></span> Proposed Nevada additions                                  |
| <span style="background-color: #8B4513; display: inline-block; width: 20px; height: 10px;"></span> Southeast Oregon and North-Central Nevada SFA |   |

Map showing the seven Sagebrush Focal Areas (SFAs) and U.S. Geological Survey (USGS) study areas in the Western United States. USGS evaluated the potential for deposit types hosting locatable minerals and described the occurrence of leasable and salable minerals within Federal lands being considered for withdrawal from entry under U.S. mining laws. Two areas in Nevada (the “Nevada additions”) were also evaluated. Inclusion of private or other lands in the assessment has no implications regarding land values, management alternatives, or recommendations for disposition. Native American lands were excluded from study.



## Potential for Locatable Minerals in Proposed Withdrawal Areas



Map showing high- and moderate-potential areas for locatable minerals within four broad U.S. Geological Survey (USGS) Sagebrush Mineral Resource Assessment study areas. These areas include the Bureau of Land Management proposed withdrawal areas and "Nevada additions." Pie charts show moderate- and high-potential locatable minerals as a percentage of acreage within proposed withdrawal areas and the "Nevada additions."

Generalized matrix of mineral potential and certainty used for the USGS study. Levels of resource potential: N, none; L, low; M, moderate; H, high. Levels of certainty: A, insufficient evidence; B, indirect evidence; C, direct evidence; D, abundant evidence. (See appendix 2 of USGS Scientific Investigations Report 2016-5089-A, <http://dx.doi.org/10.3133/sir20165089A>.)

|                             |   |   |   |   |   |
|-----------------------------|---|---|---|---|---|
| Level of resource potential | H | <b>H/A</b><br>High potential with insufficient evidence     | <b>H/B</b><br>High potential with indirect evidence     | <b>H/C</b><br>High potential with direct evidence     | <b>H/D</b><br>High potential with abundant direct and indirect evidence     |
|                             | M | <b>M/A</b><br>Moderate potential with insufficient evidence | <b>M/B</b><br>Moderate potential with indirect evidence | <b>M/C</b><br>Moderate potential with direct evidence | <b>M/D</b><br>Moderate potential with abundant direct and indirect evidence |
|                             | L | <b>L/A</b><br>Low potential with insufficient evidence      | <b>L/B</b><br>Low potential with indirect evidence      | <b>L/C</b><br>Low potential with direct evidence      | <b>L/D</b><br>Low potential with abundant direct and indirect evidence      |
|                             | N |   |   |   | <b>N/D</b><br>No potential  |
|                             |   | A   | B   | C   | D   |
|                             |   | Level of certainty  |   |   |   |

a matrix originally defined in USGS Open-File Report 84–787 (<https://pubs.er.usgs.gov/publication/ofr84787>) for ranking mineral potential versus level of certainty. Chapter A of SIR 2016–5089 (<http://dx.doi.org/10.3133/sir20165089A>) is an overview of SaMiRA and describes analytical methods, deposit types, commodities, data, and other factors used in the assessment.

The USGS followed standard BLM guidelines to assess locatable mineral potential and assign levels of certainty by deposit type. Each deposit type has its own characteristic geologic setting, commodity types, tonnage and grade range, potential economic value, mining method, and typical surface footprint. For example, gold occurs in many deposit types, including (1) stream-placer deposits, (2) high-grade, low-tonnage near-surface veins, and (3) low-grade but very large tonnage deposits in altered sedimentary rocks. Each study area has its own set of potential deposit types and commodities because of the unique geology of each area. About 40 different types of deposits were assessed.

The assessment used the latest publically available data and interpretive reports. This included geologic maps and geophysical, geochemical, and remotely sensed satellite data, which were compiled for the vast study areas. In addition, a new mineral-deposit database, the USGS Mineral Deposit Database or “USMIN” (<http://dx.doi.org/10.5066/F7J964GW>), was developed that included all publically available data, such as data from company Web sites, National Instrument 43-101 reports, and input to BLM through public comments. Permit and mine-claim data from BLM’s Legacy Rehost System (LR2000) land-status database were summarized in a USGS data release and used in the assessment (<http://dx.doi.org/10.5066/F7RX996K>).

## What are the Results of This Study?

SIR 2016–5089 chapters B, C, D, and E and accompanying data releases show assessment results within four groupings of USGS study areas that are within the seven BLM SFAs. Each of the four area reports contains a complete analysis of the data used to generate assessment potential for locatable minerals. Geographic information system (GIS) files in

## USGS-Evaluated Potential for Locatable Minerals Summarized by Proposed Withdrawal Area Within Sagebrush Focal Area

| Sagebrush Focal Areas (SFAs), listed by report chapter <sup>1</sup>   | Proposed withdrawal area, in acres | Moderate potential, in percent of area | High potential, in percent of area |
|---|------------------------------------|--|------------------------------------|
| Scientific Investigations Report 2016–5089–B, <a href="http://dx.doi.org/10.3133/sir20165089B">http://dx.doi.org/10.3133/sir20165089B</a> |                                    |  |                                    |
| Sheldon-Hart Mountain National Wildlife Refuge Complex SFA  | 955,068                            | 2                                      | 1                                  |
| Southern Idaho and Northern Nevada SFA  | 3,517,786                          | 8                                      | 7                                  |
| Southeast Oregon and North-Central Nevada SFA   | 1,608,269                          | 3                                      | 14                                 |
| Nevada additions  | 394,288                            | 2                                      | 0                                  |
| Scientific Investigations Report 2016–5089–C, <a href="http://dx.doi.org/10.3133/sir20165089C">http://dx.doi.org/10.3133/sir20165089C</a> |                                    |  |                                    |
| North-Central Idaho SFA   | 1,558,573                          | 6                                      | 1                                  |
| Scientific Investigations Report 2016–5089–D, <a href="http://dx.doi.org/10.3133/sir20165089D">http://dx.doi.org/10.3133/sir20165089D</a> |                                    |  |                                    |
| North-Central Montana SFA   | 876,035                            | 5                                      | 7                                  |
| Scientific Investigations Report 2016–5089–E, <a href="http://dx.doi.org/10.3133/sir20165089E">http://dx.doi.org/10.3133/sir20165089E</a> |                                    |  |                                    |
| Southwestern and South-Central Wyoming SFA  | 138,470                            | 65                                     | 1                                  |
| Bear River Watershed SFA  | 276,702                            | 17                                     | 0                                  |
| Total   | 9,325,191                          | 7                                      | 6                                  |

<sup>1</sup>Scientific Investigations Report 2016–5089 (chapters A–E) and related data releases can be found at <http://dx.doi.org/10.3133/sir20165089>.

ArcGIS format of identified areas of mineral potential were compiled as a USGS data release (<http://dx.doi.org/10.5066/F7833Q4R>).

USGS scientists determined that there is moderate or high potential for deposit types that include locatable commodities, such as antimony, barite, bentonite, hectorite, copper, gemstone, gold, gypsum, lead, lithium, mercury, molybdenum, opal, silver, sunstone, tungsten, uranium, zeolite, and zinc. The study-area reports also provide inventories of leasable minerals (such as coal, oil and gas, potash, phosphate, and geothermal energy) and salable minerals (such as sand, gravel, and other common materials).

The USGS Sagebrush Mineral-Resource Assessment contributes to a better understanding of the economic and environmental trade-offs that need to be considered in the decision-making process surrounding the proposed withdrawal of Federal lands to mineral entry. The evaluation of mineral-resource potential will also help inform decisions about the future use of these Federal

lands, the protection of greater sage-grouse and their habitat, and the economies of the Western States.

*David G. Frank, Thomas P. Frost,  
Warren C. Day, and the  
USGS SaMiRA team*  
Edited by *James W. Hendley II*  
Layout by *Suzanne Roberts*

For more information, contact:

Mineral Resources Program  
U.S. Geological Survey  
12201 Sunrise Valley Drive  
913 National Center  
Reston, VA 20192

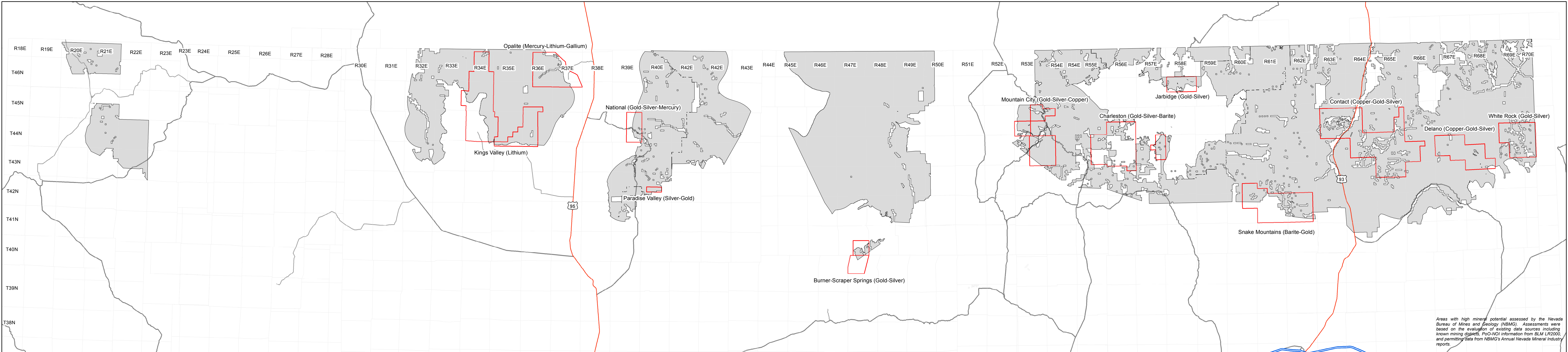
<http://minerals.usgs.gov/contacts/>  
<http://minerals.usgs.gov/>

USGS Scientific Investigations Report 2016–5089 (chapters A–E) and related data releases can be found at <http://dx.doi.org/10.3133/sir20165089>.

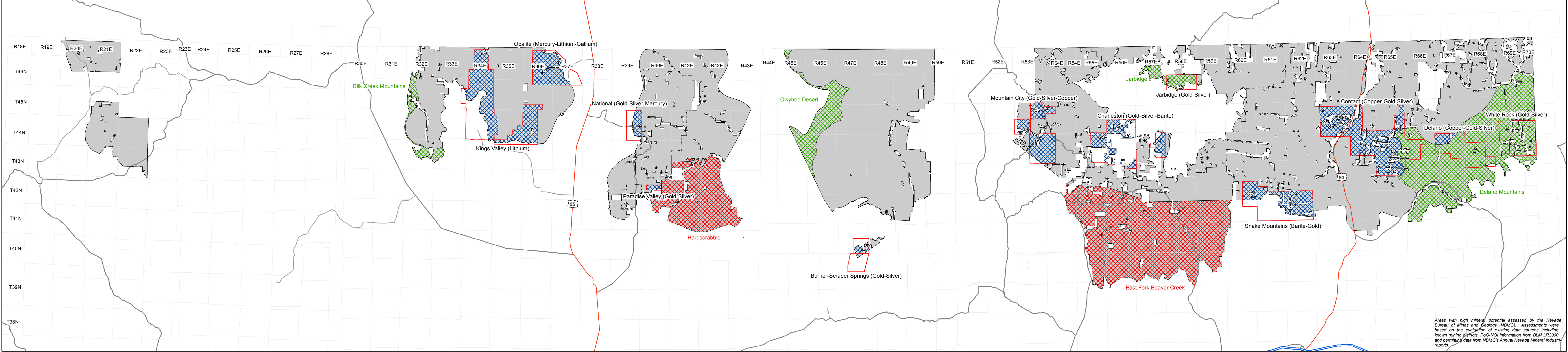
ISSN 2327-6916 (print)  
ISSN 2327-6932 (online)  
<http://dx.doi.org/10.3133/fs20163074>



Map 1. BLM Proposed Mineral Withdrawal Areas and Areas with High Mineral Potential in Northern Nevada



Map 2. NDOW & NDOM Recommended Additions to and Exclusions from the Mineral Withdrawal Area



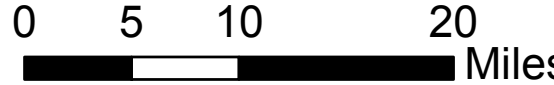
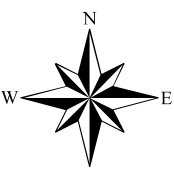
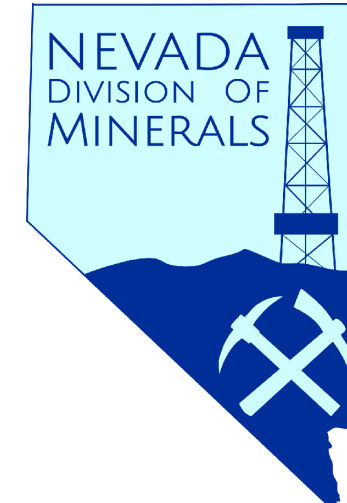



Map 3. Nevada Proposed Mineral Withdrawal Area



### Legend

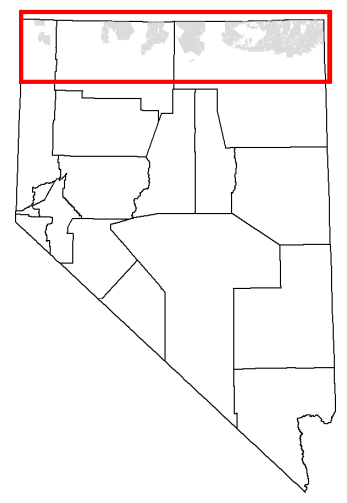
- NDOW Addition (Priority (Core) Habitat)
- NDOW Removal (Limited Habitat)
- NDOM/NBMG Areas to be Excluded from Mineral Withdrawal
- SFA Boundary
- Areas of High Mineral Potential
- Township & Range
- Major Highway
- Major Road



#### Acreage Summary

|                        |   |
|------------------------|---|
| 2,730,045 Acres        | Original SFA-Mineral Withdrawal Boundary              |
| + 394,082 Acres        | NDOW Addition (Priority (Core) Habitat)               |
| - 317,270 Acres        | NDOW Removal (Limited Habitat)                        |
| - 237,671 Acres        | NDOM/NBMG Removal (Areas With High Mineral Potential) |
| <b>2,569,272 Acres</b> | <b>Proposed Nevada Mineral Withdrawal Area</b>        |

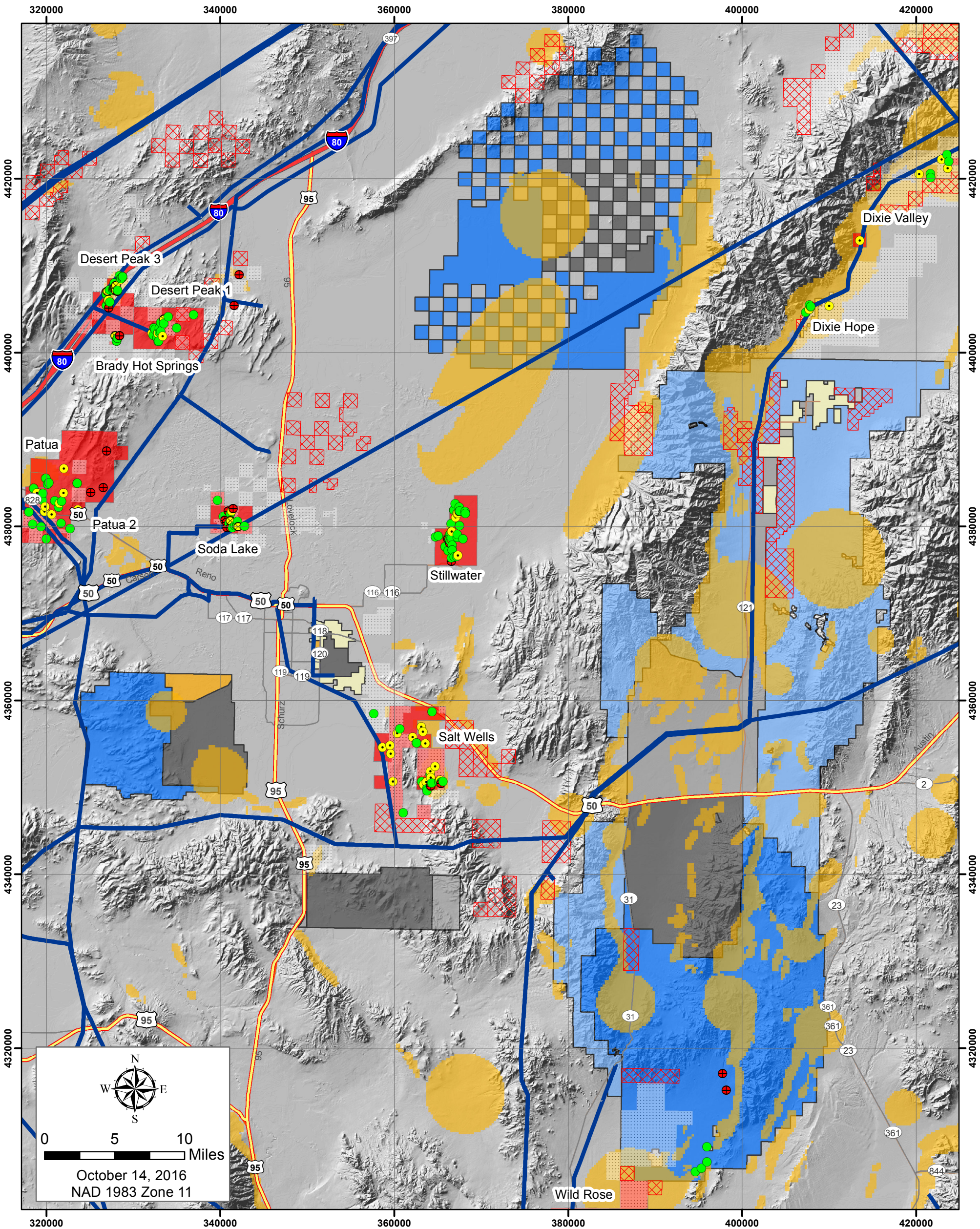
Map Prepared by:  
Lucia M. Patterson  
Nevada Division of Minerals  
NAD 1983 UTM Zone 11  
Date: 4/22/2016





# Fallon Range Training Complex Modernization EIS

Map Compiled By: Lucia M. Patterson, Nevada Division of Minerals



## Geothermal Resources Impact Map:

### Land Status

- Navy Owned Land
- Existing Withdrawal from BLM (Open to Public)
- Existing Withdrawal from BLM (Closed to the Public)
- Existing Withdrawal from BLM (Open to the Public - Proposed Closed to the Public)
- Proposed Withdrawal from BLM (Proposed Open to the Public 277,624 Acres)
- Proposed Withdrawal from BLM (Proposed Closed to the Public 328133 Acres)

### Geothermal Well Status

- Active Geothermal Fields
- Areas With High Geothermal Potential (NBMG)
- 2016 Geothermal Leases
- 2010-2014 Geothermal Lease Sales
- Transmission Corridor

### Geothermal Well Status

- In Use
- Idle
- Shut-In
- P&A

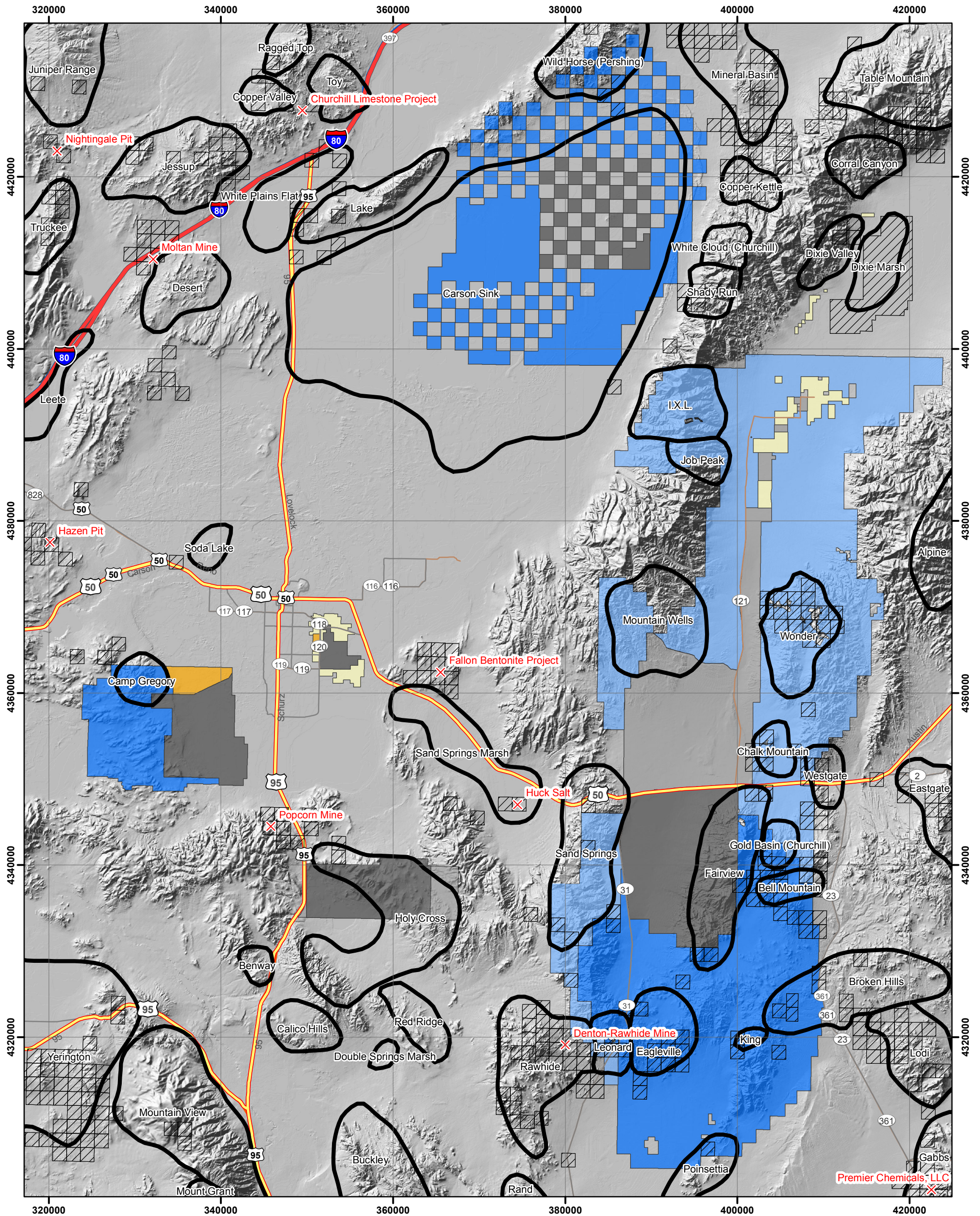


Total Proposed Additional Withdrawal: 605,757 Acres within which there are 15,360 acres under geothermal leases.









# Fallon Range Training Complex Modernization EIS

Map Compiled By: Lucia M. Patterson, Nevada Division of Minerals



## Mineral Resources Impact Map: Land Status

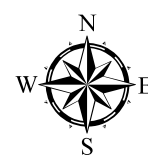
- |  |   |
|--|---|
|  | Navy Owned Land   |
|  | Existing Withdrawal from BLM (Open to Public)                                     |
|  | Existing Withdrawal from BLM (Closed to the Public)                               |
|  | Existing Withdrawal from BLM (Open to the Public - Proposed Closed to the Public) |
|  | Proposed Withdrawal from BLM (Proposed Open to the Public 277,624 Acres)          |
|  | Proposed Withdrawal from BLM (Proposed Closed to the Public 328133 Acres)         |



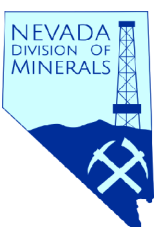
## 2016 Sections With Claims



## Mining Districts



A horizontal scale bar with alternating black and white segments. It is marked with the numbers 0, 5, and 10, followed by the word "Miles". The total length of the bar represents 10 miles.



October 14, 2016  
NAD 1983 Zone 11

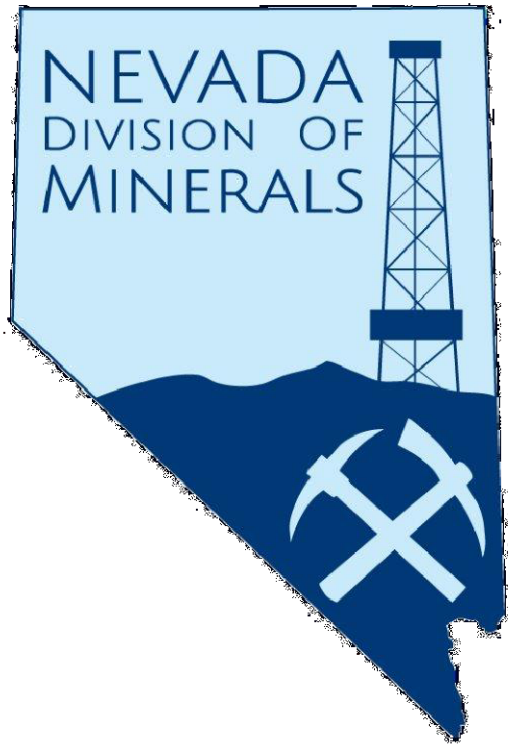
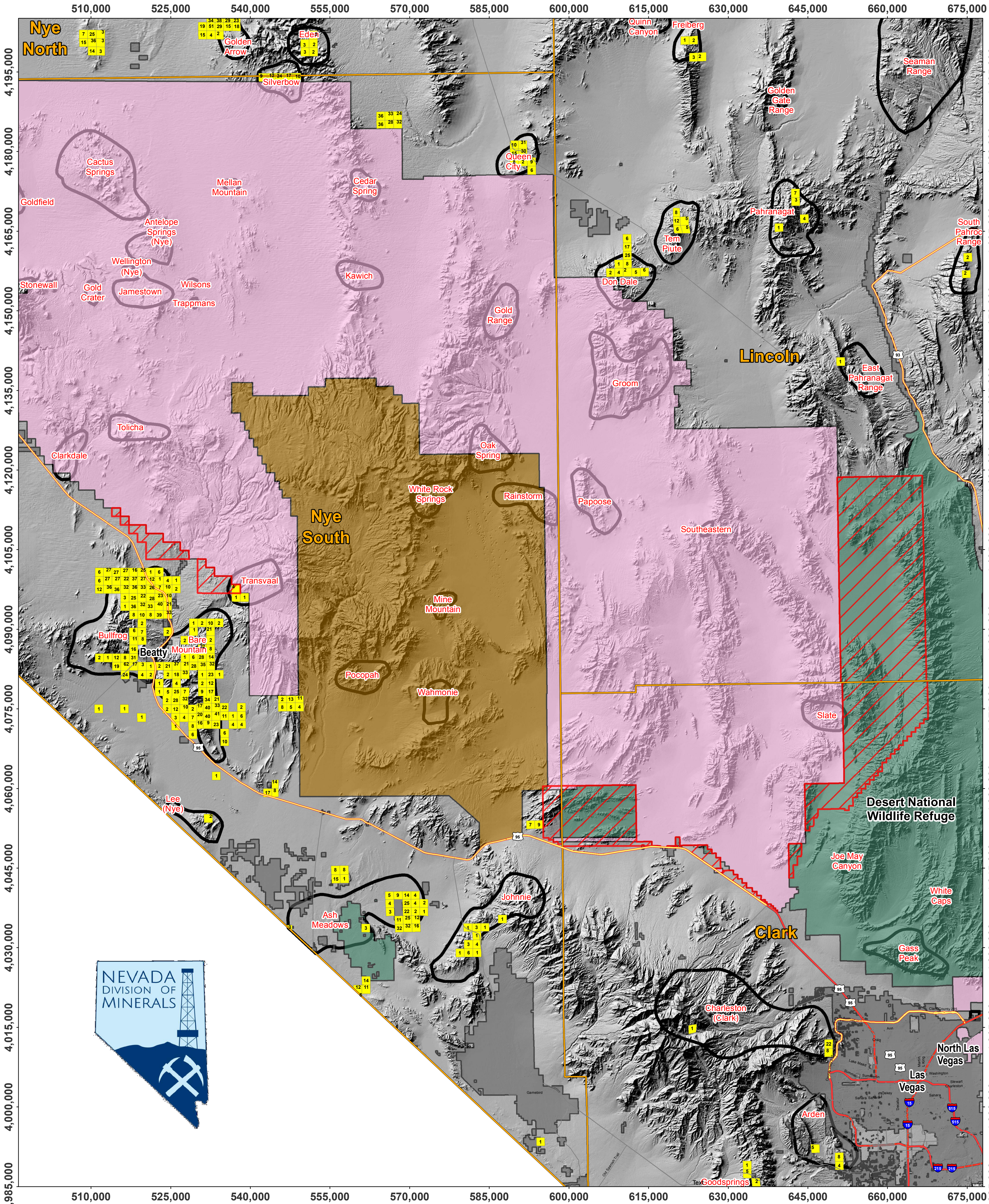
**Total Proposed Additional Withdrawal: 605,757 Acres within which there are 1,569 mining claims.**



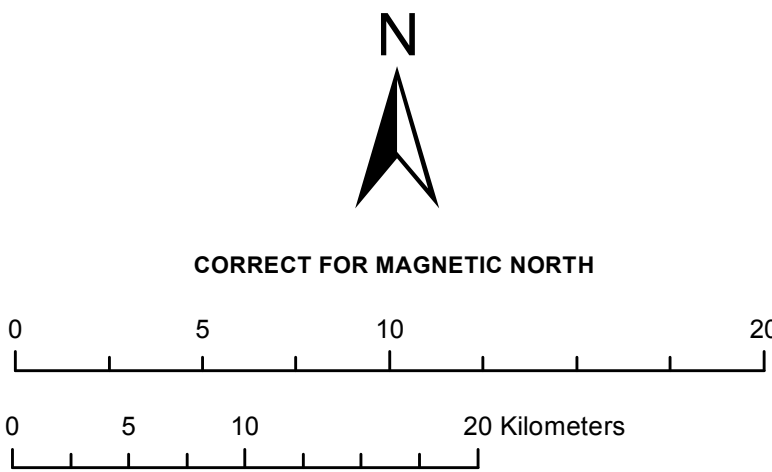
# NEVADA DIVISION OF MINERALS

Map created by Garrett A. Wake

## Proposed Nevada Test and Training Range (NTTR) Expansion -- Mineral Impact

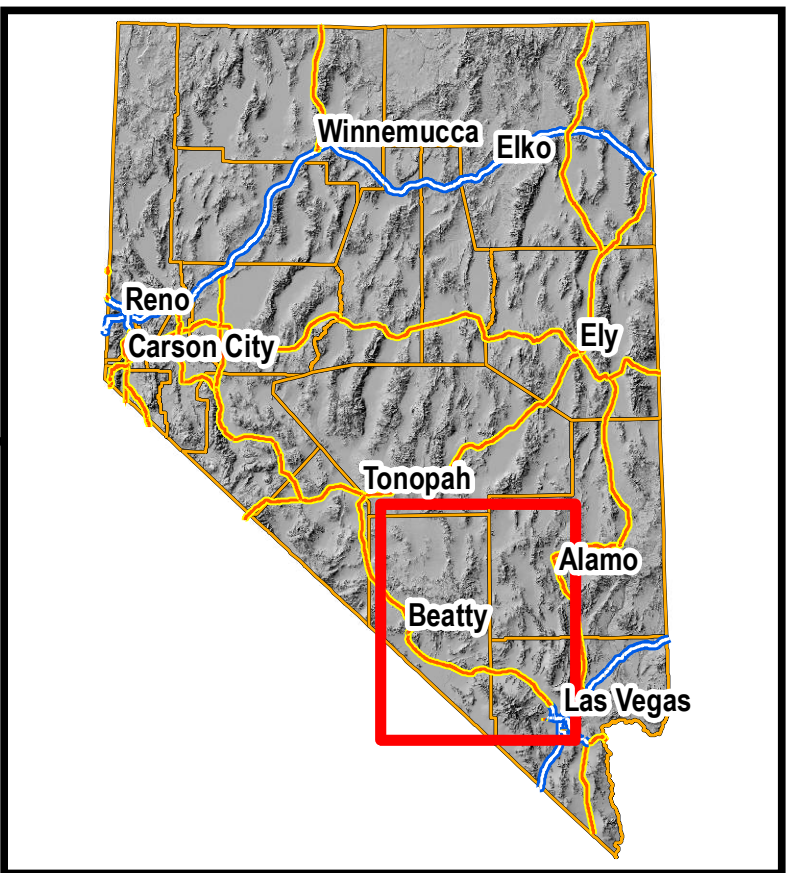


## Mineral Resources Impact Map



MAP CREATED BY NEVADA DIVISION OF MINERALS  
Map is for NEVADA DIVISION OF MINERALS use only  
NOT FOR PUBLIC USE

Data provided as of: 9/9/2016  
NAD 83 zone 11



| Land Status        |                           | NTTR Expansion                                 |
|--------------------|---------------------------|--|
|                    | Department of Defense     |  |
|                    | Department of Energy      |  |
|                    | Fish and Wildlife Service | County   |
|                    | Private / Patented        |  |
|                    | Bureau of Land Management | Mining Districts                               |
| Claims per Section |                           |  |
|                    | 1                         | Section containing active mining claims (2016) |

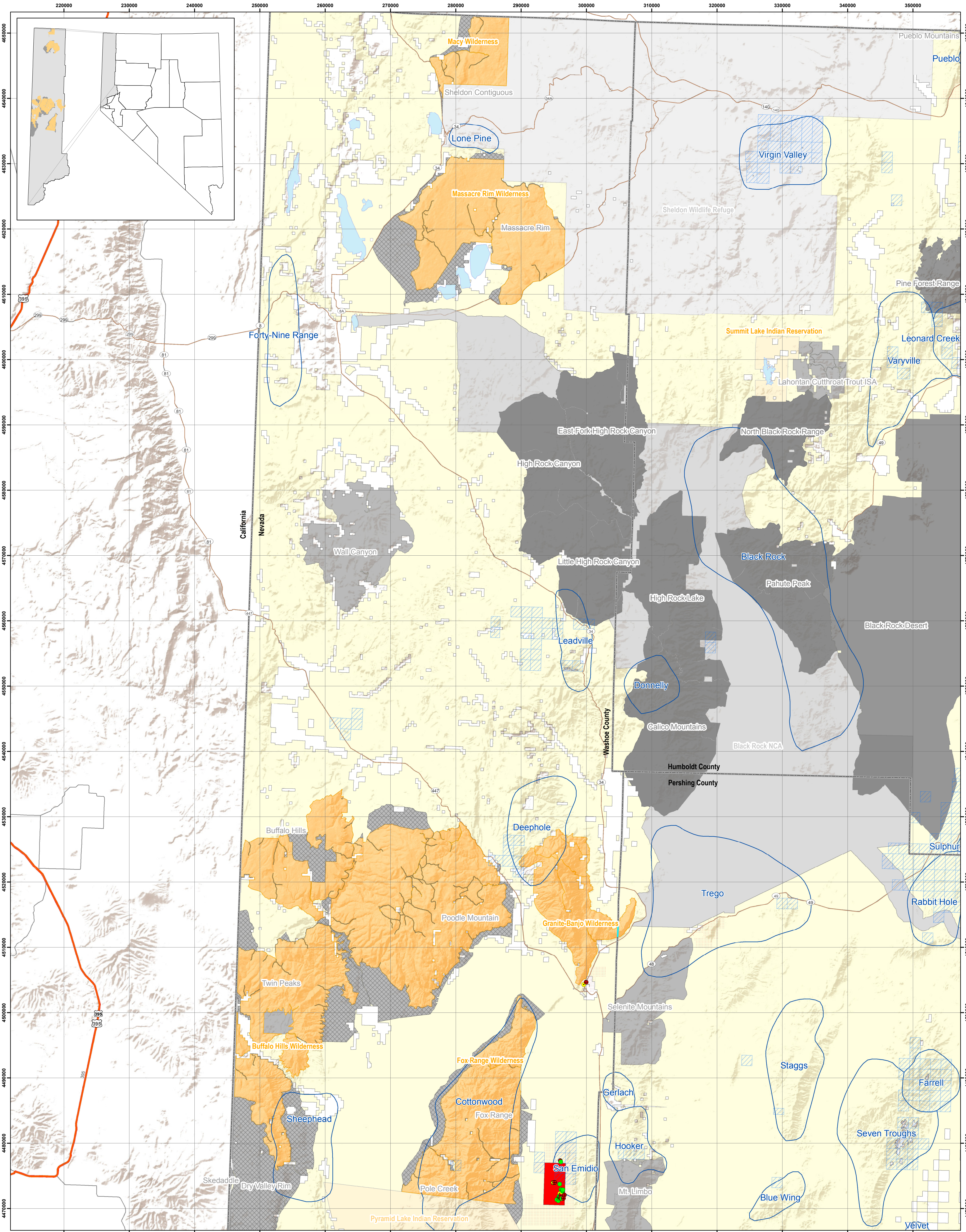
- Acres of private / patented land affected: ~465
- Active mining claims affected: 1 section with 4 claims
- Mining districts affected: Slate, Transvaal

The current NTTR renewal includes 2,949,603 acres. The proposed withdrawal includes an additional 301,507 acres.



# Washoe County Wilderness Proposal

Map Compiled By: Lucia M. Patterson, Nevada Division of Minerals



## Mineral and Geothermal Resources Impact Map:

**Land Status**

- Bureau of Indian Affairs
- Bureau of Land Management
- Private
- Water
- Nevada Wilderness Areas
- Nevada Wilderness Study Areas
- Nevada NCA Areas
- Sheldon Wildlife Refuge

- Washoe County New Wilderness Boundary Proposal
- Washoe County Wilderness Release

**Geothermal**

- Active Geothermal Fields
- 2016 Geothermal Leases

**Geothermal Well Status**

- In Use
- Idle
- Shut-In
- P&A

**Minerals**

- Sections With 2016 AY Claims
- Mining Districts
- Active Mine

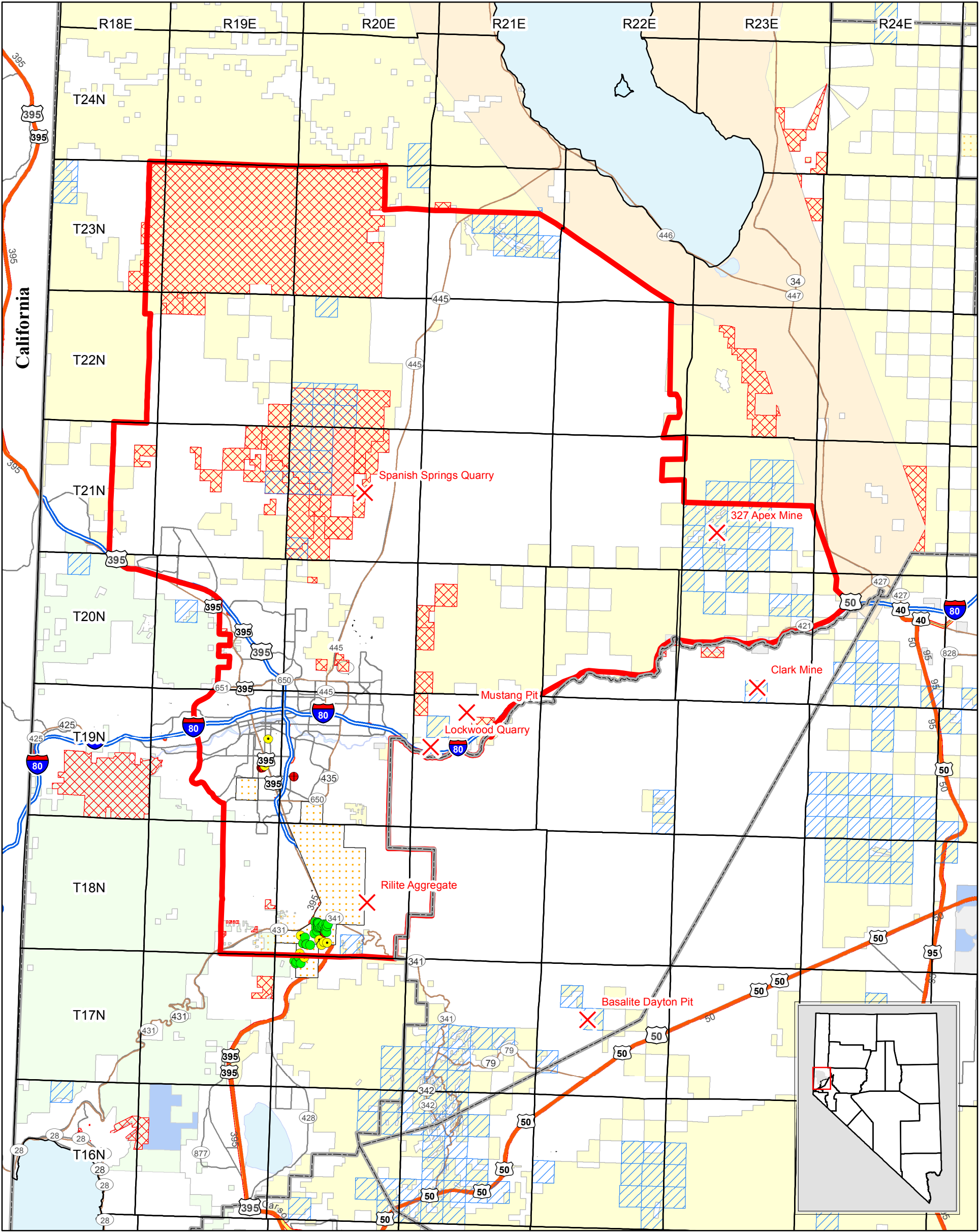
September 14, 2016  
NAD 1983 Zone 11

**Total Proposed Withdrawal: 449,170 Acres**  
within which there are approximately 1,920  
acres under geothermal leases and 2  
mining claims.



# Washoe County Land Transfer

Map Compiled By: Lucia M. Patterson, Nevada Division of Minerals



## Mineral and Geothermal Resources Impact Map:

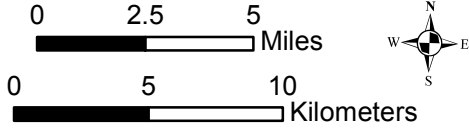
### Land Status

- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Reclamation
- US Forest Service
- Fish and Wildlife Service
- NV State Park
- Private
- Water

- Active Mines
- Nevada County Boundaries
- Disposal Boundary
- Active Geothermal Fields/2016 Leases
- Sections With 2016 AY Mining Claims
- Washoe County Land Transfer

### Geothermal Well Status

- In Use
- Idle
- Shut-In
- P&A

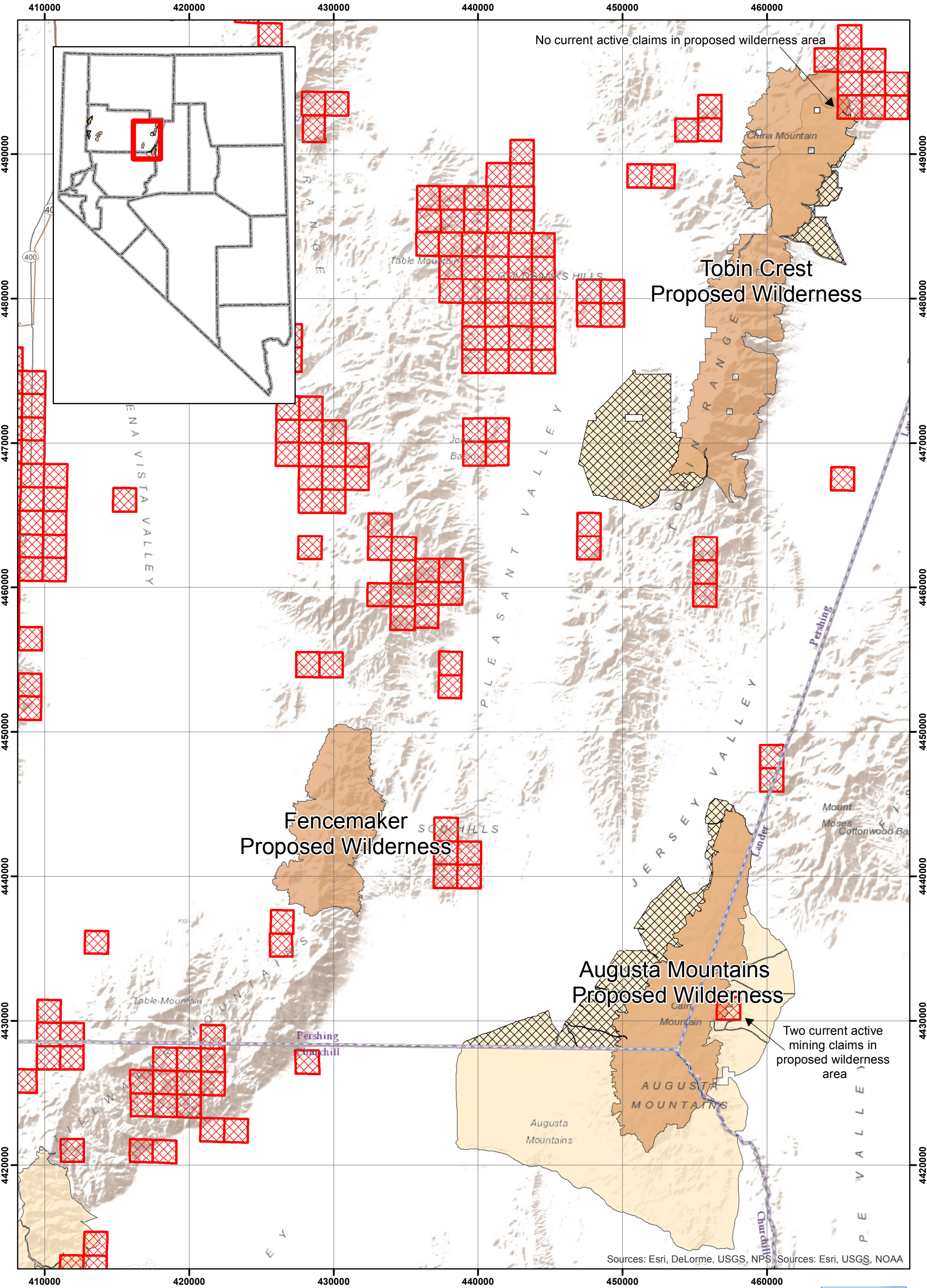


UTM NAD 1983 Zone 11  
September 15, 2016

**Total Proposed Withdrawal: 160,825 Acres**  
within which there are approximately 1,600  
acres under geothermal leases and 501  
mining claims.



# Pershing County Lands Bill Proposed Wilderness Areas (Eastern Map)

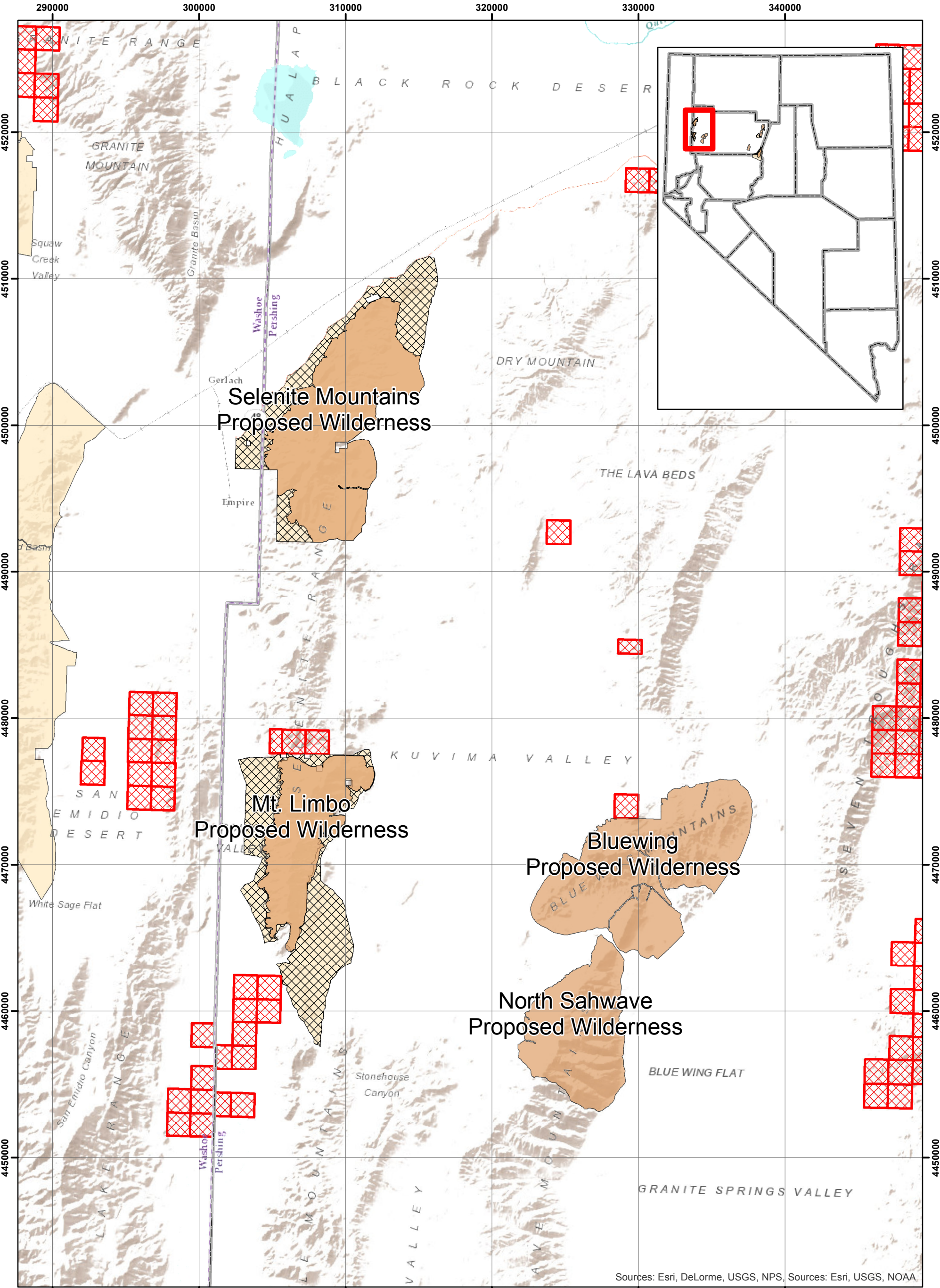


Two active mining claims within  
proposed wilderness areas  
(Located in 1986)



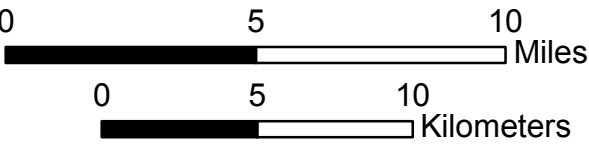


# Pershing County Lands Bill Proposed Wilderness Areas (Western Map)



**Legend**

- Nevada County Boundaries
- Wilderness Area Proposal
- Wilderness Study Area Release Proposal
- Current Wilderness Study Area
- Sections With Claims (Data as of October 2015)



UTM NAD 1983 Zone 11  
Map Compiled By: Lucia M. Patterson  
Nevada Division of Minerals  
October 19, 2016





### **III. C. Oil, Gas and Geothermal drilling and production activity**

## OIL, GAS, AND GEOTHERMAL ACTIVITY

### 2016 Permitting and Drilling Activity (Through October 14, 2016)

| Permit Type                 | Issued<br>2013 | Drilled<br>2013 | Issued<br>2014 | Drilled<br>2014 | Issued<br>2015 | Drilled<br>2015 | Issued<br>2016 | Drilled<br>2016 |
|-----------------------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|
| Geothermal - Ind Production | 10             | 5               | 5              | 5               | 10             | 7               | 7              | 8               |
| Geothermal - Ind Inj        | 2              | 2               | 2              | 2               | 1              | 2               | 2              | 1               |
| Geothermal - Observation    | 7              | 6               | 10             | 3               | 1              | 1               | 1              | 1               |
| Geothermal - TG             | 1              | 1               | ---            | ---             | 5              | 5               | ---            | ---             |
| Geothermal - Com            | ---            | ---             | ---            | ---             | ---            | ---             | ---            | ---             |
| Geothermal - Dom            | 1 <sup>1</sup> | ---             | 8 <sup>2</sup> | 4               | 8 <sup>3</sup> | 5               | ---            | 4               |
| Geothermal - Project Area   | ---            | ---             | 1              | ---             | 1              | ---             | ---            | ---             |
| Geothermal - Total          | 21             | 15              | 27             | 15              | 26             | 20              | 10             | 14              |
| Oil & Gas                   | 16             | 5               | 16             | 5               | 4              | 2               | 3              | 1               |

<sup>1</sup> Existing well, drilled in 1939; <sup>2</sup> Includes 4 wells previously drilled and completed; <sup>3</sup> Includes 2 wells previously drilled.

|                                    |            |                              |   |
|------------------------------------|------------|------------------------------|---|
| Activity to<br>October 14,<br>2016 | Geothermal | Ormat Nevada                 | Completed drilling the Carson Lake 81(86-6)-7 production well. Permits were issued for the Tungsten Mountain 75A-22 production well and the McGinness Hills 57C-22 injection well. Both wells are currently being drilled. Permits waiting on BLM approval are the Tungsten Mountain 67A-22 and 75B-22 production wells. The Dixie Valley 75(53)-4 injection well permit application has been put on hold due to an upcoming drilling program change. Ormat Nevada has submitted a production well GDP to the BLM for New York Canyon, but NDOM has not received the permit application and drilling program to date. |
|                                    |            | US Geothermal                | US Geothermal has submitted sundries to deepen and reclassify three TG wells at San Emidio. The wells would be reclassified as observation. The wells were originally constructed in an observation manner in the event deepening of the wells is needed to evaluate the potential resource. NDOM is waiting on BLM notification of approval.   |
|                                    | Oil        | Makoil                       | The Soda Springs 1-22 in Nye County (RR Valley) was permitted. The Munson Ranch 12-23X and 13-34 permits were approved in 2015, but have not been drilled. The Murphy Gap 14-23, permitted in March 2016, has not been drilled.   |
|                                    |            | Bright Sky Energy & Minerals | The White River Valley 1-35 well has been reviewed for a re-entry and testing procedure. Waiting on BLM approval.   |

### **Summary of Geothermal and Oil Well Inspections for Fiscal Year 2017**

| FY 2017 Well Inspections  | Total Wells | Wells Needed for FY17 | Wells Inspected | % of Total Needed | Wells Remaining |
|---------------------------|-------------|-----------------------|-----------------|-------------------|-----------------|
| Geothermal (13 Locations) | 438         | 146                   | 183             |                   |                 |
| Oil (6 Locations)         | 128         | 43                    | 18              |                   |                 |
| Totals                    | 566         | 189                   | 201             | 107%              | -12             |

### **Databases**

Drill samples received by the Sample Library at the Nevada Bureau of Mines and Geology will be incorporated into the two databases. I will coordinate what data is needed with David Davis at NBMG and Lucia will design how this information can be appended to the databases in order to accurately query the information needed.

### **Sundry Notice Activity through October 14, 2016**

During the 2<sup>nd</sup> quarter of 2016 (calendar year) a total of 14 sundries were approved, thirteen geothermal and one oil.

### **BLM Lease Sales**

The BLM Oil & Gas Lease Sale for the Carson City and Winnemucca Districts, scheduled for September 13, 2016, was cancelled. The reason for the cancellation is due to no Expressions of Interest (EOIs) were submitted, therefore no lands will be offered for lease until next year.

The BLM Oil & Gas Lease Sale for the Ely District, scheduled for December 13, 2016, has been cancelled. The reason for the cancellation is due to pending formal Endangered Species Act Section 7 consultation with the U.S. Fish and Wildlife Service on the Ely District Programmatic Biological Opinion.

The BLM Geothermal Lease Sale is scheduled for October 26, 2016. The sale will be held in Sacramento, California, as part of a multi-state sale. The Nevada portion of the sale will be 23 parcels within the Battle Mountain, Carson City, Elko, and Winnemucca Districts. I will be at the Geothermal Resource Council Conference in Sacramento on October 26<sup>th</sup>, but due to manning the booth I will not be able to attend the geothermal sale.

## **IV. STAFF REPORTS**





**NEVADA COMMISSION ON MINERAL RESOURCES  
DIVISION OF MINERAL**

**FY17**

**October 14, 2016**

**Week: 15  
Year %: 29%**

**REVENUES**

|  | Work Program       | Actual                | % of Work Program | Balance Remaining     |
|--|--------------------|-----------------------|-------------------|-----------------------|
| <b>Balance Forward From Prev. Yr. (2511)</b> | <b>\$1,061,288</b> | <b>\$1,061,288</b>    | <b>100%</b>       | <b>\$0</b>            |
| Federal BLM Cooperative Agreement (3578)     | 50,000             | 3,707.70              | 7%                | 46,292.30             |
| USFS Assistance Agreement (3580)             | 0                  | 0.00                  | 0%                | 0.00                  |
| Oil Assessment Fees (3654)                   | 90,000             | 5,612.96              | 6%                | 84,387.04             |
| Oil Permit Fees (3717)                       | 6,000              | 500.00                | 8%                | 5,500.00              |
| Mining Claim Fees (3718)                     | 1,053,184          | 179,556.00            | 17%               | 873,628.00            |
| Dangerous Mine Fees (3727)                   | 438,827            | 118,382.50            | 27%               | 320,444.50            |
| Geothermal Fees (3736)                       | 120,750            | 15,200.00             | 13%               | 105,550.00            |
| Abandoned Mine Securing Fees (3770)          | 108,740            | 0.00                  | 0%                | 108,740.00            |
| Printing Sales (4011)                        | 300                | 0.00                  | 0%                | 300.00                |
| Publication Sales (4027)                     | 2,757              | 845.00                | 31%               | 1,912.00              |
| Prior Yr Refunds (BOA Travel Card) 4203      | 0                  | 0.00                  | 0%                | 0.00                  |
| Excess Property Sales (4252)                 | 0                  | 0.00                  | 0%                | 0.00                  |
| Medallion Royalty Income (4311)              | 1,550              | 0.00                  | 0%                | 1,550.00              |
| Treasurer's Interest Distribution (4326)     | 2,041              | 0.00                  | 0%                | 2,041.00              |
| Transfer frm Reclamation Bond Pool (4620)    | 75,800             | 0.00                  | 0%                | 75,800.00             |
| <b>FY17 Revenues Received</b>                | <b>\$1,949,949</b> | <b>\$323,804.16</b>   | <b>17%</b>        | <b>\$1,626,144.84</b> |
| <b>TOTAL REVENUES</b>                        | <b>\$3,011,237</b> | <b>\$1,385,092.16</b> |                   |                       |

**EXPENDITURES**

|  | Work Program       | Actual                | % of Work Program | Balance Remaining     |
|--|--------------------|-----------------------|-------------------|-----------------------|
| Personnel (01)                         | \$1,054,725        | \$246,265.16          | 23%               | \$808,459.84          |
| Out of State Travel (02)               | 11,947             | 3,141.33              | 26%               | 8,805.67              |
| In State Travel (03)                   | 29,339             | 5,570.86              | 19%               | 23,768.14             |
| Operating (04)                         | 106,306            | 56,318.83             | 53%               | 49,987.17             |
| Board Travel (08)                      | 2,914              | 805.58                | 28%               | 2,108.42              |
| Special Projects (09)                  | 403,309            | 0.00                  | 0%                | 403,309.00            |
| Las Vegas Office (14)                  | 36,474             | 16,468.54             | 45%               | 20,005.46             |
| Oil, Gas Geothermal (17)               | 20,149             | 1,212.09              | 6%                | 18,936.91             |
| AML Support (18)                       | 161,066            | 37,407.79             | 23%               | 123,658.21            |
| Bond Pool Expenses (19)                | 0                  | 0.00                  | 0%                | 0.00                  |
| County Royalty Grants (20)             | 0                  | 0.00                  | 0%                | 0.00                  |
| Computer H & S Ware, DOIT(26)          | 32,453             | 1,260.87              | 4%                | 31,192.13             |
| AML Enhancement (39)                   | 54,792             | 4,553.93              | 8%                | 50,238.07             |
| Purchasing Assessment (87)             | 1,448              | 362.00                | 25%               | 1,086.00              |
| State Cost Recovery (88)               | 37,608             | 9,402.00              | 25%               | 28,206.00             |
| AG Cost Allocation (89)                | 73,104             | 18,276.00             | 25%               | 54,828.00             |
| <b>FY17 Expenditures</b>               | <b>\$2,025,634</b> | <b>\$401,044.98</b>   | <b>20%</b>        | <b>\$1,624,589.02</b> |
| <b>Reserve Balance (86)</b>            | <b>\$985,603</b>   | <b>\$984,047.18</b>   | <b>100%</b>       | <b>1,555.82</b>       |
| <b>TOTAL EXPENDITURES PLUS RESERVE</b> | <b>\$3,011,237</b> | <b>\$1,385,092.16</b> |                   |                       |

This report reflects receipts and expenditures processed by the division to date.

# Could A Lithium Shortage De-Rail The Electric C

by

**W**e've gone electric, and there's no going back at this point. Lithium is our new fuel, but like fossil fuels, the reserves we're currently tapping into are finite—and that's what investors can take to the bank.

You may think lithium got too popular too fast. You may suspect electric vehicles are too much buzz and not enough real future. You may, in short, be a lithium skeptic, one of many. And yet, despite this skepticism, lithium demand is rising steadily and sharply, and indications that a shortage may be looming are very real.

It won't be a shortage in terms of 'peak lithium'; rather, it will be a game of catch-up with the electric car boom, with miners hustling to explore and tap into new reserves.

Consider the number of battery gigafactories that are being built around the world. We have all heard about Tesla's Nevada facility that will at full capacity produce enough batteries to power 500,000 electric cars per year by 2020.

This, as the carmaker proudly notes, is more than the global total lithium ion battery production for 2013. That's a pretty impressive rate of demand growth over just three years—but this growth also represents the culmination of a sea change in the way we think.

Lithium is powering pretty much everything upon which our present depends on and our future is being built. It's a viable alternative to petrol and in consumer electronics market segment alone, there is no sign of contraction—only expansion. Think the Internet of things, or smart houses, or smart cities, eventually. All these fascinating ideas are powered in some way by lithium.

But the real and present coup has been launched by electric vehicles. Forecasts from market research firms seem to be unanimous: EVs are on the rise, EVs

are hot, and EVs will be increasingly in demand as people all over the world are eagerly encouraged to cut their carbon footprint. According to Lux Research, the EV market will grow to \$10 billion within the next four years. Navigant Research forecasts EV sales will rise from 2.6 million last year to more than 6 million in 2024. So, whether we like it or not, EVs are coming—and in force.

Indeed, says Nevada Energy Metals executive Malcolm Bell, "It may be time to start worrying about a shortage, but it's not a question of whether we have enough lithium—it's a question of tapping into new reserves. Those who don't see the supply wall looming, will hit with a resounding thud. Those who start tapping into new reserves will be extremely well-positioned for the future."

From where everyone is standing right now, it may seem that the world's got a fair amount of lithium. According to global estimates by the U.S. Geological Survey, there is enough lithium in the world—13.5 million metric tons of it—to last us over 350 years in batteries.

What's missing from this prediction, however, is...the future, and indeed, the present. This calculation takes into account only the current rate of lithium ion battery usage. It does not account for the entrance of EVs into the mainstream. It does not account for Tesla, not to mention the growing ranks of Tesla rivals. And it most certainly doesn't account for what is by all means a pending energy revolution that sees lithium as its leader.

Already, the present is clear: Demand is growing fast, faster than production, and for now this new demand is coming increasingly from the electric vehicle industry.

Tesla's is by no means the only battery gigafactory out there. There are others being built around the world (at least 12, according to Benchmark Mineral Intelligence) and these gigafactories will raise the global demand for lithium batteries to some 122 GWh by 2020. That's up from 35 GWh currently. It's a

phenomenal rise over a very short period of time.

In the U.S., there is already one gigafactory—Tesla's, in Nevada—operating. A second gigafactory is in the works, courtesy of LG Chem. Brine-based lithium production in the country is concentrated in one place only, at least for now, and this place is Nevada. That's because it is the only confirmed place with lithium deposits. The biggest actively mined area is the Clayton Valley, with presence from both mining majors like Albermarle and smaller, pure-play lithium miners such as Nevada Energy Metals. This makes Clayton Valley ground zero for the U.S. lithium rush and everyone wants to be there, but it's the pure play miners who are set to explode onto this scene from an investors' perspective.

Clayton Valley can hardly contain the lithium rush, and it is already time to look in the surrounding areas to secure future supply for soaring demand predictions. Those with enough foresight are diversifying their Nevada holdings and banking on geological clues that suggest there's plenty more lithium in Tesla's backyard, and whoever gets to it first will be far ahead of the game.

"When everyone starts paying attention to Nevada's geology, we'll see a land rush that makes the current one pale by comparison," says Bell, who heads of acquisitions for Nevada Energy Metals, one of the pure play movers in this playing field that sees the wider lithium potential in Nevada.

"Nevada's geothermal footprints are large and extend well beyond the Clayton Valley. If you put a mirror up to Clayton Valley, there is endless opportunity here. The real race here is to create the next U.S. lithium powerhouse," says Bell.

## How to Play Lithium

Look everywhere, and then look again. Securing an investment in Clayton Valley is a good place to start—but it's also potentially only a flash in the pan. The best way to secure a foothold in lithium

2010-2016

### **Carson City**

8/17/2012-Tour in Yerington

12/11/2014

5/19/2016

11/1/2016

### **Virginia City**

### **Elko**

08/29/14-Newmont LeeVile Mine

08/27/15-Noble Energy's Huntington

K1L Well & General Molly Mt. Hope

### **Reno**

5/12/2010

10/19/2010

4/29/2011

7/27/11 – Tour of Bat Cupola in VC

11/2/2011

5/03/2012- Virginia City

11/09/2012

5/03/2013- Hazen and Olinghouse

10/10/2013

05/09/2014- EP Minerals; Nevada  
Cement Plant and Mine.

05/01/2015

11/05/2015-Bishop Manogue H.S.

### **Las Vegas**

2/11/2010 – Tour of the McCaw  
School of Mines - Henderson

2/7/2011 – Tour of Molycorp Mine

2/27/2012 – Searchlight Area

2/21/13

2/14/14- Tule Springs Park

2/24/15

2/03/16- Simplot Silica

### **Battle Mountain**

July 30, 2010 – Tour of Newmont Phoenix Mine

### **Tonopah**

8/15/13 - Solar Reserve Plant

8/16/13 - Tonopah Mining Park

### **Wendover**

8/25/16- Graymont's Pilot Peak, Newmont Long Canyon Mine

