



Nevada Division of Minerals

Division activities report

Mineral production and mining activities

Geothermal production and activities

Hydraulic fracturing regulations and oil activity



**Assembly Committee on Natural
Resources, Agriculture and Mining**

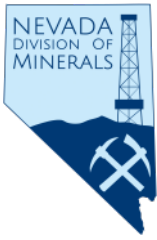
March 3, 2015

Richard Perry, Administrator



WHO WE ARE

- **State Agency and part of the Commission on Mineral Resources NRS 513**
- **CMR is 7 members appointed by the Governor from minerals, OGG industries**
- **Offices in Carson City (9 employees) and Las Vegas (2 employees)**
- **Revenues from fees, no general fund monies (mining claim fees, oil/gas fees, geothermal fees, etc.)**



WHAT WE DO

- **“Encourage and assist in the exploration for and production of oil, gas, geothermal energy and minerals within this state”
– NRS 513**
 - **Minerals Education to public, schools, organizations**
 - **Supply information on the minerals industry**
 - **Abandoned Mine Lands Program – public safety**
 - **Record annual production of mines, oil & gas, and geothermal energy.**
- **Permit Oil and Gas drilling & production NRS 522**
- **Permit Geothermal drilling & production NRS 534A**
- **State Reclamation Bond Pool NRS 519A.290**
- **Mining Claims, Mill Sites and Tunnel Rights NRS 517**



PERFORMANCE MEASURES

Activity	Description		FY-14 Actuals	FY-16	FY-17
General Administration	Number of abandoned mine land (AML) and minerals education presentations		196 /11 FTE's = 17.8	12	12
Abandoned Mines	Number of hazardous abandoned mine openings secured, expressed as a percentage of the total number inventoried		14,492 secured/18,331 inventoried = 79.1%	70%	70%
Oil, Gas, and Geothermal	Monitoring of Oil, Gas, and Geothermal Wells		556 Wells Inspected in FY14)/ 558 Permitted Wells = 99.6%	33%	33%
Oil, Gas, and Geothermal	% of Permits Processed in Ten Working Days		42 permits processed / 42 total permits processed = 100%	N/A	N/A

Nevada mineral and energy production

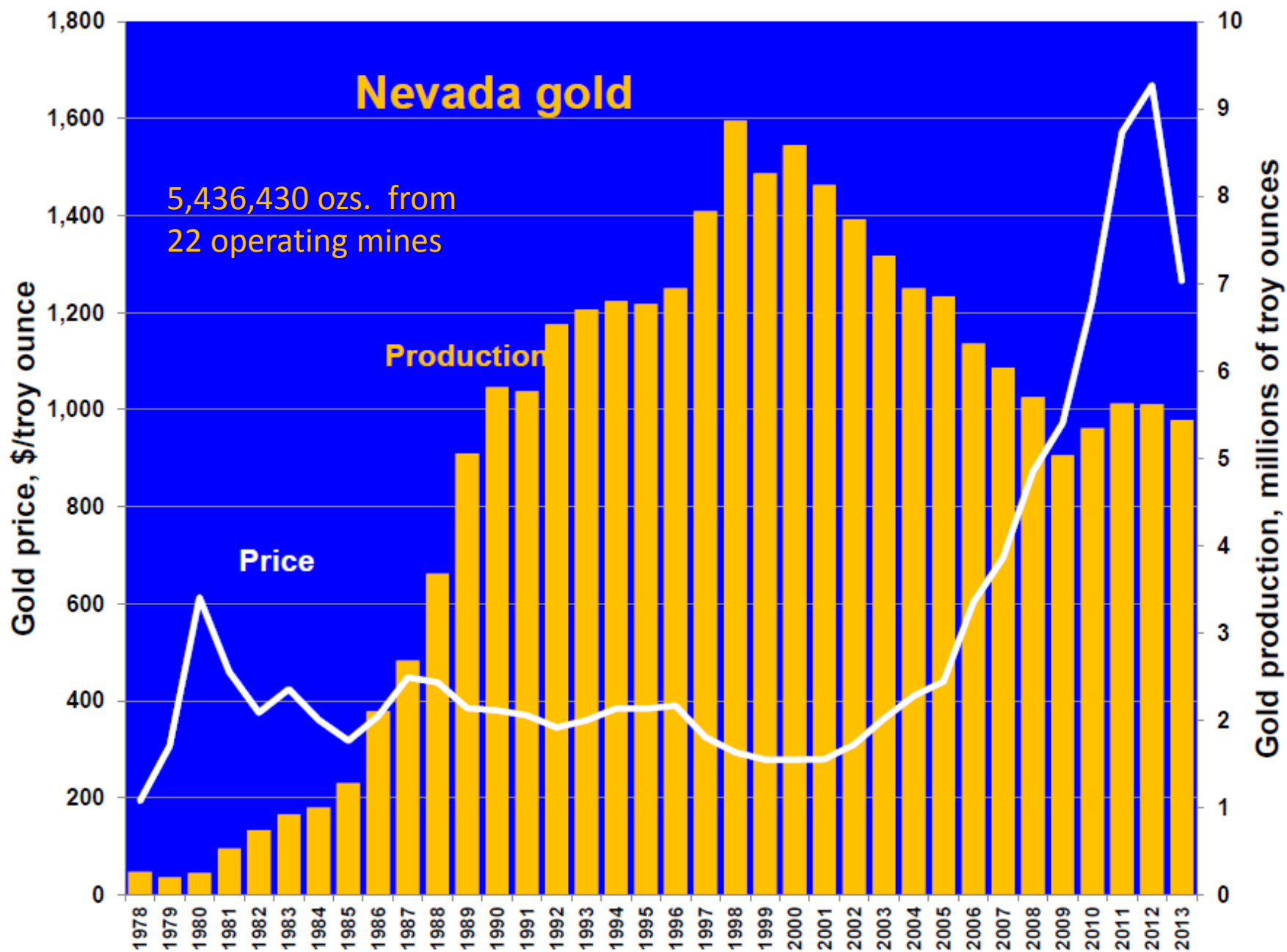
Production, \$ millions

Legend:

- Other
- Gypsum
- Petroleum
- Barite
- Geothermal
- Aggregate
- Silver
- Copper
- Gold

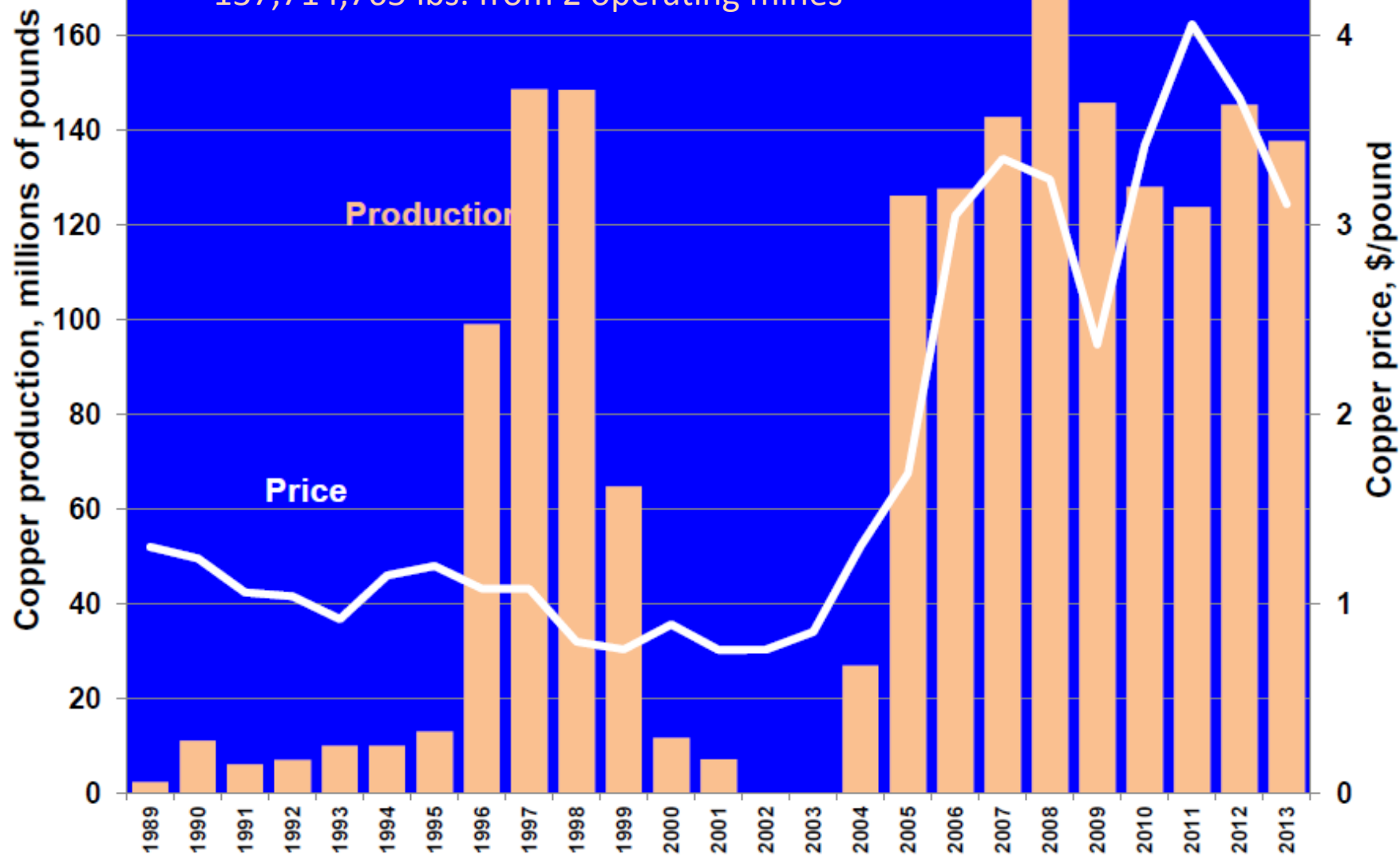
Year	Gold	Copper	Silver	Aggregate	Geothermal	Barite	Petroleum	Gypsum	Other
1978	100	0	0	0	0	0	0	0	0
1979	100	0	0	0	0	0	0	0	0
1980	200	0	0	0	0	0	0	0	0
1981	300	0	0	0	0	0	0	0	0
1982	300	0	0	0	0	0	0	0	0
1983	400	0	0	0	0	0	0	0	0
1984	400	0	0	0	0	0	0	0	0
1985	400	0	0	0	0	0	0	0	0
1986	800	0	0	0	0	0	0	0	0
1987	1200	0	0	0	0	0	0	0	0
1988	1600	0	0	0	0	0	0	0	0
1989	2000	0	0	0	0	0	0	0	0
1990	2200	0	0	0	0	0	0	0	0
1991	2200	0	0	0	0	0	0	0	0
1992	2300	0	0	0	0	0	0	0	0
1993	2400	0	0	0	0	0	0	0	0
1994	2600	0	0	0	0	0	0	0	0
1995	2600	0	0	0	0	0	0	0	0
1996	2800	0	0	0	0	0	0	0	0
1997	2600	0	0	0	0	0	0	0	0
1998	2600	0	0	0	0	0	0	0	0
1999	2400	0	0	0	0	0	0	0	0
2000	2400	0	0	0	0	0	0	0	0
2001	2300	0	0	0	0	0	0	0	0
2002	2400	0	0	0	0	0	0	0	0
2003	2600	0	0	0	0	0	0	0	0
2004	2800	0	0	0	0	0	0	0	0
2005	3000	0	0	0	0	0	0	0	0
2006	3800	0	0	0	0	0	0	0	0
2007	4200	0	0	0	0	0	0	0	0
2008	5000	0	0	0	0	0	0	0	0
2009	4900	0	0	0	0	0	0	0	0
2010	6500	0	0	0	0	0	0	0	0
2011	8500	0	0	0	0	0	0	0	0
2012	9400	0	0	0	0	0	0	0	0
2013	7600	0	0	0	0	0	0	0	0

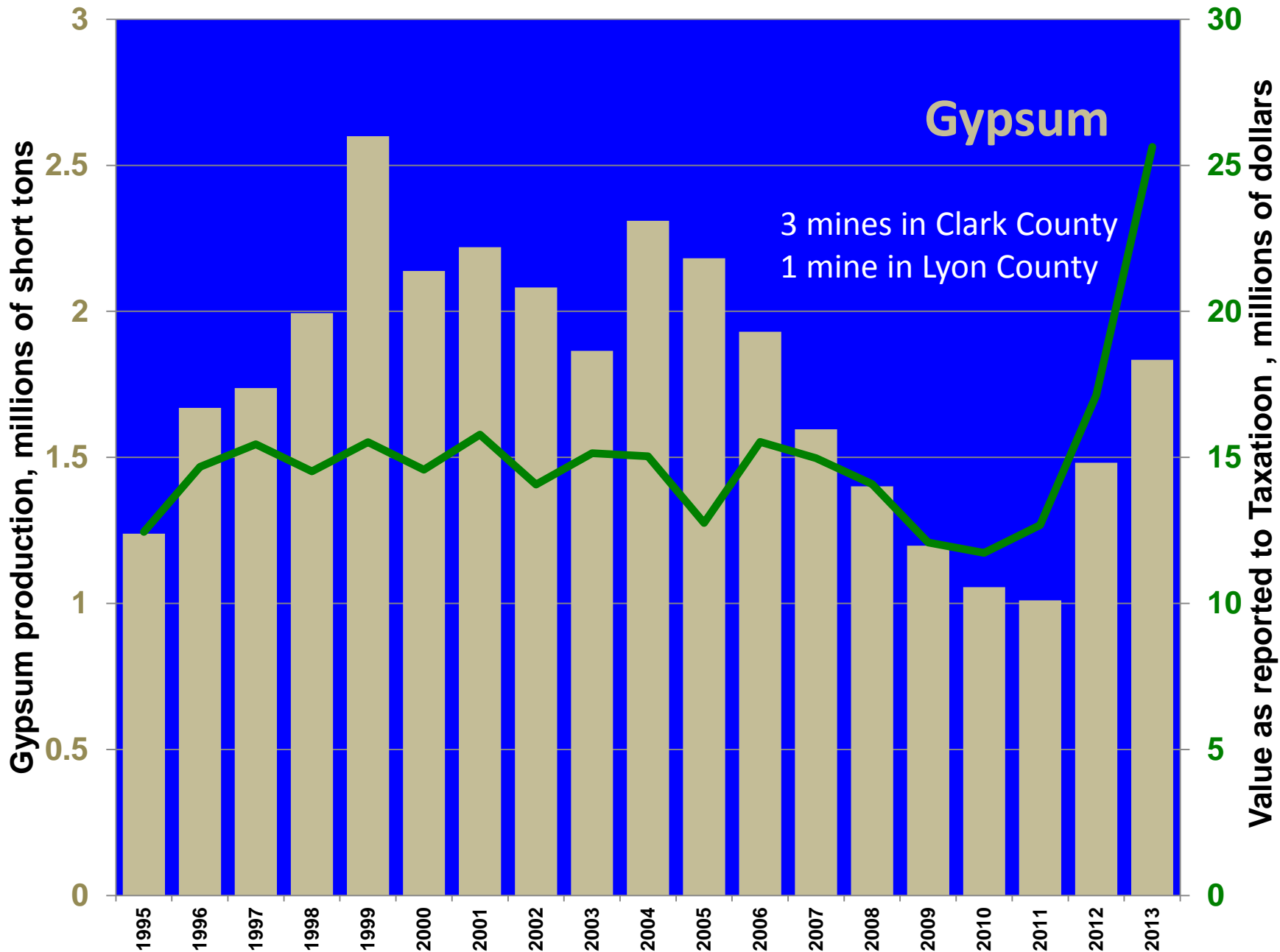
Production, \$ millions

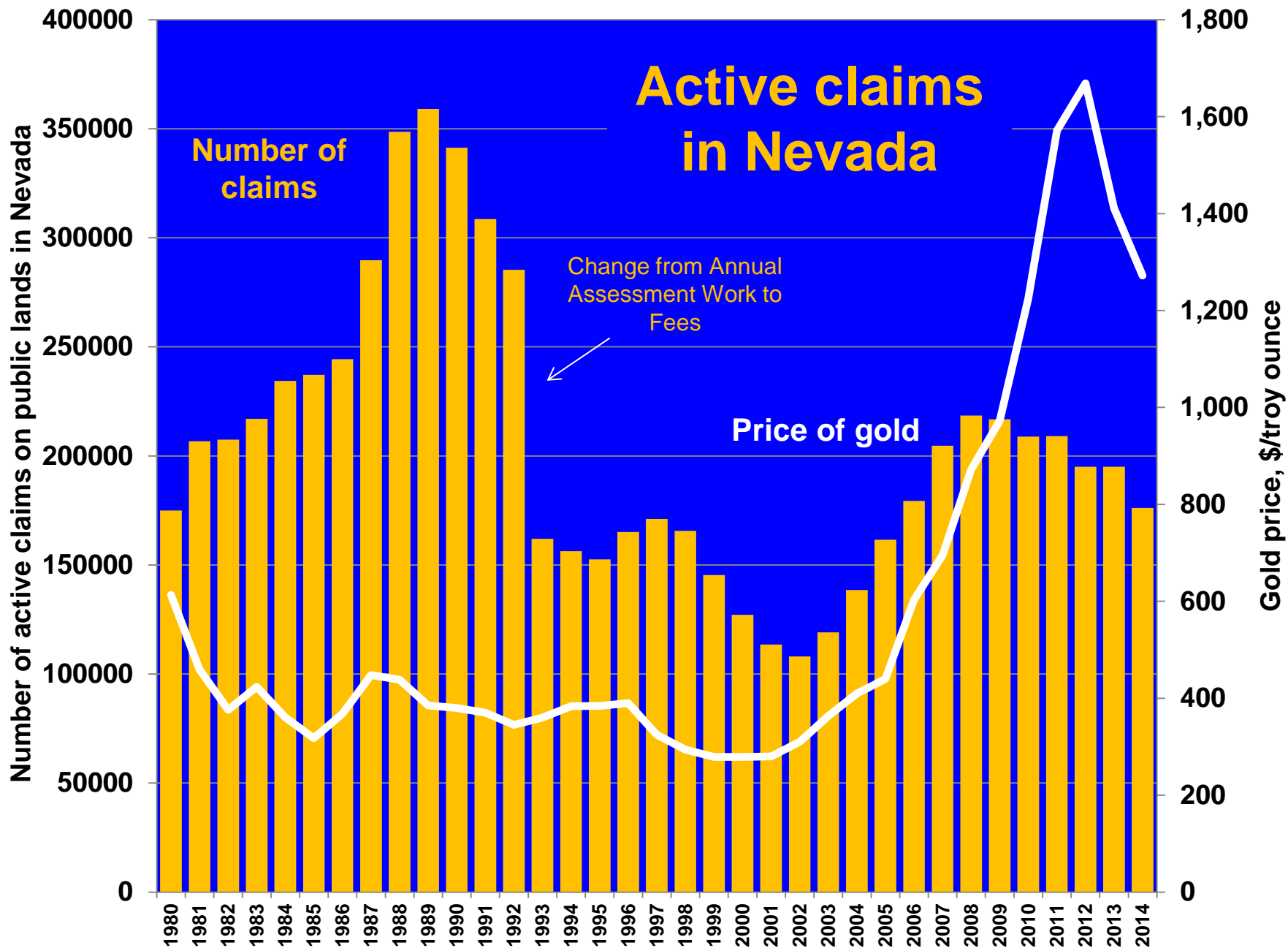


Nevada copper

137,714,765 lbs. from 2 operating mines







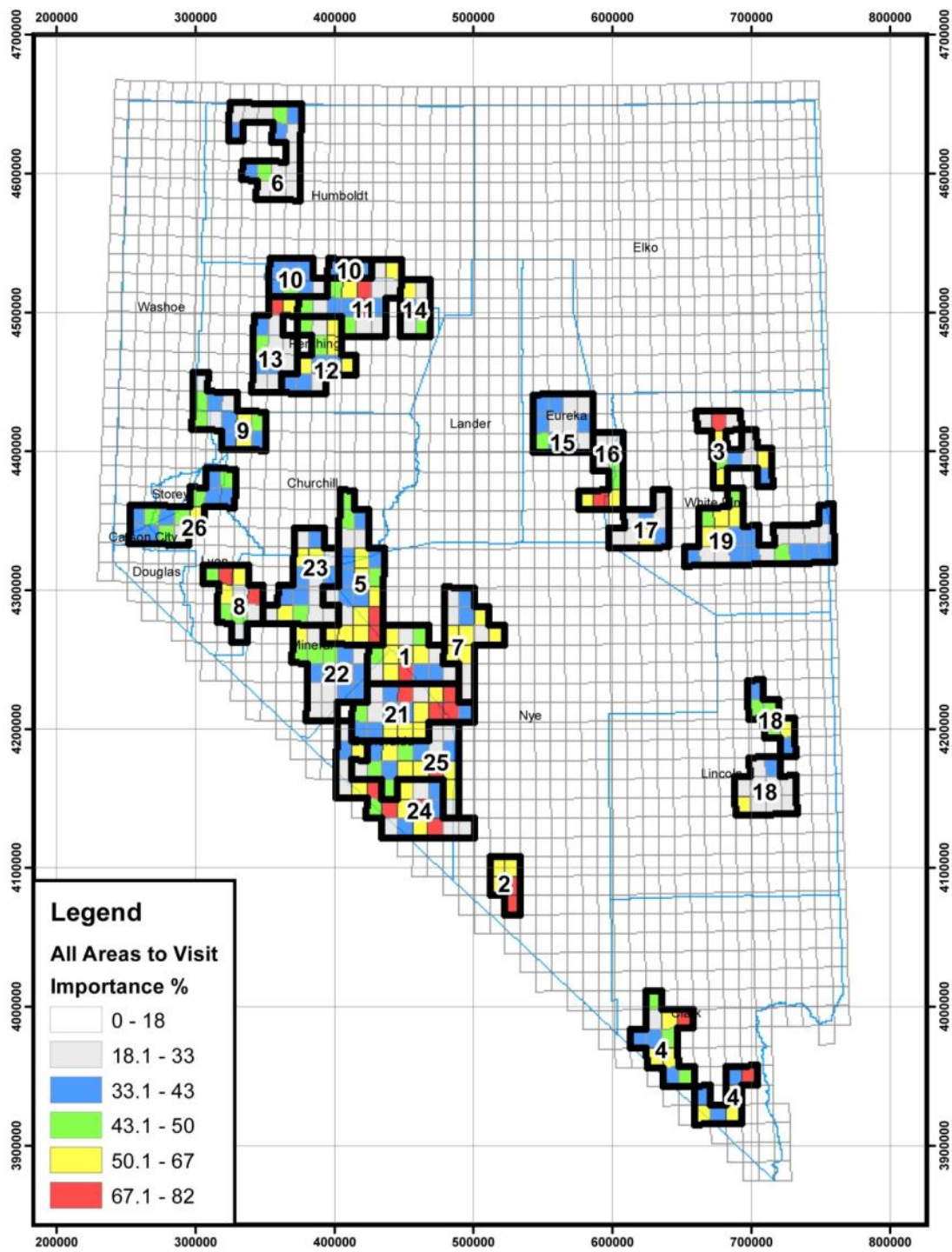


AML Activities by County

COUNTY	SITES DISCOVERED	SITES SECURED	% SECURED	TOTAL UNSECURED	% UNSECURED STATEWIDE
Carson	76	76	100%	0	0.00%
Churchill	707	570	81%	137	3.74%
Clark	2,151	1,686	78%	465	12.68%
Douglas	204	201	99%	3	0.08%
Elko	783	579	74%	204	5.56%
Esmeralda	2,793	2,376	85%	417	11.37%
Eureka	774	709	92%	65	1.77%
Humboldt	797	700	88%	97	2.65%
Lander	591	508	86%	83	2.26%
Lincoln	722	576	80%	146	3.98%
Lyon	1,035	962	93%	73	1.99%
Mineral	1,620	1,355	84%	265	7.23%
Nye	2,614	1,958	75%	656	17.89%
Pershing	1,593	1,141	72%	452	12.33%
Storey	197	186	94%	11	0.30%
Washoe	445	402	90%	43	1.17%
White Pine	1,554	1005	65%	549	14.98%
TOTAL (Since 1987)	18,656	14,990	80%	3666	100.00%



SECURING
ACTIVITIES
PRIORITIZED
ANNUALLY
USING A RISK
EQUATION
2015 >>>>>>>



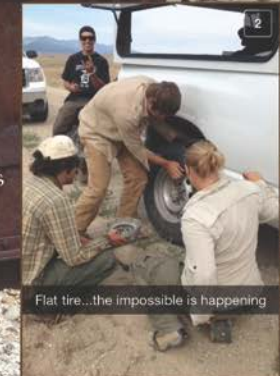
2014 SUMMER INTERN PROGRAM

Eight UNR-UNLV students investigated 4,012 abandoned mine features in 13 counties, logged 451 hazards and secured 284

NEVADA DIVISION OF MINERALS ABANDONED MINE LANDS 2014 SUMMER INTERN PROGRAM



Many Thanks to These
Hard Working Students:
Sean Diggins
Alain Nowakowski
Ralston Pedersen
Vince Ugalde
Sarah Ullrich
Nolan Weintz
Alex Wheatley
Gunnar Young



Flat tire...the impossible is happening



AML BAT GATE PROJECTS

789 bat compatible closures thru Feb 2014

BEFORE

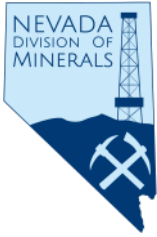
AFTER



CC-37
SECURED
12/16/2014
LOOKING NE



WA-0395
Secured
09/26/2014
Looking NW



AML BACKFILL PROJECTS

3,125 Backfills thru January 2015





EAGLE SCOUT SECURING PROJECTS



154 projects since 1992 resulting in 696 securings
(through 12/31/2014)



MINERALS EDUCATION



2014 ACTIVITIES:

- 167 educational presentations by staff that reached 7,408 citizens
 - 113 classroom presentations
 - 28 to civic groups, clubs and trade orgs.
 - 21 to Boy Scout and youth organizations
 - 88 in Northern Nevada
 - 72 in Southern Nevada





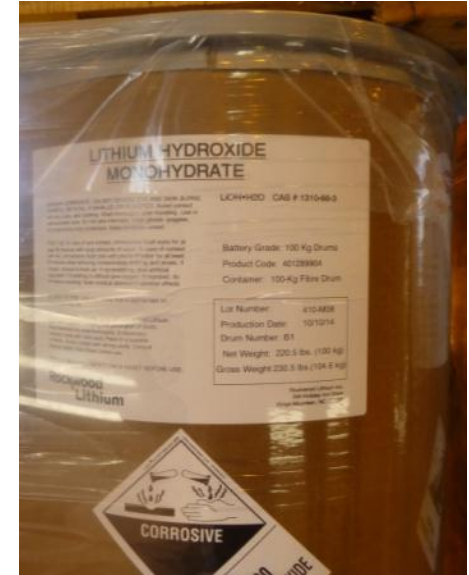
Rockwood Lithium: Silver Peak

Located in Silver Peak, NV

Lithium Brine Deposit

Overview:

- First lithium Carbonate was produced in 1967
- Brine is pumped from 4 aquifers which are bound in the Clayton Valley by high angle faults
- Only commercial lithium mine in North America
- Employs 75 directly + 10 contractors



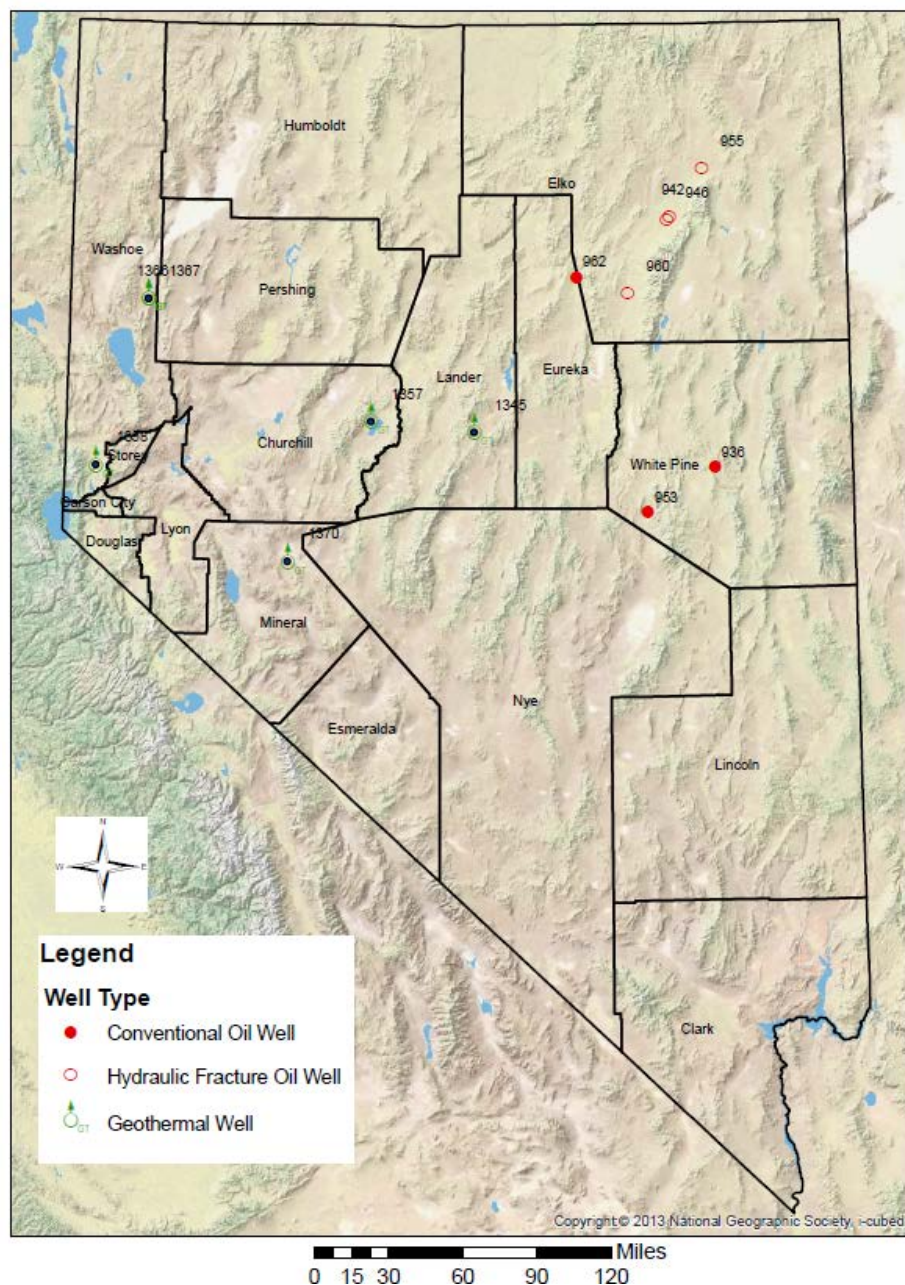


Oil and Geothermal Wells Drilled Since 9/1/2013 to 12/31/2014

FLUID MINERALS PERMITTING AND DRILLING ACTIVITY

7 OIL EXPLORATION
WELLS DRILLED

5 GEOTHERMAL
EXPLORATION OR
PRODUCTION
WELLS DRILLED



Nevada Geothermal Energy

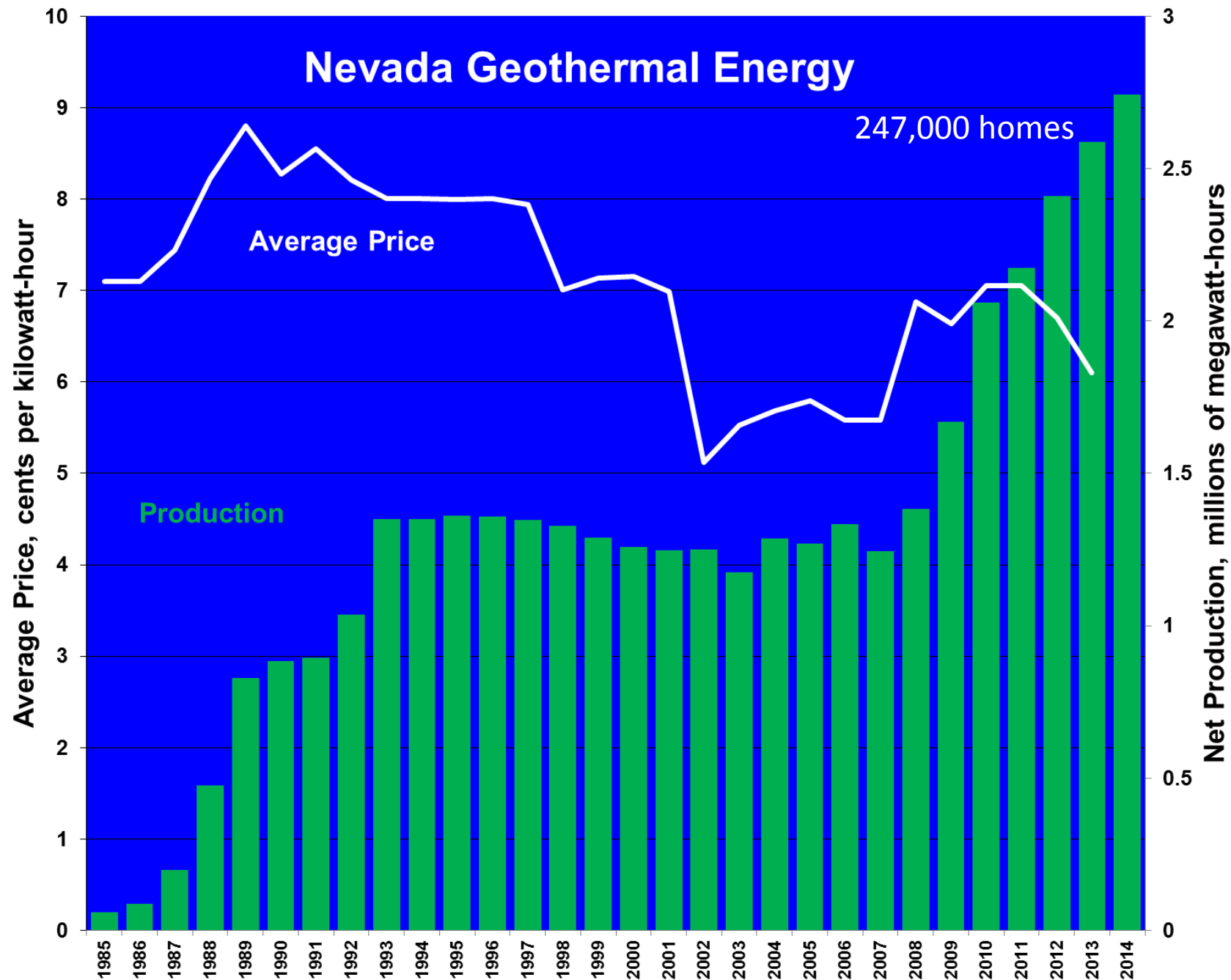
247,000 homes

Average Price, cents per kilowatt-hour

Average Price

Production

Net Production, millions of megawatt-hours





Ormat Technologies Inc: McGinness Hills

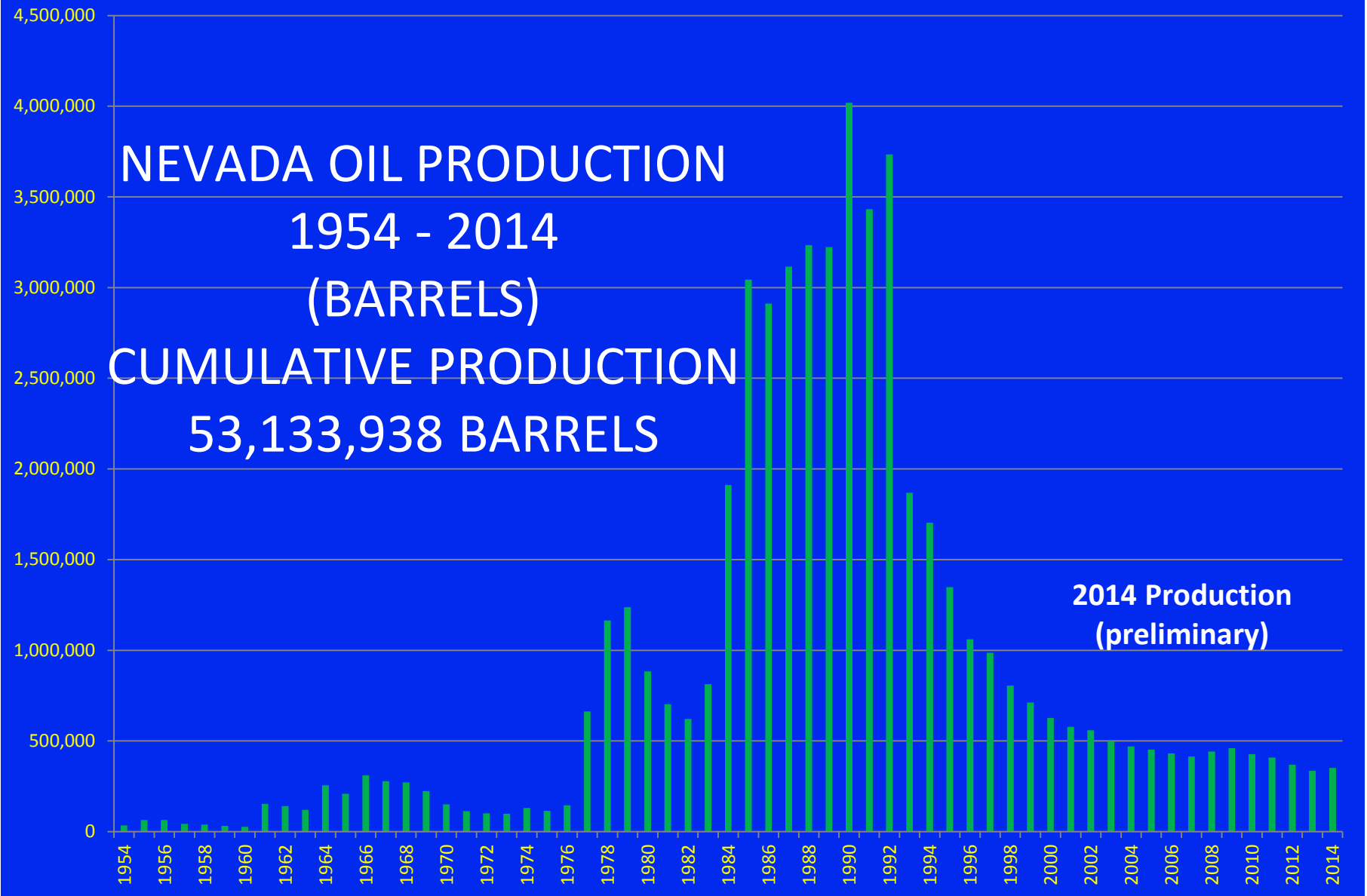
Located in Lander County northeast of Austin
Geothermal Power Plant

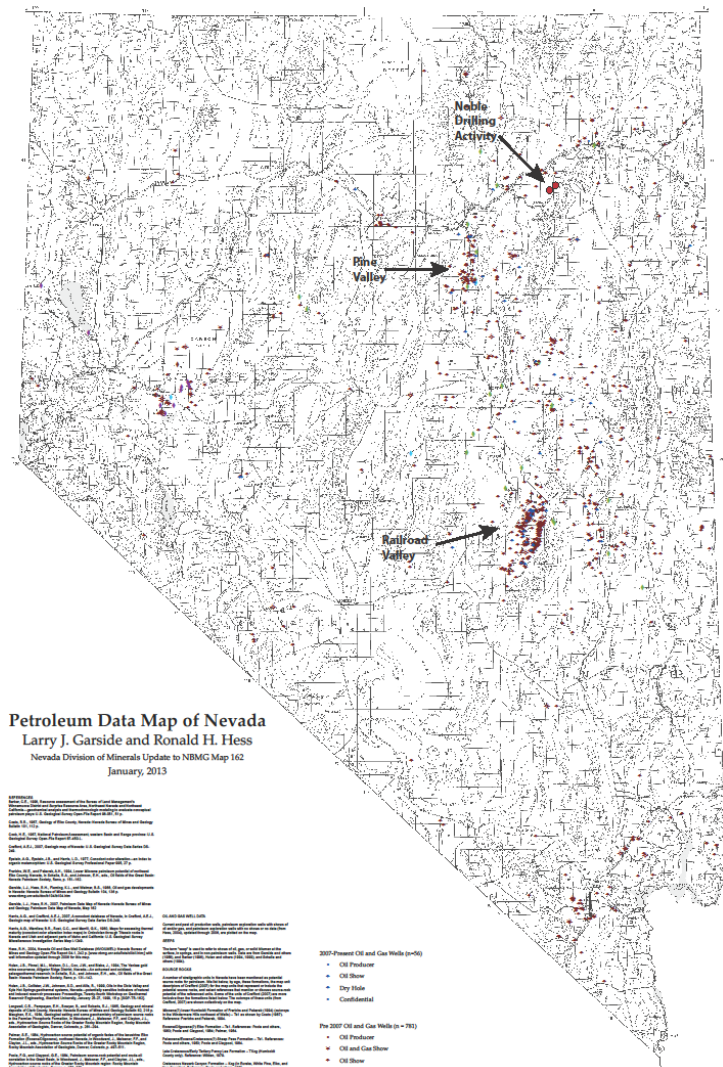
General

- First explored for gold in the 1980's due to exposure of high-sulfidation and low-sulfidation hydrothermal alteration products
- In 2004 Newcrest Resources encountered hot water during exploration drilling
- Each 300 meter exploration hole punctured the sinter cap and intercepted near-boiling waters
- Geysering action was observed in one hole
- Ormat leased the McGinness Hills Property in 2009
- Phase I at 30 MW began operations on June 15, 2012
- Phase 2 of commercial operation began February 4, 2015. Total = 72 MW



NEVADA OIL PRODUCTION
1954 - 2014
(BARRELS)
CUMULATIVE PRODUCTION
53,133,938 BARRELS





PETROLEUM EXPLORATION WELLS AND PRODUCTION FIELDS IN NEVADA

826 oil & gas exploration wells drilled since 1907

FIELD	BBLS OIL
Eagle Springs	34,217.00
Trap Spring	136,651.30
Bacon Flat	6,223.00
Currant	143.00
Grant Canyon	46,263.00
Kate Spring	27,085.76
Duckwater	124.00
Sans Spring	1,604.00
Ghost Ranch	15,563.93
Sand Dune	7,467.00
Total RR Valley	275,341.99
Blackburn	32,217.00
Tomera Ranch	1,916.00
Total Pine Valley	34,133.00
Humboldt	2,755.77
Huntington	2,247.52
Total Elko County	5,003.29
Total Nevada	314,478.28



DEVELOPMENT OF NEVADA'S HF REGULATIONS – UPDATE OF NAC 522

- 1. 7 Member team from NDEP & NDOM developed regulations**
- 2. IOGCC - Reviewed regulations of oil-producing states**
- 3. Reviewed BLM proposed rule on hydraulic fracturing**
- 4. Staff discussed what works and what does not with regulators in Arkansas, California, Colorado, Kansas, North Dakota, Ohio, Pennsylvania, Texas and Utah.**
- 5. Developed regulations and benchmarked against other states.**
- 6. LCB review**
- 7. Held public workshops in CC, LV, Elko in March**
- 8. Addressed all comments, modified first draft**
- 9. 2nd LCB review**
- 10. New regulations approved by CMR in August, 2014**
- 11. Recommended for approval by MOAC**
- 12. Approved by Legislative Commission on 10/24/14**



NEVADA HF REGULATIONS SUMMARY

(Update to NAC 522)

APPLICATION:

- **application to include minimum 1-mile radius Area of Review**
- **Groundwater baseline sampling and monitoring of up to 4 existing water wells by operator before and 2X after HF.**
- **Approved applications with COA's on NDOM web site.**

DRILLING

- **Minimum 500' cement for surface, intermediate, production casing**
- **Cement bond logs and pressure testing to ensure casing integrity**
- **Intermediate casing required**

HYDRAULIC FRACTURING

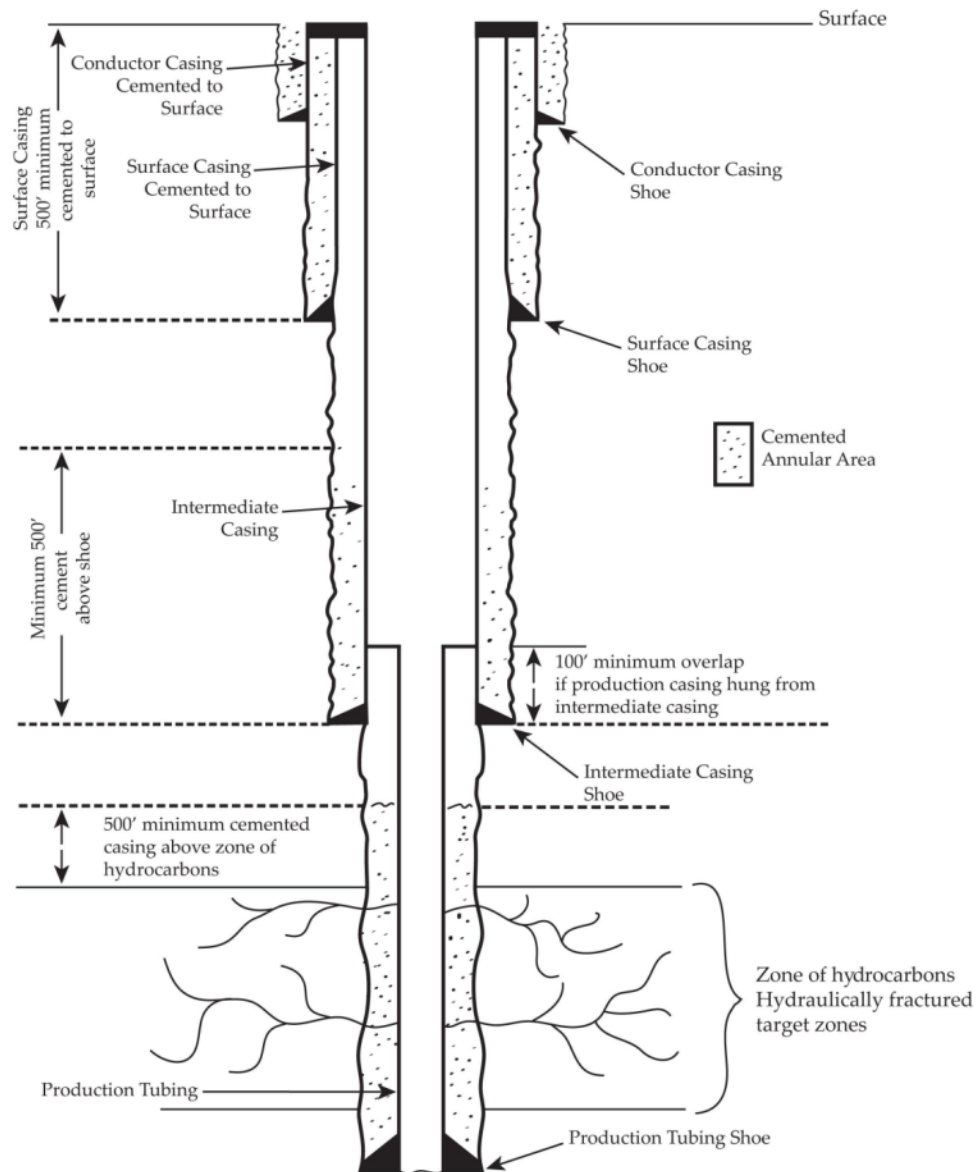
- **Pre-approval sundry process for chemicals to be used in HF**
- **14 day notification to county commissioners and neighbors**

POST-DRILLING

- **Operators post HF list on Fracfocus.org within 60 days.**



Oil & Gas Resource Well Proposed for Hydraulic Fracturing Vertical





AQUA study
By Noble,
NDOM
NDEP, DRI.

Reports 1
and 2 show
no
degradation
of surface or
groundwater

Water-Quality Data, Hydraulic Fracturing in the Upper Humboldt River Basin, Aquifer Quality Assessment Program, Report 2

Ronald L. Hershey
Susan Rybarski
James M. Thomas
Greg Pohll

December 2014

Publication No. 41259

Prepared by
Desert Research Institute, Reno, NV

Prepared for
Noble Energy



FOUR AGENCIES CAN BE INVOLVED WITH DRILLING AN OIL WELL IN NEVADA

- BLM – drilling on Federal lands, leasing process, NEPA process
- NDEP – Air permits for surface area disturbance, UIC permits if water is to be re-injected, water pollution control permits if water is to be discharged outside of containment.
- NDOM – Permits to drill on private/state lands, coordinates w/ BLM for drill permits on Federal lands.
- NDWR – For any water used in drilling, dust control or hydraulic fracturing



Noble Energy: NE Nevada Oil Play

Unconventional Oil Prospect/Wilson Project

Exploration Stage Unconventional Oil Prospects

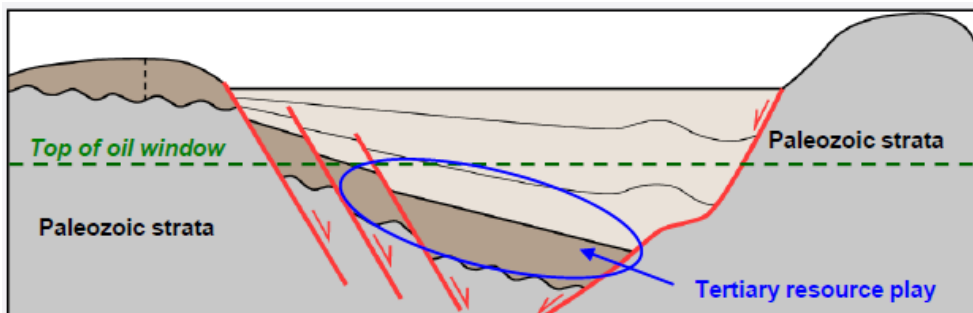
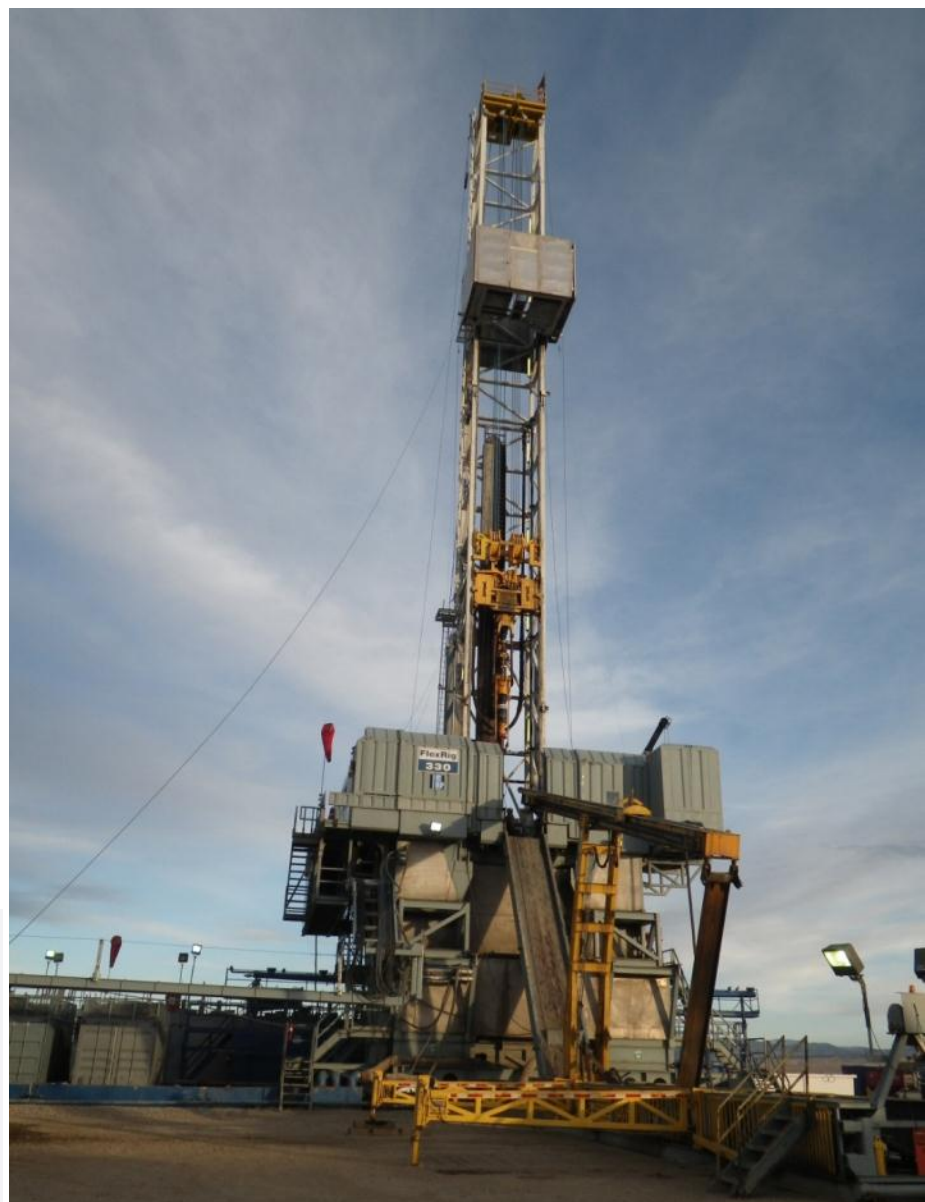
- Targeting Tertiary age lacustrine shale (Elko Formation) with play at depths between 6,000 – 12,000 ft
- Unconventional tight oil prospect
- 4 Wells drilled to date, 3 hydraulically fractured

Results:

- Hydrocarbon saturation up to 70%
- Thermal maturity in peak oil generation window
- Total organic content 1-24%
- 2 wells recorded oil production

Looking Forward:

- Complete Analysis of data from wells
- Design Completion and conduct production tests





State of Nevada
Commission on Mineral Resources
Division of Minerals



NV.gov

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Noble Energy oil exploration well in Elko County

Division of Minerals



Important Links

- [Nevada Excellence in Mine Reclamation Award Winners Named](#)
- [Final Approved Regulations for Hydraulic Fracturing](#)
- [Nevada Mineral, Oil and Geothermal Energy Production and Selected Projects – Presentation to MOAC December 2, 2014](#)
- [NDOM YouTube Channel](#)
- [Nevada Bureau of Mines and Geology](#)

Employment Announcement(s)

- [Recruitment Announcement for Public Service Intern 2015](#)

Programs

