

# URANIUM MINING IN COLORADO: WHAT'S THE NEXT CHAPTER?

STUART A. SANDERSON, PRESIDENT  
[www.coloradomining.org](http://www.coloradomining.org)





- Founded 1876
- One of the oldest mining trade associations in the U. S.
- 900 plus members include producers of coal, gold, molybdenum, gypsum, sodium bicarbonate, uranium and other minerals, plus
- Individuals and Companies providing equipment, services and supplies to the industry – 183 corporate members – record levels

# What Mining Means To Colorado

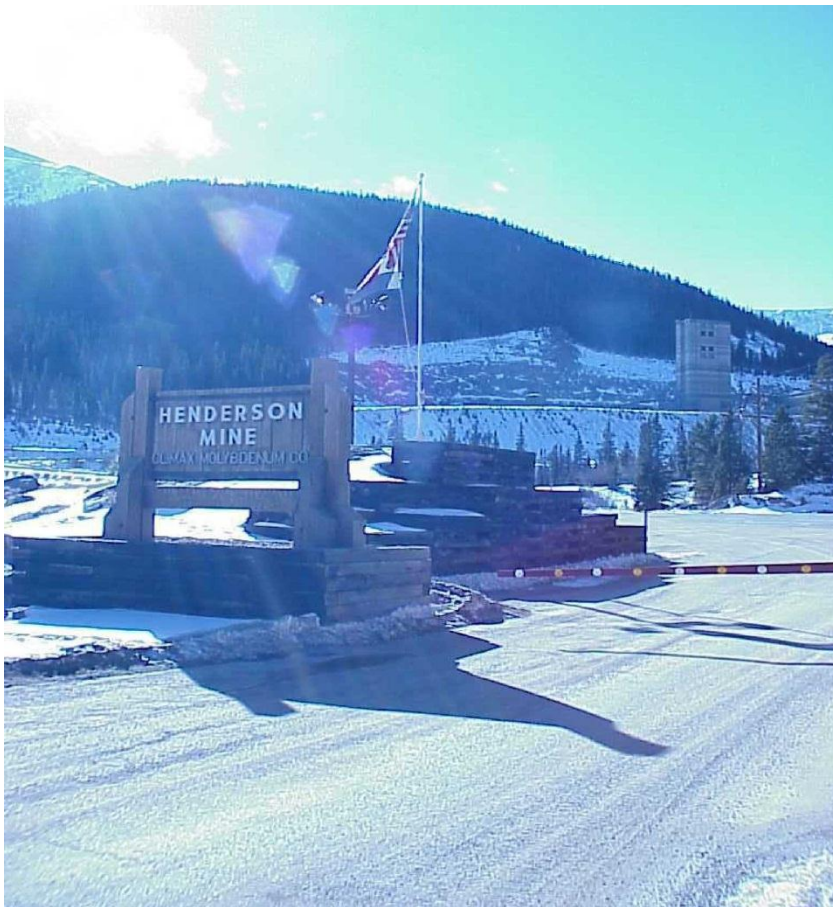
- Colorado's mining industry – accounts for over 11,000 direct jobs and 48,000 in general economy
- In Colorado average Mining wages and benefits exceed \$70,000 annually; over \$100,000 annually for coal mine employees
- Overall value exceeds \$6 billion

Source National Mining Association  
PriceWaterhouseCoopers study 2008, 2010 – Colorado  
Mining Association Coal Production Reports





# MOLYBDENUM – COLORADO RANKS 1ST





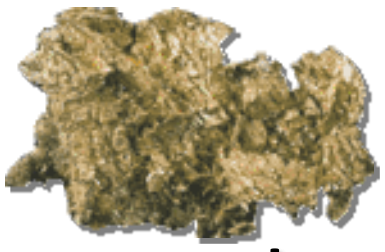
# Climax Mine Reopening



## Climax Molybdenum Company – Climax Mine







# Gold

## Colorado Ranks Fourth

- Used in a variety of products and industries including:
  - Currency and Jewelry
  - Medicine and dentistry
  - Scientific research
  - Computers and satellites
  - Cell phones, MP3 players, and automobile airbag control panels

***Mined in Colorado!***



*Mining Matters... when you work on a computer.*







# Coal

## Colorado Ranks 9th

- **Clean coal** is used to produce 68% of Colorado's electricity
- 27 million tons produced in 2011
- Colorado ranks 9<sup>th</sup> among producing state, although Colorado production has ranked as high as seventh
- 10 coal mines produce coal that is low in sulfur, ash and mercury – clean “super compliance” coal
- Coal faces many challenges, including legislation (House Bill 10-1365) that will result in retirement of Front Range power plants and conversion to higher cost natural gas
- Yesterday's decision on Colorado roadless rule will preserve 1,000 jobs in coal mining by allowing access to lands that would otherwise be set aside as “wilderness”



***Mining Matters... when you plug in for power.***

# COLORADO – INTERNATIONAL MINING CENTER

- Colorado School of Mines – founded 1874
- Denver – mining's infrastructure of consulting, finance, law, and engineering firms
- Home to SME, CMA, Denver Gold Group, SEG and Others
- Home to some of the largest mining IPO and merger activity in the U. S. – Molycorp, Intrepid
- Mining community an untapped political force in need of deployment





# NUCLEAR INDUSTRY UPDATE

- Existing nuclear reactors:
  - United States – 104 – world's largest consumer
  - World – 435
- U.S. expansion plans:
  - 4 reactors under construction
  - 28 reactors in licensing
- Worldwide expansion plans:\*
  - 62 reactors under construction
  - 489 reactors are now planned or proposed
  - *Up to 1,350 reactors by 2030*



# Positive Long-term Outlook

U.S. nuclear reactors require 55 million pounds of Uranium annually, but only produced 4.2 million pounds in 2010

U.S. – Russia HEU Agreement expires in 2013

Intensifying global demand for clean energy

Aggressive reactor construction program in China and India





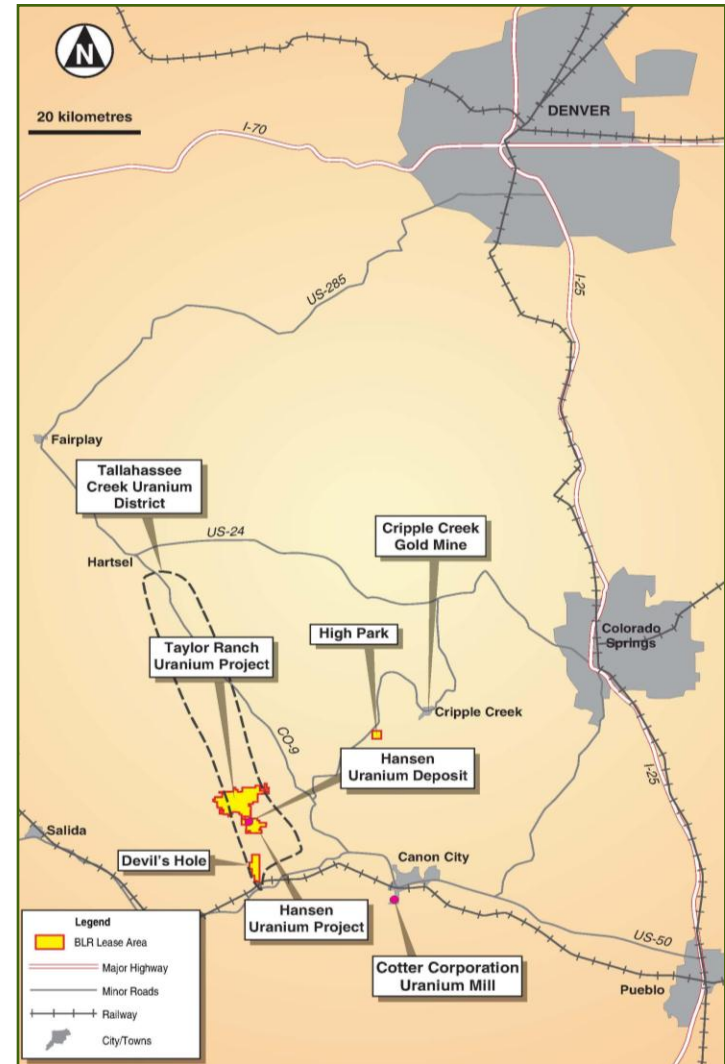
# Uranium Mine Development – The Hansen Project

Black Range Minerals Colorado LLC



# Tallahassee Creek Uranium District

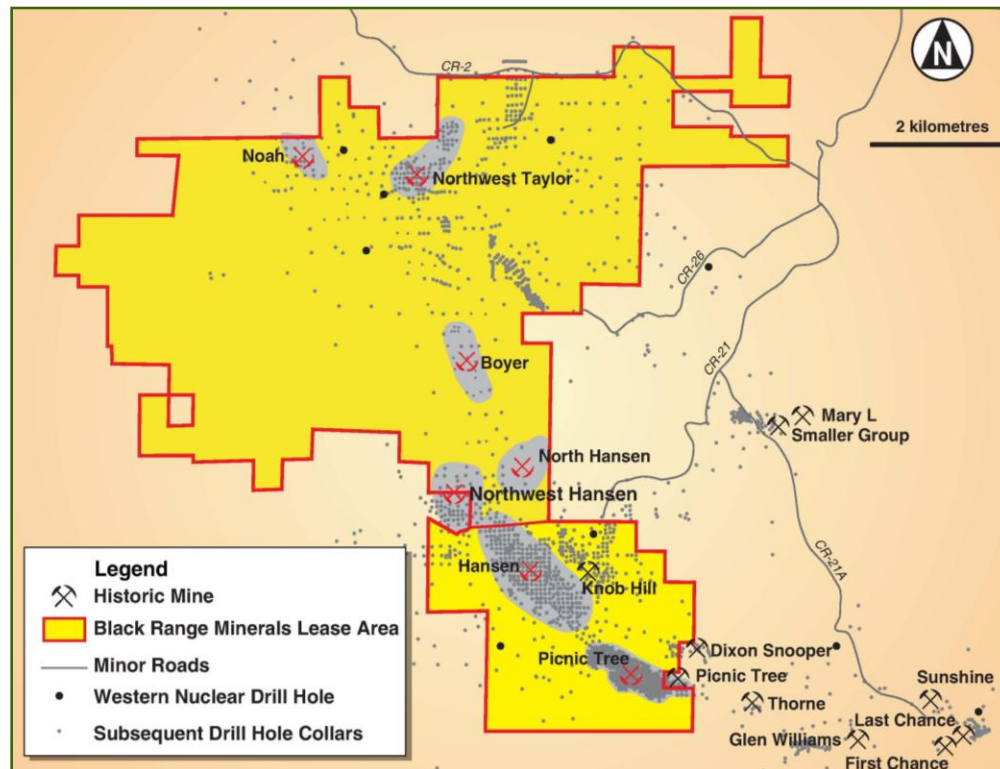
- Hansen project is largest uranium deposit in Colorado (information supplied by company)
- 30km NW of Cañon City
- Near Cripple Creek Mining District
- Established mining industry and mining culture in the district





# Hansen Uranium Deposit

- Discovered in 1977
- Fully permitted for mining in 1981
- More than 2,200 holes drilled for more than 350,000 metres

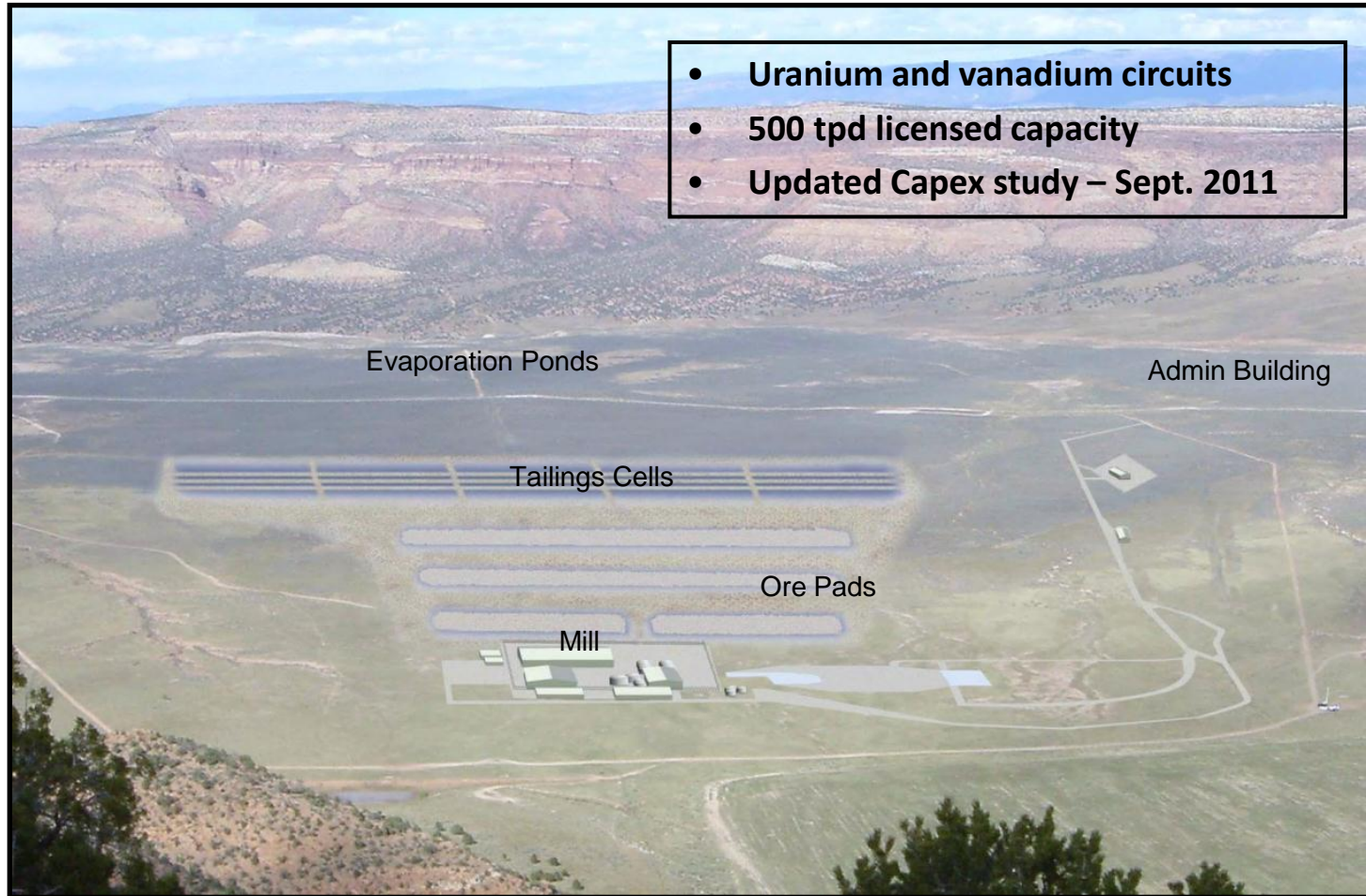


2007 Deposit Outline

## JORC Compliant Resources

Cutoff (ppm)	Total (Mlb)	Grade (ppm)	M&I (Mlb)	Grade (ppm)
250	39.4	640	17.1	670
750	19.7	1270	8.9	1290

# ***Energy Fuels' Piñon Ridge Mill – would become only second active mill in America***



# ***Fully Permitted Mines on Colorado Plateau***

## **Whirlwind Mine**

- **Mine Permits in Place:**
  - EPA Radon Emissions Permit
  - Mesa County Conditional Use Permit
  - DRMS 112d (State of Colorado)
  - BLM Plan of Operations (FONSI)
- **Mine rehabilitation complete**
- **All environmental permit facilities and mine related construction complete**
- **65 Miles to Piñon Ridge Mill**
- **Internal PEA completed**



## **Energy Queen Mine**

- **Mine Permits in Place:**
  - Utah DOGM Mining Permit
  - EPA Radon Emissions Permit
  - Surface water discharge permit
- **Detailed capital cost estimate developed for rehabilitation**
- **Mine rehab construction underway**
- **39 Miles to Piñon Ridge Mill**
- **Internal PEA in progress**



# M & A IN COLORADO – ENERGY FUELS BUYS DENISON U. S. ASSETS

## Combined U.S. Based Resources

52.5 million lbs.  $U_3O_8$  + 34.9 million lbs.  $V_2O_5$  (M&I)  
18.1 million lbs.  $U_3O_8$  + 13.1 million lbs.  $V_2O_5$  (Inferred)

## Asset & Operational Synergies

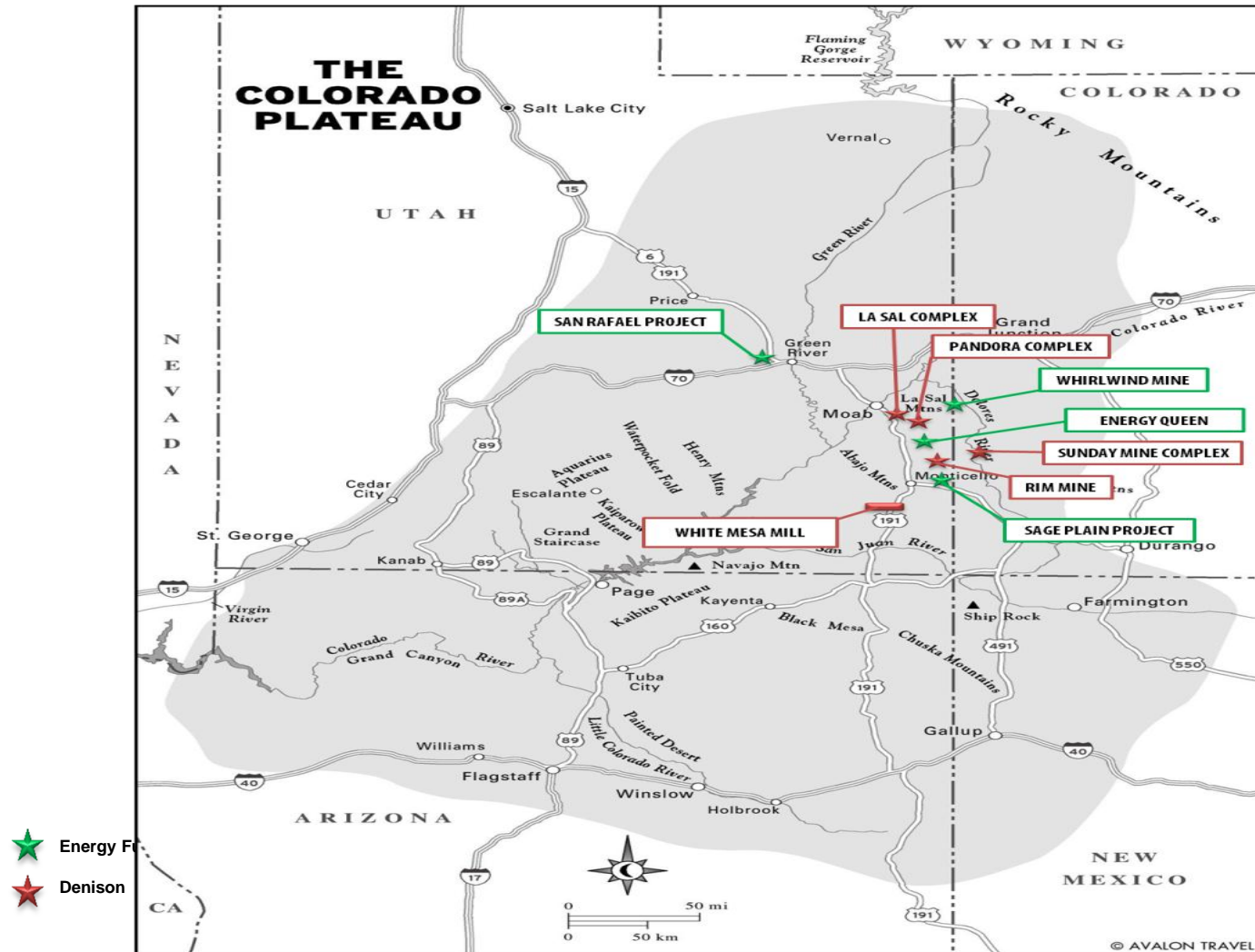
Denison's White Mesa Mill and Mines

+

Energy Fuels' Nearby Resource Base

*Information Courtesy of Energy Fuels, Inc.*

# COLORADO PLATEAU PROPERTIES



## Colorado – An Agreement State

- **Colorado became an Agreement State on February 1, 1968; uranium mill amendment on April 29, 1982**
- **Colorado has assumed regulatory authority over the following combination of the categories:**
  - **Radioactive materials as defined in Section 11e of the Act.**
    - Byproduct (11e1)
    - Mill Tailings (11e2)
    - NARM (11e3)
    - Discrete Sources (11e4)
  - **Source materials**
  - **Special nuclear materials in quantities not sufficient to form a critical mass**
  - **Sealed source and device evaluation**
- **Few Agreement States have 11e2 authority**
  - **Nationally, six Agreement States have authority**
  - **Four active uranium mill programs (CO, TX, UT, and WA)**

Source NRC Presentation by Duncan White, April 12, 2012



# NRC “Intervention” and Retreat on Pinon Ridge Mill Licensing

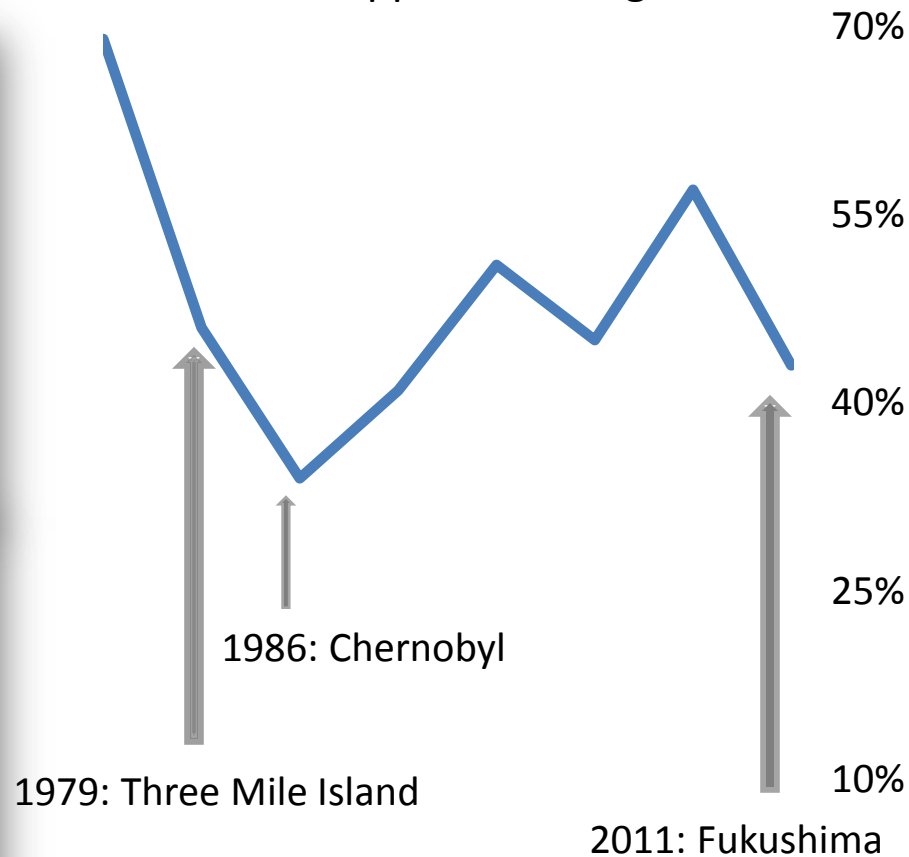
- Notwithstanding extensive public process, March 6 letter from NRC staffer to counsel for group challenging license claims that Colorado program was deficient
- March 7 – Dr. Chris Urbina sent strong letter to NRC questioning agency’s actions in midst of litigation
- April 4 – NRC replied, stating that initial letter was “unclear, as it was not NRC staff’s intent to intercede in the pending litigation related to the Pinon Ridge uranium license issued by CDPHE”

# Mining in Colorado

- Rich Resource Base – Colorado is mineral rich
- Considerable experience and infrastructure in Denver and Colorado mining community
- Colorado Division of Reclamation Mining & Safety expertise and credibility in regulation
- Not so good - Political uncertainty at state and federal levels
- Fraser Institute rates Colorado low - although survey is somewhat subjective, and does not identify whether participants are actually conducting or contemplating mining in the state
- Opposition groups
- Conclusion - It takes capital and commitment to mine in Colorado

# Public Perceptions and Concerns Linger

U.S. Approval Rating



Source: CBS News



# House Bill 08-1161

- Enacted in 2008 – Context is Democratic Party sweep in elections that resulted in historic transfer of control of legislative and executive branches of government
- Industry fought successfully another bill, HB 1165, that would have allowed local governments to impose preemptive bans on mining – Supreme Court later upheld industry challenge led by CMA to Summit County ban on chemical reagents such as cyanide
- HB 1161 – imposes numerous restrictions aimed at in situ but also conventional uranium mining
- Reclassifies uranium mines as Designated Mining Operations – DMO status results in additional burdens and was only intended – initially – to apply to large scale gold or other mining operations employing chemical reagents like cyanide

# HB 1161 Continued

The Law Authorizes the MLRB to deny a permit

- Based on “uncertainty about the feasibility of reclamation”
- If existing or reasonably foreseeable future uses of groundwater include domestic or agricultural uses
- If applicant or related entity or person has previously violated reclamation laws and any violation remains unabated
- If applicant or related entity or person has demonstrated pattern of willful violations of environmental protection requirements in Colorado or other states or U.S. laws
- If applicant cannot show it will restore ground water for “all baseline parameters” or better
- if operator fails to show evidence of at least five (5) past ISR sites which did not result in groundwater contamination through leakage, migration or excursion
- Regulations implementing law are in litigation – meanwhile Powertech has put Centennial project on hold while it develops mine in South Dakota

# NRC Comments to CDPHE Question Validity of DRMS Regulations and Authority to Implement HB 1161

- Oct 13, 2011 letter from A. Duncan White, USNRC to Stephen Tarleton, CDPHE raised several concerns
  - Regulations were reviewed by comparison to the equivalent Nuclear Regulatory Commission (NRC) rules in 10 CFR Part 40
  - 28 specific comments were identified
  - Review was limited to regulations required for compatibility and/or health and safety.
  - NRC stated that regulations as revised incorporating their comments would meet compatibility and health and safety categories established by the NRC (Office of Federal and State Materials and Environmental Management Programs)



# NRC Comment 17, Colorado Section 18.1.5, NRC Section 40.2:

- *This regulation as written indicates that there is a potential overlap between two Colorado agencies which could result in a duplication of regulatory efforts*
- *Colorado needs to either clarify Section 18.1.5 that the Department (CDPHE) has responsibility for implementing the regulatory authority of 11e.2 byproduct material program under the Atomic Energy Act Section 274b Agreement or*
- *Inform NRC that the Department of Natural Resources, Division of Reclamation, Mining and Safety is now part of the Colorado's Radiation Control Program under the Section 274b Agreement with NRC*

# NRC Comment 17, Colorado Section 18.1.5, NRC Section 40.2: - Continued

- Appears that NRC is asking Colorado to make sure the DRMS is not implementing authorities of the Radiation Control Program as assigned to CDPHE under the Atomic Energy Act
- Several provisions of House Bill 1161 could be interpreted as such
- if so, DRMS must be officially determined to be qualified under NRC's Integrated Material Performance Evaluation Program
- Implications are not fully known though it is apparent that sponsors of HB 1161 did not give consideration to NRC provisions

# Where do we go from here?

- Markets are affected by price of uranium
- Regulatory structure in Colorado strongly discourages in situ recovery of uranium and DMO requirements impact smaller operations – that needs to change
- But U. S. energy needs are growing and already exceed our ability to supply through domestic sources of uranium
- Nuclear energy is a clean fuel option
- Future of uranium mining will also be impacted by U. S. and state recognition of the need to increase energy security through full and responsible development of existing resources
- Uranium miners need clear, predictable regulatory environment to commit management and capital resources
- Active political engagement

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