

## Open Up the Textbook (OUT)

*Enlarge*

*Complicate*

*Contest*

*Vivify*

Title: Mining and the Environment

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Standards: Read for Informational Text: RI 1, 3, 4, 6 - 9; Social Studies: H3.4.4, H3.4.5, G6.4.4, G8.4.2, & E11.4.3

1. **Teacher Note: Start the lesson/unit with the Making Predictions Smart Sentences as an “Into” to gain information about what students know or might be confusing about the topic. (page 2)**

In this OUT analysis, fourth grade students will study mining in Nevada in order to better understand the effects of mining in Nevada. This OUT analysis provides students with documents that are meant to deliberately complicate and contest the textbook.

This strategy is implemented most effectively when students collaborate to analyze the texts in small, heterogeneous groups. The texts that accompany the textbook are complex and often include difficult vocabulary and syntax. (For a few words that are likely unknown to students and unidentifiable based upon context clues, helpful synonyms are provided in the footnotes.) Students should first annotate each text and then collaborate to answer the text dependent and specific questions that follow. Questions will highlight sourcing and perspective of the author, close reading of key details from the document that enlarge, complicate, contest, or vivify the textbook, as well as questions that help students corroborate (or not) the accuracy of individual documents. **The writing tasks that follows will provide students with choice and the opportunity to reflect on their knowledge and be creative in the way they demonstrate what they learned.**

**Source A: The Textbook** – *Nevada: Our Home*, G.P. BeDunnah et al., page 246

### Modern Mining

Mining in Nevada is very different today than it was when prospectors first came. New inventions have made it much easier to separate the minerals in our soil from the dirt and sand.

After scientists locate minerals in the ground, they send engineers to the area to build mills. Large trucks and diggers are used to scoop up the ore and transport it to the mills.

Mining is still a very important part of Nevada’s economy. Minerals found in our state, have made a difference in transportation, communication, electronics, engineering, and medicine. Copper, molybdenum, barite, mercury, diatomite, magnesia, perlite, gypsum, and fluorspar are some of the minerals found in our soils.

For almost 30 years, Nevada has been the largest gold-producing state in the nation. We also lead the nation in the production of silver. Because mining companies make so much money from our minerals, the government has asked them to pay higher taxes. Citizens have also demanded that mining companies restore the land they mine. Now, when a mine closes, mining companies level the land and plant native grasses and trees. Many companies also try to improve the communities where their workers live. Some build schools and places for recreation in their towns.

### Source A: Questions for Consideration

1. Restate the four step process of mining.
2. What evidence from the text describes the negative impact of mining in Nevada?
3. Why would some (citizens) support mining in their city/state?

## Possible Sentences

<p><b><u>Key Vocabulary</u></b>            These words appear in the texts we will be reading and discussing. Most should be familiar to you.</p>	<p><b><u>Making Predictions</u></b>            Write two sentences that include four or five of the words from the Key Vocabulary. Underline your key words. Your sentences should make sense to any reader.</p>	<p><b><u>Sentence Review</u></b>            Now that you have read the texts, write two sentences that demonstrate your learning. Each sentence should include four or five of the words from the Key Vocabulary section. Underline your key words.</p>
<b>mining</b>		
<b>minerals</b>		
<b>community</b>		
<b>pits</b>		
<b>environment</b>		
<b>impact</b>		
<b>taxes</b>		
<b>concerns</b>		
<b>support</b>		
<b>economy</b>		
<b>harm</b>		
<b>opportunity</b>		



Transcript for NBC nightly news video clip:

<http://www.nbcnews.com/video/nightly-news/46899005#46899005>

Finally, at a time when a lot of Americans are struggling just to get by, one Nevada city is in the midst of an economic renaissance, far from the bright lights and casinos of the Vegas strip. As the price of gold remains sky high, the mines in Elko are booming, and folks are coming from far and wide to get in on the action.

Dawn in Elko, Nevada, and it's not just the sun casting the glow. There's gold in these hills, and for mine workers like Devon Judy, these are good times.

I feel fortunate, that's for sure. I know a lot of Americans out there don't.

The mines are adding hundreds of jobs. So Devon, a 22-year-old combat veteran, picked up and moved here. He drives a huge hauler all day and at night, goes home to his family with a \$60,000 a year paycheck he says he couldn't have found elsewhere.

What do you think your daughter's life is going to be like here?

Very well provided for.

So many have come to Elko, there's a waiting list at the RV park.

We have over 100 spaces.

Full?

It's all full.

And construction companies can't build housing fast enough.

Everybody in Elko, we work for the mining industry. If don't care if you're selling doughnuts, this is the industry we're in.

Take a look at how tiny the massive trucks look from here. That gives you an idea of the scale of the operation. This is about a mile wide, a third of a mile deep, and they have taken billions of dollars in gold from here. But that gold is microscopic and takes an expensive process to extract. Only worth it when the price of gold is high. The mayor says they're cautious with the new-found wealth.

At \$1600, we're smiling. At \$200, we're like, oh, what is going to happen?

They have seen ghost towns throughout the west, a constant reminder.

Have you hit water?

All of the things you want and dream about when you get out of college, you can have here.

For Elko, for now anyway, life is golden. NBC news, Elko, Nevada.

**Source C: Secondary Source**, Nevada Mining Fact Sheet. From the Progressive Leadership Alliance of Nevada<sup>1</sup> (PLAN). Retrieved from [www.planevada.org](http://www.planevada.org)

### **Impacts on Great Basin Native American Communities**

- The Western Shoshone consider Mt. Tenabo in central Nevada a sacred place figuring back to their creation stories. Today, Barrick Mining is tearing it down; Barrick is the second-largest and most profitable<sup>2</sup> gold mine in the world.
- One of the newest mines in Nevada, the Mt. Hope Molybdenum Mine, will result in the complete elimination of Mt. Hope and surrounding forests (a pine nut and food-gathering source used by the Western Shoshone for millennia).
- Because of mining pollution, members of the Yerington Paiute Tribe cannot drink the water on their reservation; it could kill them.

### **Land, Water and Wildlife Impacts**

- According to the US EPA (Environmental Protection Agency), a total of 529 million pounds of toxic chemicals were dumped into Nevada's land, water and air during 2011. Mining accounted for 98% of these releases. Seven of the 10 biggest polluters in Nevada are mines owned by transnational mining conglomerates<sup>3</sup> Barrick and Newmont.
- EPA estimates that more than 40 percent of western watersheds<sup>4</sup> have been contaminated with mine waste. U.S. taxpayers took on \$2.6 billion in Superfund and other federal cleanup of mines in the past decade- and are on the hook for an estimated \$50 billion more.
- Nevada Department of Wildlife scientists are gravely concerned that Barrick's fast-track expansion of its massive Bald Mountain Mine northwest of Ely will cut off the north-south migratory route for 23% of Nevada's deer population. Barrick has been unwilling to accommodate mule deer corridors<sup>5</sup> that would allow for safe passage.

### **Source C Questions for Consideration**

1. Where is the source of this information from? Based on the title of the organization, does it support or oppose mining? How do you know this?
2. Cite examples from the text that demonstrate the impact that mining has on Nevada's tribes.
3. Discuss the harmful effects of mining in Nevada for each of the following:
  - A. land
  - B. water
  - C. wildlife.

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<sup>1</sup> A Nevada Non Profit working for social and environmental justice

<sup>2</sup>Makes money

<sup>3</sup>Large business

<sup>4</sup> An area of land that separates water flowing to different rivers

<sup>5</sup> A long narrow piece of land

**Source D: Secondary Source** “Two Gold Mines Fined \$591K in Nevada.” *Reno Gazette Journal* March 12, 2015

The world’s two largest gold-mining companies have agreed to pay nearly \$600,000 in combined penalties in a deal with U.S. and Nevada environmental regulators that signals more stringent<sup>6</sup> enforcement of pollution laws in the state that leads the nation in gold production.

Newmont USA is paying \$395,000 and Barrick Goldstrike Mines \$196,000 as part of an agreement with the state and U.S. Environmental Protection Agency to settle allegations<sup>7</sup> that they violated hazardous waste laws with mercury releases recorded during inspections at two huge open pit mines in northeast Nevada dating to 2007.

The companies have maintained that they didn’t break any laws based on the way the Nevada Division of Environmental Protection enforced clean water protections for three decades.

“Under the consent decree, Barrick does not admit to any violation or offense, but we do agree to pay the civil penalties to both EPA and NDEP,” said Louis Schack, the Salt Lake City-based director of communications for Barrick Gold of North America.

The EPA said both mines near Carlin about 270 miles east of Reno-Newmont’s Quarry and Barrick’s Goldstrike mine- “illegally treated and disposed of” toxic waste without the required permit after failing to identify the materials as federally regulated hazardous waste.

#### **Source D Questions for Consideration**

1. Where does this information come from? How old is the article?
2. Why are the two largest gold mining companies having to each pay a substantial fine?
3. How does this article contrast with the statement from Source A that “mining companies restore the land they mine?” Be specific.

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<sup>6</sup> strict  
<sup>7</sup>claims

**Source E: Secondary Source** Dirty Gold Mining Practices. Retrieved from Brilliant Earth: [www.brilliantearth.com](http://www.brilliantearth.com)

Two-thirds of newly mined gold is recovered using an environmentally harmful practice known as open-pit mining. In open-pit mining, mining companies reach the gold-laden rock (known as ore) by digging or blasting from the ground level, creating vast craters. In the past, it was more common for mining companies to obtain<sup>8</sup> ore by digging targeted underground tunnels. But with rich gold deposits becoming harder to find, companies increasingly rely on open-pit mining because it is a cheap way of recovering trace amounts of gold.

Unfortunately, open-pit mining destroys the landscape, opening up holes in the ground so large that they can be a mile wide and visible from outer space. The other problem with open-pit mining is waste. After the ore is brought to the surface, it must be processed to extract the gold. Only 0.000001 percent of the ore obtained through open-pit mining consists of gold. The rest must be discarded<sup>9</sup>. It is estimated that open-pit mining creates at least 20 tons of toxic waste for every 0.333 ounce gold ring.

### **Source E Questions for Consideration**

1. Describe the process of open-pit mining. What environmental problems are associated with open pit mining?
2. What reasons are given to explain why mining companies turned to open-pit mining as a practice to mine gold?
3. How does this information complicate the claims made in the last paragraph of Source A? Be specific.

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<sup>8</sup> get

<sup>9</sup> thrown away

**Source F: Primary Source** – Supporting Nevada’s Economy. Retrieved from Barrack Web Site 3/14/15. [www.barrickbeyondborders.com](http://www.barrickbeyondborders.com)



### Source F Questions for Consideration

1. What is the source of this infographic? Will this source support or oppose Nevada mining? Why?
2. Source A claims that “many mining companies try to improve the communities where their workers live.” What evidence from this infographic supports this claim?
3. How much money has Barrack paid in taxes each year for the past 4 years?
4. Based on your answer to Number 3, what can you infer about Barracks profits since 2010?



## Writing Task

Standards: (Writing: It will depend on which job they choose. Their culminating activity can be persuasive, informative or narrative. All writing will include W4.4, 7, 8, and 9.)

All students will complete #1. Then students have an option to show their knowledge and express their creativity by picking another writing assignment.

1. The whole class will revisit their “Possible Sentences.” You can have them work in pairs or independently to write two (new) sentences with the key vocabulary. Their sentences should be more concise and informative since they have acquired an abundant amount of information on the topic of mining.
2. The Good News, the Bad News (Lesson #5 from Wacky We-Search Reports – pgs. 46 - 47)

Set Up: Make lists of facts about your subject and then get a blank piece of paper divided into three columns. The first column is the good news, the second column is the bad news and the last column is the news of your choice (gross, sad, funny...).

Example:

**The good news** about being a slug is that you have slime that protects your skin from bacteria and mold.

**The bad news** for animals that eat you is that you taste disgusting.

**The gross but good news** is that your mucus-making ability is being studied by scientists looking for a cure for cystic fibrosis.

3. Top Ten Lists (Lesson #48 from Wacky We-Search Reports – pgs. 162 and 163)

Set Up: Begin by listing facts about your subject, as many facts as you can come up with. Next, put stars next to the “ooh” facts or any facts that seem surprising or interesting or go beyond general knowledge.

Choose: “The Top Ten Reasons to Work in a Mine” OR “The Top Ten Reason NOT to Work in a Mine”

4. Write a letter to the president of a mining company. State a claim and support your claim with evidence from the texts you read. You can pretend to apply for a job and specify all the reasons why you’d like to work for the company. Or, you can pretend to complain about something the mining company is doing and support your claim with evidence.