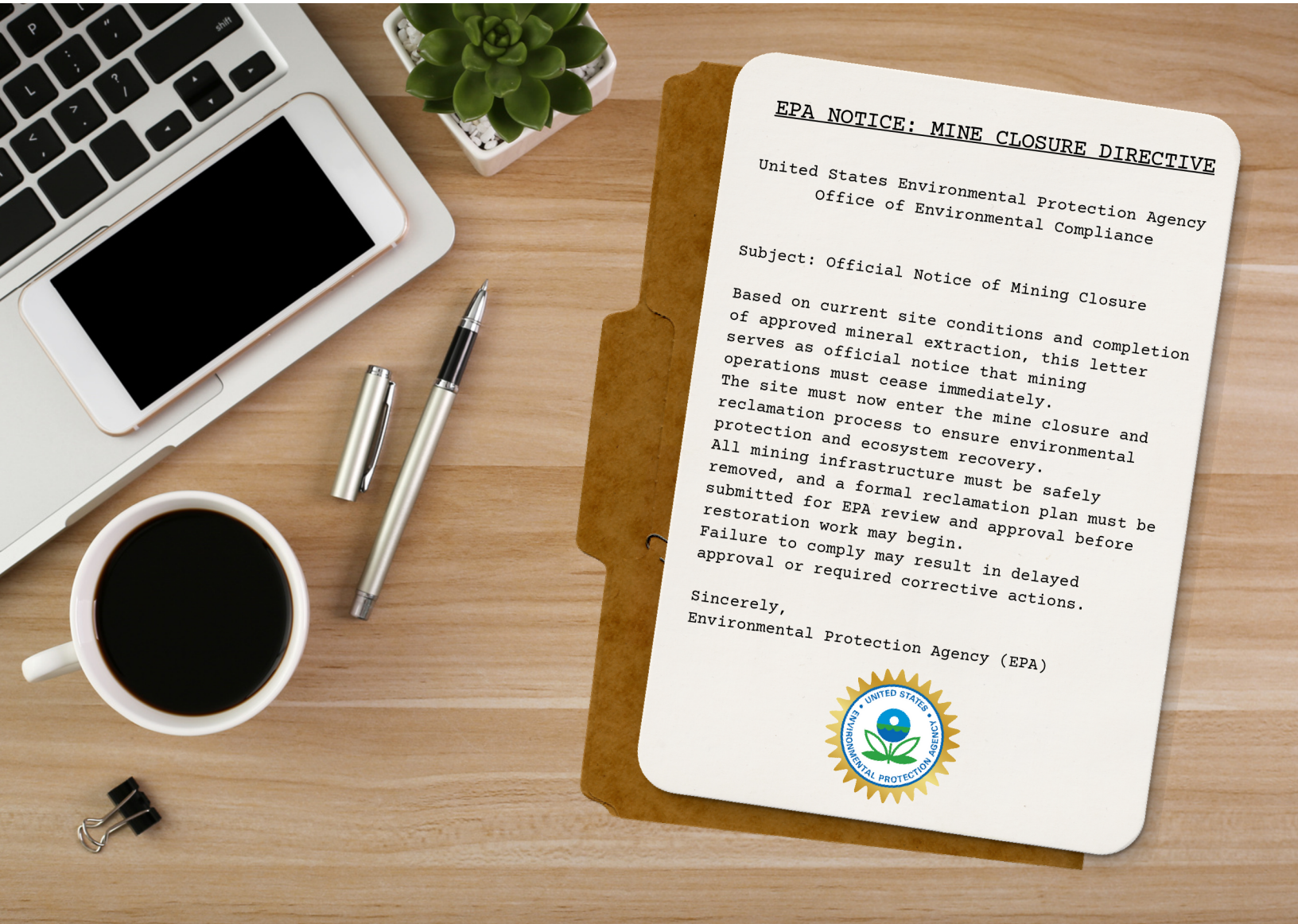


Name: \_\_\_\_\_

# *Aim to Reclaim*

## Creating and Implementing a Reclamation Plan

After mining is completed, land must be restored to protect ecosystems, water, and biodiversity. This worksheet guides you through creating and carrying out a reclamation plan and preparing your biome for an Environmental Performance Inspection (EPI). This plan guides you through mine closure, reclamation planning, and restoration, modeled after real EPA processes!



### **Section 1: Mine Closure**

Before the reclamation phase can begin the EPA will issue a Mine Closure Directive, like the sample in the picture above!

Mine closure is the process of safely shutting down a mining operation and removing mining infrastructure so reclamation can begin. Complete the mine closure checklist to get started!

# Mine Closure Checklist

## A. Closure Planning

- Mining activity has officially stopped
- No further resource extraction will occur
- Resources have been transferred to processing
- All mining tools are returned

## B. Removal of Mining Infrastructure

- Removed and returned all mining buildings and fencing
- Removed and returned machinery and equipment
- Removed transport systems (roads and pipes)
- Removed waste storage structures

## C. Site Safety After Closure

- No sharp or unstable structures remain
- Open pits clearly visible for reclamation
- Area safe for restoration work

## D. Final Closure Attestation

- Mine officially closed

Student Initials: \_\_\_\_\_

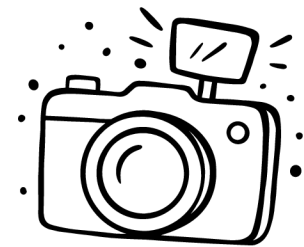
Teacher Initials: \_\_\_\_\_

## **Section 2: Post-Mining Site Assessment**

After mining operations end, environmental scientists conduct a post-mining site assessment to identify environmental damage and determine what restoration actions are needed.

### What this assessment covers:

- Documents damage caused by mining
- Identifies risks to land, water, plants, and animals
- Provides the scientific basis for a reclamation plan



Use your diorama to complete the post-mining assessment on the next page! Be sure to take photos of your model now that you have successfully closed your mine.

Upload the photos to the album on Schoology!

# Post-Mining Site Assessment

General condition of the site:    Severe Damage    Moderate Damage    Minor Damage

## SECTION 1: LAND & SOIL DAMAGE

Check all that apply:

- Open pits or trenches
- Unstable slopes or cliffs
- Soil removed or compacted
- Evidence of erosion
- Soil unable to support plants

Severity Level:

- High    Medium    Low

## SECTION 2: WATER IMPACT

Check all that apply:

- Water flow altered or blocked
- Sediment or debris present
- Risk of contamination
- Wetlands damaged or removed
- No visible water damage

Severity Level:

- High    Medium    Low

## SECTION 3: VEGETATION DAMAGE

Check all that apply:

- Native plants removed
- Soil unable to support regrowth
- Vegetation fragmented
- Non-native materials present
- No visible vegetation damage

Severity Level:

- High    Medium    Low

## SECTION 4: WILDLIFE HABITAT DAMAGE

Check all that apply:

- Habitat structures destroyed
- Food sources reduced
- Shelter removed
- Migration or movement disrupted
- No visible habitat damage

Severity Level:

- High    Medium    Low

## SECTION 6: WASTE & HUMAN IMPACT

Check all that apply:

- Mining waste present
- Artificial structures remain
- Roads or access paths disrupt land
- Materials pose environmental risk
- No remaining human impact

## SECTION 7: ENVIRONMENTAL DAMAGE SURVEY

*Most Critical Areas of Damage*

(List the top 3 that must be addressed in your reclamation plan)

- 1.
- 2.
- 3.

## SECTION 8: ASSESSMENT CONCLUSIONS

Which part of the ecosystem requires the most immediate attention? Why?

Which damage will be hardest to repair? Why?

## ASSESSMENT CERTIFICATION

I confirm that this post-mining site assessment accurately documents the environmental damage observed in my model.

**Student Initials:** \_\_\_\_\_

### ***Teacher Use Only***

- Assessment complete
- Student ready to move to Planning Phase

**Teacher Initials:** \_\_\_\_\_

### **Section 3: Create your Reclamation Plan**

What goals do you have for how your ecosystem should look like after restoration?

	What will you do to fix it?	What materials will you need?
<b><u>Land &amp; Soil</u></b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Fill in pits</li> <li><input type="checkbox"/> Level or smooth land</li> <li><input type="checkbox"/> Add soil</li> <li><input type="checkbox"/> Reduce erosion</li> </ul>	
<b><u>Water Protection</u></b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Restore water path</li> <li><input type="checkbox"/> Remove debris</li> <li><input type="checkbox"/> Add barriers or buffers</li> <li><input type="checkbox"/> No water damage observed</li> </ul>	
<b><u>Native Plants</u></b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Replant native grasses or ground cover to reduce erosion</li> <li><input type="checkbox"/> Add native shrubs or small plants typical of the biome</li> <li><input type="checkbox"/> Create plant clusters instead of single plants (to model real ecosystems)</li> <li><input type="checkbox"/> Place plants in biome-appropriate locations (near water, open areas, shaded areas)</li> <li><input type="checkbox"/> Add a layer of soil or mulch to support plant growth</li> </ul>	
	<p><b>Complete at Least 4 Tasks</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Create shelter (burrows, nests, caves, logs, rocks)</li> <li><input type="checkbox"/> Add food sources (plants, seeds, water access)</li> <li><input type="checkbox"/> Design safe movement paths for animals (open space, corridors)</li> <li><input type="checkbox"/> Restore water access for animals (pond, stream edge, watering area)</li> <li><input type="checkbox"/> Add camouflage or cover to protect animals from predators</li> <li><input type="checkbox"/> Rebuild damaged habitat features removed during mining</li> </ul>	

Develop the Mining and Reclamation

Methodologies:

**Mining Method & Phasing:** Describe the type of mining, progression/direction, and handling of waste materials.

**Soil Management:** Detail the method for removing, safely storing (stabilizing stockpiles), and replacing topsoil or an approved substitute to ensure a viable growing medium.

**Landform Reshaping & Stabilization:** Plan how disturbed areas will be backfilled, graded, and recontoured to create stable, non-eroding landforms that blend with the surrounding topography. This includes slope angles and drainage patterns.

**Water Management & Treatment:** Describe methods for managing surface water and groundwater, treating potential contaminants (acid drainage, heavy metals, sediment), and controlling erosion during and after mining.

**Revegetation Plan:** Outline the specific methods and native or desirable plant species to be used, including seeding rates, fertilizer use, and irrigation plans. The goal is a diverse, permanent vegetative cover.

**Public Safety Measures:** Include plans such as fences, removal of structures.

## Mining Reclamation

### 1. Mine Closure

a. Mine closure plan

### 2. Reclamation

a. Wildlife Habitat Reclamation model.

b. The Wildlife Habitat approach to mine reclamation involves five phases:

c. Split into 5 phases

i. Planning

ii. Engineering

iii. Regulatory Approval

iv. Construction

1. survey and regrade

2. Place cover materials and build storm water controls.

3. Prepare seed bed

4. Plant place

5. Support speci

6.

v. Monitor



The Environmental Problems Caused by Mining

Mining operations have large repercussions on the local surroundings as well as wider implications for the environmental health of the planet.