

NATIONAL PARK SERVICE MINED LANDS FIELD INVENTORY DATA SHEET
Geologic Resources Division – (303) 969-2099

Park unit _____ Inspected by _____ Date _____

A. Site/mine name

Location: State _____ County _____ Watershed name _____
 USGS quadrangle _____ UTM coordinates _____ N X _____ E
 Township, range, section, and ¼ section _____
 Access route (describe) _____

B. Operation type: pit or quarry__ underground__ mill__ placer__ other

Commodity: _____
 Operation status: abandoned___ active___ administrative use (NPS sand/gravel, staging area, equipment storage, etc.)

C. Size of surface disturbance: _____ acres, _____ length x _____ width

D. OPENINGS - DO NOT GO INTO ABANDONED UNDERGROUND MINES

ID #	OPENING [e.g., adit, shaft, pit (dimensions)]	ID #	OPENING

E. HAZARDS: If the following exist, place a check mark next to the item. Where applicable, write the number of the opening with which the hazard is associated.

1. structures (describe number, type, condition)
2. debris (describe type, extent)
3. highwall - average length___, height___ benches? (y/n) __ describe:
4. unstable rock (describe rock type)
5. pools (describe size, number, location)
6. explosives **DO NOT TOUCH** (describe type if known)
7. machinery (describe type, number)
8. hazardous substances - **DO NOT OPEN CONTAINERS** (describe: e.g., fuels, lubricants, chemicals, transformers; drums, containers, storage tanks; altered soil, vegetation, water; dumps, fill areas)
9. subsidence features (describe)
10. other

Notes on hazards:

11. tailings or waste rock piles [describe number, location, and approximate dimensions (lwxh)]

F. RESOURCE IMPACTS: Include all areas associated with the mine, such as access roads, waste rock piles, refuse piles, etc. Place check marks next to the items that apply.

1. Water

- 1. Water is flowing out of mine workings (adits, shafts, pits, etc.). pH _____
- 2. Water is standing in mine workings (adits, shafts, pits, etc.). pH _____
- 3. Water is flowing through or over the tailings/waste rock pile (if it exists).
- 4. The ground or stream bottom is discolored around the site.
- 5. There is evidence of aquatic life in the drainages near the site.
- 6. Estimate the distance to the nearest drainage:

2. Sediment

- 1. During runoff, sediment from the site is transported by water into a nearby drainage or stream channel.
- 2. Other evidence of erosion (specify, e.g., gullies, scarps, cracks)

3. Vegetation

- 1. Characterize the vegetation: healthy , struggling , dead , nonexistent
- 2. If there is vegetation damage, state why you think it is damaged, and try to quantify the amount of damage.

3. The tailings/waste rock pile (if it exists) is revegetating naturally.

4. Wildlife (in the mine or in/on the tailings or waste rock pile)

1. Wildlife inhabit or visit the site. (Look for droppings, tracks, and nests. This is especially important in underground sites since evidence of animal habitation is a good clue about the air quality. Specify types of wildlife, paying special attention to endangered species, e.g., bats, rodents.)

2. No wildlife use detected.

5. Visual

1. Characterize the visibility of the site: easily seen , seen when pointed out or sought , hidden

2. Site is visible from visitor facilities, or well-visited roads, trails, or viewpoints.

From what distance is the site easily visible?

G. Cultural resource potential? (y/n) (describe)

If applicable, describe interpretive potential.

H. Visitor/staff use? (y/n) 1. Frequency of visitation/use (high/medium/low) _____ (describe evidence)

2. Rescue information:

I. Potential mitigation/closure/reclamation methods:

1. If you were to design a reclamation plan for this site, what would you do? Check the appropriate boxes and describe below if necessary:

- | | |
|--|--|
| <input type="checkbox"/> cable nets (bolted over entrances) | <input type="checkbox"/> install warning signs |
| <input type="checkbox"/> bulkheads (e.g. rock and mortar or formed concrete installed in entrances) | <input type="checkbox"/> recontour |
| <input type="checkbox"/> polyurethane foam (PUF) (expands 30X when installed; earthen backfill at surface) | <input type="checkbox"/> topsoil or other soil amendments |
| <input type="checkbox"/> gates | <input type="checkbox"/> revegetate, either by seeding or transplanting |
| <input type="checkbox"/> explosives (blast openings closed) | <input type="checkbox"/> stabilize deteriorating structures |
| <input type="checkbox"/> backfill shafts, pits, entrances | <input type="checkbox"/> destroy deteriorating structures |
| <input type="checkbox"/> fences | <input type="checkbox"/> no action - (The site is naturally reclaiming and poses no resource impacts or safety hazards.) |
| | <input type="checkbox"/> other |

Describe details:

2. Mitigation status: none ; temporary measures - fence , sign , other _____; hazards adequately mitigated (y/n) ; reclamation complete (y/n) . Comments:

J. On an attached piece of paper, draw a **SKETCH MAP** of the site. Show map orientation, approximate scale, access route, drainages in the vicinity, and the location of each of hazard. (Identify each opening by its number as indicated in Section D.)

K. Attach **LABELED PHOTOGRAPHS** of the site, including photographs of hazards, resource impacts, access routes, and anything else that might be useful. PHOTOGRAPHS HELP TREMENDOUSLY IN EVALUATING MANAGEMENT OPTIONS.

L. Hazard rating (0-6) **Access rating** (0-10) **Natural resource rating** (H/M/L)

NATIONAL PARK SERVICE MINED LANDS FIELD INVENTORY INSTRUCTION SHEET
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Identify and locate all active and abandoned mineral sites in your park:

- * look on maps for mining symbols
- * search through archival records
- * follow old dirt roads
- * search aerial photographs
- * talk to locals and park staff
- * check with state mining agencies

For oil wells, please fill out **ONLY** sections A, B, and J on the Inventory Data Sheet.

Go to each site and fill out the inventory form. DO NOT GO INTO ABANDONED UNDERGROUND MINES

If you do not know some information, leave the question blank. Please quantify whenever possible (e.g., size of opening, waste rock pile dimensions, pertinent distances, etc.). If your comments exceed the space given or if you wish to provide additional information, attach extra pages. If you have questions, call MMB.

A. Fill in the mine claim or **site name** and its **location** -- USGS quadrangle, UTM coordinates, township, range, section, $\frac{1}{4}$ section, and access route. If you do not know the name of the site, invent a logical name and put quotation marks around it on the form. (e.g., "Clear Creek Site", "Campground Site") When describing access route, note the site's approximate distance and direction from nearby landmarks, paths, and roads.

B. What is/was the **type of operation**? (e.g., underground mine, surface pit or quarry, mill, placer, other). What **commodity** is/was mined at the site? (e.g., gold, copper, sand and gravel, coal) Note the status of the operation: abandoned, active (full-time or intermittent), or administrative (used by the NPS for sand and gravel storage and/or extraction, equipment staging area, bone yard, etc.)

C. Estimate the **size of the operation** in acres, miles, feet, etc. (Total surface area impacted, not underground.)

D. **Identify openings** - Are there hazardous openings at the site, e.g., shafts, pits, quarries, or adits? Number and describe each opening (include dimensions) in the table, e.g., #1 / adit (6'w x 7'h), #2 / pit (15' x 15' x 10'd), #3 / shaft [8' x 8' x 50'd est'd. (to estimate depth, drop rock; to measure, use long tape measure)] The apparent "bottom" of a pit or shaft may be a blockage; the actual shaft may be deeper. If there are more than 10 openings at the site, continue table on another piece of paper attached to the Inventory Data Sheet.

E. **Identify hazards - USE CAUTION** - Mark the location of each hazard on your sketch map (see J).

1. Are there structures at the site? If so, describe the number, type, and condition.
2. Is there debris at the site? If so, quantify and characterize.
3. Are there any highwalls or unnatural benches at the site? If so, give dimensions and description.
4. Is the rock in which the mine is excavated stable (competent)? Does it appear that slabs or smaller rock debris could easily be dislodged? Looking from outside an underground mine, a good indicator is to note how much rock debris is lying on the floor. If rock type (sandstone, shale, limestone, granite, quartzite, etc.) or formation name (e.g., Morrison Formation) is known, please specify.
5. Are there any pools of water visible in the mine workings? Locate on map and estimate depth.
6. Are there signs of abandoned explosives present (boxes, fuses, shot wire, etc.)? If you find explosives (e.g., dynamite, blasting caps, misfires), **DO NOT TOUCH** them under any circumstances. Make note of labels or packaging information and contact a certified blaster for disposal.
7. Is heavy machinery abandoned at the site? Specify.
8. Did you find, or do you suspect the presence of hazardous substances? [e.g., fuels, lubricants, chemicals, chemical odors, leaky transformers; drums, containers, storage tanks; dumps, fills (possible cover for dumps); stained soils, unexplained vegetation anomalies, "sterile" or modified water bodies] Make note of any labels or packaging information. **DO NOT OPEN CONTAINERS.**

9. Are there subsidence features around the mined area, e.g., slumping or cave-ins? Describe.
10. Describe anything else you see that you think would be hazardous.
11. Are there piles of tailings (crushed/milled/processed rock), ore, waste rock, or sand and gravel present? Comment on each pile's size, location, and if you think the rock has been processed.

F. Identify **resource impacts**

G. Does the site have potential **cultural significance**? Is it on the National Register of Historic Places? Does it have interpretive value? Is it being interpreted? If so, how?

H. Do the visitors or staff visit/use the site?

1. Rank the **frequency/evidence of visitation**: high=large amounts of trash, footprints, graffiti, etc.; medium=moderate amounts; low=no signs of visitation. Rank the site as high if the park staff knows that the site is regularly visited.
2. List the address and phone number of the agency you would contact in case of an emergency at this site (sheriff's department, mine rescue teams from local mines, etc.). Make sure that the Protection Division has this information.

I. Suggest an appropriate **mitigation/closure/reclamation** method.

1. Check all the boxes that apply and write a description of your plan, if necessary. Make recommendations for each of the identified openings in section D. Closures can be designed to preserve wildlife habitat, e.g., bat gates. Fences are useful for preventing entry by an unwary visitor, but are easily vandalized and require periodic monitoring and maintenance, and do not prevent the intentional intruder. Ordering information for warning signs is available through MMB.
2. Check the appropriate box for mitigation status and provide any appropriate comments, e.g., note vandalized closures and repair needs, need for upgraded closures, or describe reclamation measures needed.

J. Draw a **SKETCH MAP** of the site. Show map orientation (north arrow), approximate scale (e.g., 1"= 50'), access route, and local drainages, trails, and roads. Attach a photocopy of the appropriate portion of the USGS topographic quadrangle with the site location labeled; include the map title and site coordinates. If the park has multiple sites, attach a park map with each site location labeled.

K. Attach **LABELED PHOTOGRAPHS** of the site. Color prints are best. Include all aspects, e.g., all mine entrances, hazards, resource impacts, access route, evidence of visitation, interpretive or warning signs. If developing film is a problem, send MMB the exposed film (with a numbered list describing of each photograph) and we will develop it. Photographs can be the most important part of the inventory.

L. List the **ratings** for each of the 3 categories. A guide for this ranking is attached to this instruction sheet. Note that there are three categories under the accessibility ranking. To determine the accessibility ranking for each site, add the point values in each column together. For example, a site that is accessible by car on a designated road and is not easily seen from a well-visited area would have an accessibility ranking of 9.

DEFINITIONS

mine site - an area with mining features (A "site" may include many features, e.g., adits, shafts, pits, mill)

shaft - a vertical (or near vertical) passage into a mine

adit - a horizontal or inclined passage into a mine (You can walk into an "adit," but must climb into a "shaft.")

tailings - processed ore (crushed, milled, treated rock) from which the desired material (typically metal) has been removed. Usually a fine, sand-like consistency.

waste rock - sub-grade, blasted (but unprocessed) rock, typically abandoned on-site near mine openings

highwall - steep wall bordering a quarry or pit; if quarry is deep, may be "benched" to permit vehicular access.

mitigation - the reduction or elimination of a hazard (does not necessarily include reclamation)

reclamation - the elimination of all hazards and impacts

misfire - an undetonated explosive charge

**SEND A COPY OF THE COMPLETED INVENTORY DATA SHEET TO THE GEOLOGIC RESOURCES DIVISION.
RETAIN THE ORIGINAL IN PARK FILES.**

Ranking System for Hazards

Danger Rating Associated With Hazard	
5 Pts	<ul style="list-style-type: none"> ·Any coal mine ·Vertical shafts, winzes, or underhand collapsed stopes > 20' ·Irrespirable air ·Instantaneous fatal injury could occur due to mine-related hazard
4 Pts	<ul style="list-style-type: none"> ·Large unstable structures ·Deep pools of water from which it would be difficult to climb out. ·Potential fatal injury could occur ·Major collapse zones
3 Pts	<ul style="list-style-type: none"> ·Radiation potential ·Large stopes overhead - seemingly stable ·Highwalls > 20' drop-off not apparent from above ·Serious injury could occur
2 Pts	<ul style="list-style-type: none"> ·Highwalls > 20' - drop-off apparent from above ·Rubble around but rock is generally stable ·Moderate injury could occur
1 Pt	<ul style="list-style-type: none"> ·Minimal injuries could occur like tripping, bumping head, cutting oneself ·Highwalls < 20' in area where such drop-offs are common naturally ·minimal injury possible
0 Pts	<ul style="list-style-type: none"> ·No inherent hazards; no injury potential above normal condition

* Add 1 point for any site that has an adit > 500' in length

Difficulty of Access (For each site, add the point value in each column together)

	Type of Access	Method of access	Attraction of site
5 Pts	Good road with mine as the specific destination	Car	
4 Pts	Good dirt road without specific destination	Car	
3 Pts	Dirt road without specific destination	Easy hike < 5 mi	
2 Pts	Near a road/path (within 1 mi)	<ul style="list-style-type: none"> ·Easy hike > 5 mi ·Moderate hike < 5 mi 	
1 Pt	> 1 mi from road/path	<ul style="list-style-type: none"> ·Moderate hike > 5 mi ·Hard hike < 5 mi 	Seen easily from path/road or other well-visited area so that site is an attraction
0 Pts		Hard hike > 5 mi	Not easily seen