

GLOSSARY OF TERMS USED IN LODGE & PLACER MINING

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A

Alluvial deposit – clay, silt, sand, gravel, gold or other mineral or other unconsolidated material deposited gradually by flowing water.

Amalgam – an alloy of mercury with gold or another metal. See Amalgamation.

Amalgamation – the mixing or grinding of clean mercury with gold concentrates. Sometimes included the addition of lye, dilute nitric acid or a weak cyanide solution. The combined product is called an amalgam. An amalgam requires the separation of the mercury from the gold. Excess mercury can be removed by passing and squeezing the amalgam material through a muslin or canvas sack. The remaining amalgam is heated or dissolved in nitric acid to remove the mercury. The remaining residue is gold. *Caution – all amalgamation processes are dangerous and must be performed outside and with great care.* See Retort.

Assay – the determination of the amount of metal contained in an ore.

Assay value – the amount of gold, silver or other metal contained in an ore or other material as determined by assay of a sample of that material.

Attrition – the act of rubbing together, friction; abrasion.

Aqua regia – a mixture of one volume of concentrated nitric acid and two volumes of hydrochloric acid. Used to put gold into solution.

Auriferous – containing gold.

B

Bar – a bank of sand, gravel or other material at the mouth of a river; or similar gold-bearing material in the slack portion of a stream.

Base metals – all the useful metals except the precious metals.

Bedrock – any solid rock underlying auriferous gravel and upon which the gold rests.

Benches – ledges of all kinds of rock or gravel shaped like steps or terraces. Bench placers are usually 50 to 300 feet above the present streams.

Black gold – alluvial gold coated by black oxide of manganese.

Black sand – heavy grains of magnetite, chromite, ilmenite, cassiterite or tourmaline found in rivers, beaches, canyons, gulches and (unfortunately) sluice-boxes. Often black sands are associated with gold placers.

Black sand magnet – a magnet used to remove black sand from concentrates.

Bullion – unrefined gold and/or silver mixtures that have been melted and cast into a bar.

Buried placers – placer gravels covered with some other strata or overburden.

C

Caliche – a soil type common in the West and Southwest containing excessive amounts of calcium carbonate. Caliche soils may be thin or a dozen or more feet thick and can be extraordinarily hard. Caliche placers present significant mining challenges.

Channel – gravel in a river, stream, canyon or gulch, often with overburden.

Claim – the filing of appropriate documents to establish ownership of a lode or placer mining operation.

Classifier screens – used to sort out gravels and other gold placers by the size of the material that stay on top of and go through screens of varying sizes. Often classifier screen buckets are used with rocker boxes and sluices to pre-classify gold placers.

Colloidal gold – gold in an extreme state of subdivision; in a true colloidal gold suspension the gold is almost in a molecular form.

Concentrate – the valuable minerals separated from the containing rock or gravel by any process of concentration.

Concentration – the removal by some mechanical means of the lighter material in an ore or placer material.

Confluence – a junction of streams.

Conglomerate – an aggregate of rounded and water-worn pebbles and boulders cemented together.

Contact deposit – one between two unlike rocks, usually applied to an orebody at the contact between a sedimentary rock and an igneous rock.

Contiguous – in actual contact or near though not in actual contact, as in mining claims.

Contour – The outline of the surface of the ground with respect to its undulation. Topographic maps of the U.S. Geological Survey show contour lines.

Core – see Drill core.

Cradle – see Rocker box.

Crevice – the removal of placer material from the cracks and crevices in bedrock.

Cyanide process – a process of gold extraction based on gold's solubility in sodium or potassium cyanide. *Caution: cyanide solutions are poisonous, handle with care!*

D

Deposit – enough mineral in rock to make an ore.

Develop – open a mine and ore; search, prospect, explore.

Dirt – the miner's term for auriferous gravel or the material being worked. See Pay dirt.

Dragline dredge – a machine that consists of a self-propelled power shovel fitted with a dragline bucket and a floating plant to process the material dredged. See Dredge.

Dredge – a machine, operated by some form of power, usually mounted on a flat-bottomed hull equipped to dig, process and dispose of alluvial or other placer gravels from the bottom of rivers or other bodies of water.

Draw – a small natural gully or other watercourse, usually part of a dry streambed.

Drift-gravel – gold-bearing gravel lying on granite usually with overburden.

Dry digging – mining operations in dry gulches not associated with a river or stream. See Wet diggings.

Dry washer – a device for recovering gold or other heavy minerals from dry alluvial material without the use of water. Typically a hand powered device with a sloping riffle board and a bellows or blower. The bottom of the riffle board is made of some porous material to trap the gold or mineral. Air forced through the bottom by the bellows or blower causes the lighter materials to be expelled over the riffles and out the machine, while the gold or heavy mineral is trapped in the porous material on the riffle board.

Dump – the pile or heap of “waste” material from any mining operation.

E

Escarpment – a steep slope or cliff formed by the erosion or separation of two relatively level areas of differing elevations.

Erosion – weathering and movement of rocks and debris.

F

Face – any part of a mine where work is under way.

Fine gold – gold too small to be found by almost all metal detectors, requiring panning or some other method of concentration.

Fineness – the degree of purity of gold, either native, bullion or refined gold, stated in terms of gold content in parts per thousand. A gold nugget containing 895 parts of pure gold and 105 parts of other metals, such as silver and copper, would be considered 895 fine.

Fissure – a crack or opening in rocks; fissure veins are those formed by mineral matter being deposited in the cracks.

Flagget – a term created to identify a piece of gold bigger than a flake but smaller than a nugget.

Float – the loose or scattered pieces of ore broken off from a vein outcrop. Float may be traced to its source or outcrop by prospecting.

Floatation – a process of concentration whereby crushed ore is mixed with water and oil or chemicals, the minerals, like gold and silver, float while the worthless material sinks.

Flour gold – smaller than “very fine gold.” See Gold classification.

Flow lines – lines of crystals, mineral streaks, or inclusions in an igneous rock that indicate the direction of flow before consolidation.

Fool's gold – a material that superficially resembles gold, usually a form of pyrite, an iron sulphide, FeS₂.

Formation – the common local rock in which an orebody is found. Several formations in a region make a system of rocks.

Fossil placers – gold placer deposits that have been cemented into hard rock by geological processes.

Free gold – gold not in combination with any other substance.

G

Gold – a brass-yellow colored metal with a specific gravity of about 19.3, i.e., about 19 times as heavy as an equal volume of water. Gold is malleable and can be cut with a knife. Gold will not dissolve in nitric, hydrochloric or sulfuric acid alone. Gold is soluble in “aqua regia.” See Aqua regia.

Gold classification:¹

Gold, course – gold that remains on a 10-mesh screen.

Gold, medium – gold that remains on a 20-mesh screen and passes a 10-mesh screen.

Gold, fine – gold that passes a 20-mesh screen and remains on a 40-mesh screen

Gold, very fine – gold that passes a 40-mesh screen.

Gold dust – once a common term for placer gold, particularly fine gold.

Gold float – fine gold floats on the water surface in panning or other concentration operations, especially if contaminated with oil, grease or clay.

Gold, flower – see Flower gold.

Gold lode – a vein of gold.

Gold mining vacuum – see Vacuum, gold mining.

Gold pan – a miner’s pan made of metal or plastic used to concentrate placer gold.

Gold placers – sand or gravel that containing gold nuggets, and/or gold as course, medium, fine, very fine and flower gold. Gold placers may be at or near the surface, but are usually below some overburden.

Gold suckers – a hand operated device used to suck-up gold placers from between cracks and crevices and off river or stream bedrock. They typically consist of an outer and inner tube, O-rings and a crevice sucker attachment. Several commercial models are available. Plans are available for gold sucker construction.

Grain – a unit of weight equal to 0.0648 part of a gram, 0.04167 part of a pennyweight, or 0.002083 part of a troy ounce. There are 480 grains in a troy ounce.

Gram – a unit of weight in the metric system equal to 15.432 grains, 0.643 pennyweight, or 0.3215 troy ounce. There are 31.003 grams in a troy ounce.

Ground sluicing – a method of mining gravel by water not under pressure. Typically a natural or artificial water channel is directed through a channel or cut of placer material. The material may be run over a

sluice box or allowed to accumulate on bedrock for subsequent concentration.

Gulch – a narrow ravine or small canyon.

H

Hardpan – bolder clay or layers of cemented gravel.

High banker – a term for any operation of a sluice box above a streambed on a high bank of stratified gravels and dirt paralleling a watercourse. High bankers usually operate with a gasoline-powered pump. High bankers are often used on ancient brownish-stained composites that indicate concentrations of minerals and black sand, or whitish to rust-colored quartz gravels in layers apart from the rest of the deposit, or any rounded gravel layer that is distinct from the predominant material, all are conditions that are favorable for gold placers. See black sand.

I

Igneous rocks – formed by solidification from a molten state (magma), or cooled at great depths (plutonic rocks), or blown into the air as rock fragments (volcanic rocks).

J – K

Karat – denotes the proportion of solid gold in an alloy based on a total of 24 parts. For example, a 14-karat (14K) gold designation indicates a composition of 14 parts of gold and 10 parts of other metals.

Knob – a prominent or isolated rounded hill or mountain with steep sides.

L

Leach – dissolving metals from ore by draining a solution intended to place the minerals in solution.

Lode – an irregular vein; a mineral deposit or vein, often without well-defined walls. Therefore, a gold lode deposit is a primary deposit of gold in a vein.

Lode claim – claims of valuable minerals in classic veins or lodes having well defined boundaries and imbedded in other rock, they may be claims of broad zones of mineralized rock. Lode claims are generally parallelograms with the long sides parallel to the vein or lode. They are limited by statute to a maximum of 1,500 feet in length along the vein and 300 feet on either side. Typically, lode claims become a tunnel site.

M

Magma – see Igneous rock.

Magnetite – the mineral form of black iron oxide, often found with magnesium, zinc, and manganese. An ore of iron. Also known as black sand.

Matrix – the rock that contains minerals or ore.

Mercury (quicksilver) – the heavy, silver-white liquid metallic element used in placer mining because of its affinity for gold. Sometimes placed in sluice boxes to catch gold. See Amalgamation.

Metal detector – an electronic device used to identify minerals, such as gold. Current metal detectors are designed for specific detecting operations, such as gold nuggets or coins. Most metal detectors are battery operated and hand-held devices on a collapsible pole, with the electronics near the operator and the detecting coil at other end. Designed to be operated while standing or walking. Metal detector's coils vary in size from about 3" to over 14", with the larger coils having greater depth of detection but reduced sensitivity to smaller targets.

Mill site – a site of unappropriated public domain land of nonmineral character, suitable for the erection of a mill or reduction works. Limited to 5 acres per claim. Mill site may be used or occupied distinctly and specifically for mining and milling purposes in connection with an associated lode or placer location. Mill site may be used as a general reduction works unconnected with a specific lode or placer location.

Milligram – one-thousandth part of a gram. There are 31,103 milligrams in a troy ounce.

Miner's pan – a gold pan, originally made from a sheet of metal shaped like a pan.

Miner's spoon – a gold washing implement used to test or sample small quantities of sand or dirt. Made of horn, hard rubber, copper or steel.

Mining claim- a placer or lode claim. May be sold, bought, willed or inherited.

Monument – a permanent object indicating the boundary of a claim.

Moss mining (mossing) – the gathering of plant moss from the banks of gold-bearing streams to recover its gold content.

Mother lode – the mineralized formation that passes through any district, not rich enough to be worked as a whole but containing numerous workable veins.

N

Native – a mineral that occurs in nature as a pure metal, such as copper, gold, silver, platinum.

Nugget – a lump of water worn metallic copper, gold, silver or platinum. A gold nugget is larger than a grain in weight.

O

Ore – any rock that contains enough mineral to be mined profitably is an ore.

Orebody – those parts of a vein that carry ore are orebodies or shoots.

Overburden – the material covering mineral placers.

Oxide – a compound of any metal with oxygen.

P

Panning – the use of a round pan to concentrate placer gold. See Gold pan.

Patent claim – a mining claim that has had \$500 of work done on it allows the claim holder to apply for and obtain a patent claim and obtain a deed or title to the claim. After receiving the patent, the claim owner is relieved of further annual assessment work. Patent claims may be sold, bought or willed.

Pay dirt – auriferous gravel with enough mineral value to "pay" for its concentration.

Pay lead (pronounced leed) – placer gravel rich enough to work.

Paystreak – a placer deposit that contains a concentration of a mineral rich enough to mine.

Pennyweight – a unit of weight equal to 24 grains, 0.05 troy ounce or 1.5552 grams.

Pinpointer – a small, hand-held metal detector, with limited depth effectiveness, used to pin point a metal object. Often used in conjunction with a standard metal detector mounted on a pole.

Placer – any gravel deposits or minerals, particularly gold, not in place, i.e., moving. Therefore, a gold placer deposit is a secondary deposit from concentrations of gold in lode deposits. Erosion, disintegration and decomposition of the lode deposit result in placer deposits.

Placer claim – a claim of placer minerals as deposits in sand or gravel. Placer claims are located, where possible, by legal subdivision. They are limited to 20 acres per claim per location; however, individuals may jointly make claims to a maximum of eight [or more] individuals for 160 acres.

Placer deposit – see Placer.

Placer gold – often alloyed with silver, copper or other metals, usually with a specific gravity of from 15 to 19.

Placer mining – mining operations of placer deposits that removes overburden and detritus from the gold or other mineral.

Prospecting – qualifying work associated with the discovery and assessment of lode or placer minerals.

Pyrite – an iron ore sulfide mineral usually brass-colored. Also called fool’s gold.

Q

Quicksilver – see Mercury

R

Recovery – the operations associated with the extraction of a mineral, usually expressed as a percentage of the total mineral content

Refining – purifying a mineral by application of heat.

Riffle – the lining of the bottom of a sluice.

Retort – a device used to remove mercury from a gold amalgam. The retort heats the amalgam to a temperature high enough to vaporize the mercury. Mercury’s boiling point is about 675 degrees F, while gold’s boiling point is about 4,720 degrees F. Often a retort has a water-jacketed cooling tube to recover the mercury vapor as liquid mercury for further use. *Caution – fumes from volatilized mercury are very poisonous and can be deadly.*

Rocker box – a hand or engine powered box used to process gold gravels and placers. The rocker box consists of a washing box, one or more screens, and a canvas, carpet or some other form or apron under the screens, and a short sluice with two or more riffles. The bottom of the rocker box is usually sheet metal with ½ inch holes punched in it. The gravels or placers were shoveled into the top of the box and water poured over the material as the box is “rocked” back and forth. Oversized material is inspected for nuggets and discarded. The rocking action of the watered material moves it through the box, trapping the gold and black sands on the apron. The riffles are intended to stop any gold that escapes the apron. Typically, the rocker is cleaned every 2 – 3 hours, more often if good color is evident to capture the gold concentrates. Concentrates are typically cleaned up with a gold pan. Small hand and powered rocker boxes are commercially available and plans are available for their construction. Also called, simply, rocker.

Rotopan – A handoperated Australian gold and gemstone concentrating device that operates in a 5 gallon bucket.

Rusty gold – free gold coated with iron oxide or silica. Usually requires grinding to recover.

S

Salting – the intentional placement of gold or other valuable mineral in a placer or ore sample to deceive and defraud the unknowing.

Sampling – the systematic removal of a representative ore sample or placer material to assess for mineral content.

Sluice-box – a constructed trough, lined with riffles, through which water mixed with placer gravel flows and catches the gold or other valuable mineral. A variety of commercial sluice-boxes are available, including a back-pack model. Plans are available for the construction of a variety of sluice-boxes.

Sluicing – operating a sluice-box.

Specific gravity – the comparison of a substances’ weight against an equal bulk of pure water. Placer gold has a specific gravity of up to 19 and is, therefore, 19 times heavier than water.

Specimen – a hand sample or selected piece of ore. A collectable specimen’s value often exceeds its mineral value.

Spiral concentrator – a device with a spiral form of concentrating placer gold. Commercial models are available for concentrating gold from either dry or wet operations.

Stratified – formed or lying in beds, layers or strata.

Stripping – removing the overburden from ore or placer gravel.

Structure – the general occurrence or nature of rocks in an area.

T

Tailings – the washed material from some type of placer concentration operation.

Topography – the physical features of an area, such as hills and valleys.

Troy ounce – see Troy weights and measures. The ounce designation of all assay returns for precious metals.

Troy weights and measures:

24 grains = 1 pennyweight

20 pennyweights = 1 ounce

1 ounce = 480 grains

12 ounces = 1 pound

1 pound = 240 pennyweights

1 pound = 5,760 grains

Tunnel site – the land associated with a tunnel developed to mine a vein or lode, or to discover a vein or lode. Tunnel sites may not be patented.

U

Unpatented claims – those that require \$100 of work to be done each year. Owners of unpatented claims may use as much of the surface and surface resources of the claim as necessary to carry out mineral development.

United States price of gold (date of law/value per fine troy ounce)

April 2, 1792	\$19.393939
June 28, 1834	\$20.689656
Jan 18, 1837	\$20.671835
March 4, 1900	\$20.671835
Jan 31, 1934	\$35.000000
March 17, 1968	Monetary gold value remains fixed at \$35.00 per ounce.
1975	Release of gold prices, gold prices allowed to float.

V

Vacuum, gold mining – Typically powered by a gasoline engine driven leaf blower rigged to a five gallon bucket. The device is used to vacuum material off and between cracks and crevices of bedrock. Several different commercial models, including a backpack model, are produced and plans are available for building a gold mining vacuum from hardware store parts.

Vein – any well-defined mineralized zone, with or without payable orebodies or shoots.

W

Wash – 1. a dry bed or an intermittent stream, often at the bottom of a canyon or gulch, often called a “dry wash.” 2. The act of concentrating a valuable mineral from gravels.

Wet diggings – gold placer mining operations in or on a stream or river.

X – Y – Z

¹ Young, George J., Elements of Mining, 3rd Edition, McGraw-Hill Book Company, Inc., NY, 1932, p. 426