

GOLD PROSPECTING

A Complete Field Guide for Prospectors

■ YOUR COMPLETE FIELD COMPANION ■

- Geology & Rock Identification
- Placer & Lode Gold Tactics
- Desert, Tropical & Greenstone Environments
- Tellurides, Opals & Rare Minerals
- Claim Staking & Legal Requirements

13

CHAPTERS

Gold Prospecting Series • Complete Edition

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Greenstone Belts: Simple Guide for Beginners

✓ What is a greenstone belt?

- ✓ Very old volcanic rock
- ✓ Green in color
- ✓ Hard and fractured
- ✓ Often rich in gold

These rocks formed **billions** of years ago.

✓ Why is gold found there?

- ① Hot water moved underground
- ② The water carried gold
- ③ Gold entered cracks in rocks
- ④ Quartz veins formed

So gold is often found
inside quartz veins

✓ How to recognize greenstone rocks?

Look for:

- ✓ Green or dark green color
- ✓ Layered or banded rocks
- ✓ Many cracks and fractures
- ✓ White quartz veins

If you see these → = **good sign for gold**



✓ Where to search?

Best places:

- ✓ Near quartz veins
- ✓ Along faults or cracks
- ✓ In river gravel near **green rocks**
- ✓ In black sand
- ✓ In bedrock cracks

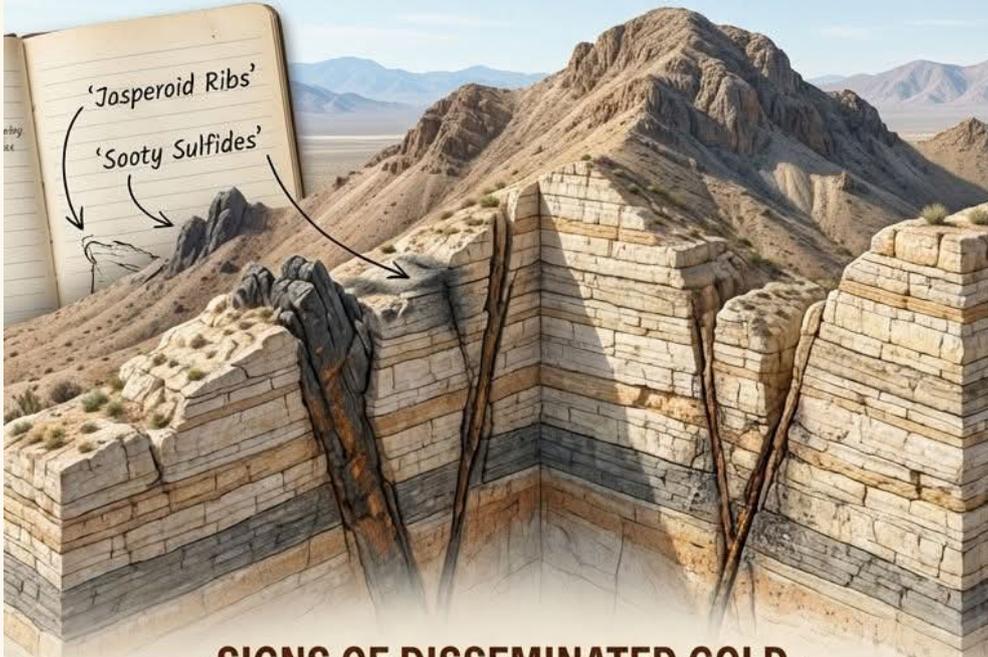


★ Golden rule (remember this)

→ **Green rocks + quartz + cracks + black sand = high chance of gold**

THE INVISIBLE LODGE

Look for the soot, not the shine.



SIGNS OF DISSEMINATED GOLD



← **JASPEROID RIDGES:**
Look for dark, weather-resistant silica ribs that have replaced original limestone beds.



→ **SOOTY SULFIDES:**
Identify fine-grained, dark grey to black coatings on rocks which indicate gold-bearing pyrite.



← **DECARBONATIZATION:**
Search for 'sanded' limestone that feels light and porous due to carbonate leaching by acidic fluids.



→ **ARSENIC INDICATORS:**
Keep an eye out for bright orange Orpiment or red Realgar crystals in fracture fillings.



← **FAULT JUNCTIONS:**
Focus exploration where high-angle faults cross through silty or 'dirty' limestone layers.



Search the contact zones where ancient lava meets granite. Look for dark mafic rocks signaling ancient volcanic activity, follow shear zones, seek sugary quartz veins, and watch for alteration halos of rusty carbonate or iron-sulfide staining on rock surfaces.



Follow the green host rock to the golden contact. Serpentine hosts waxy, soapy-textured rock with quartz stringers branching from shear zones. Focus on the 'Contact Zone' where different rock types meet, use a magnet to check for magnetite concentrations, and look for orange-red iron staining on green rock surfaces.

Gold Prospecting Field Guide • Chapter 3

THE BOXWORK BLUEPRINT

Empty pockets in the rock are full of hidden potential.

First field generation and his mining field notes

$CH_2 + CH_3$

$M = L_1$
 $(\text{or } |z - L)$
 $P = T_2 \text{ gold}$

CO₂

Basalt

Sketch Observations

$L = CO_2OH$
 $d = 3MC$
11.9 moils

$Q = \frac{1.2 \times (VEV_0)}{2CO_2}$

SIGNS OF LEACHED ORE

- Identify the Lattice:** Look for honeycomb structures where pyrite or chalcopyrite once lived.
- Color Clues:** Deep maroon or chocolate browns often indicate copper-rich precursors.
- Silica Ribbs:** Hard quartz walls surrounding the voids suggest high-temperature hydrothermal activity.
- Weight Check:** A porous rock that feels surprisingly heavy may contain unoxidized minerals.
- The Golden Residue:** Gold is chemically stable; it stays in the boxwork while trash minerals dissolve.

Hand holding water

Hand holding hammer

Hand holding pan

Hand holding hammer

Hand holding pan

Compass

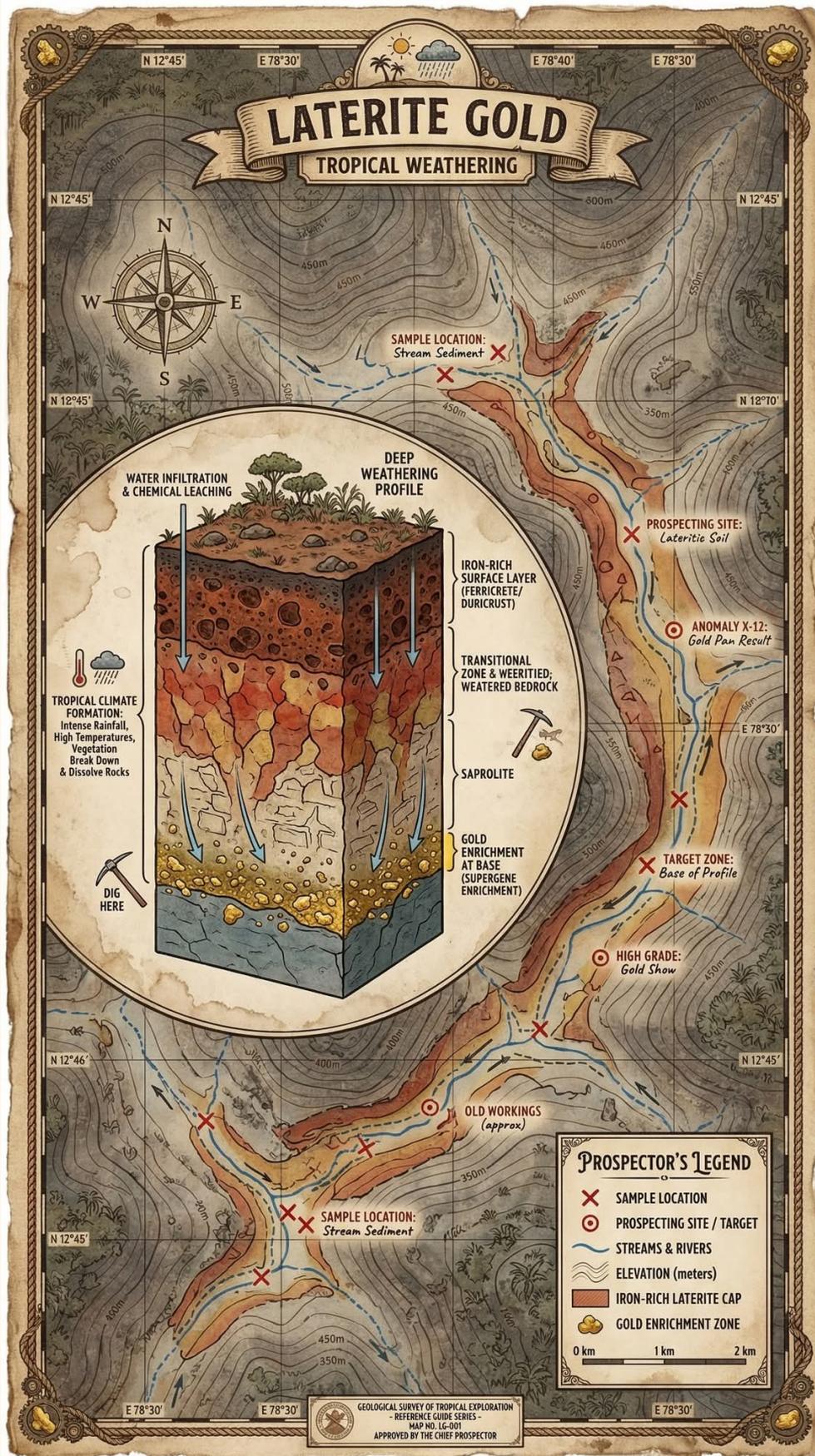
Sketch of lattice

Sketch of scales

Sketch of gas

$E_r(X \cdot M_1) = \frac{X \cdot L}{14.6 \text{ GO}}$

Mountain-building riches. Orogenic gold is shear-zone hosted, located in deep fault systems and fractures. Formed during intense heat, pressure, and mountain building, it occurs in quartz-carbonate veins at mesothermal depths of 1.5–6 km. Unlike surface placer gold, lode mining requires specialised drilling and processing.

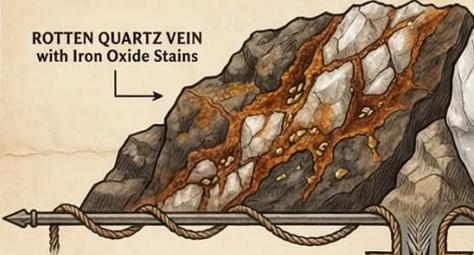


Gold hides where the heavy sand settles. In desert dry-wash environments, gold concentrates in bedrock traps wedged in deep crevices, beneath false bedrock clay layers, within caliche crusts, at inside bends of washes, and wherever black sand concentrations of magnetite and hematite accumulate.

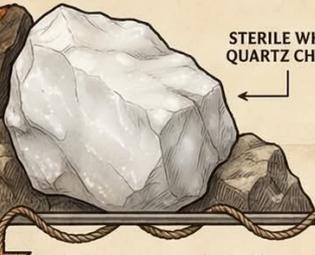
GOLD PROSPECTING

— CLAIM STAKING: Securing your ground —

ROTTEN QUARTZ VEIN
with Iron Oxide Stains



STERILE WHITE
QUARTZ CHUNK







1 RESEARCH AVAILABLE LAND

Consult official government maps, mineral databases, and land management agencies. Identify areas with mineral potential and verify land status (open public land vs. private). Ensure area is not patented or withdrawn.

2 MARK BOUNDARIES PROPERLY

Physically mark the corners of the claim area in the field according to local regulations. Use clear, durable posts (wood, metal, or stone) with required information. Maintain a clear line of sight between markers.





3 FILE WITH AUTHORITIES

Submit required forms, maps, and fees to the appropriate recording office (county, state, or federal) within a specified timeframe after marking. Obtain an official claim serial number and receipt.



4 ANNUAL MAINTENANCE FEES

Perform required annual assessment work (e.g., labor, improvements) on the claim or pay an annual maintenance fee to the government agency by the deadline to keep the claim valid. Failure to do so results in claim forfeiture.

Heavy gold stays put while the mountain turns to dust. In residual saprolite, locate the gossan — the rusty red iron-cap indicating oxidized sulfides. Examine quartz texture for sugary 'rotten' quartz, a prime gold host. Pan the V-channels where heavy metals settle in the weathered matrix.

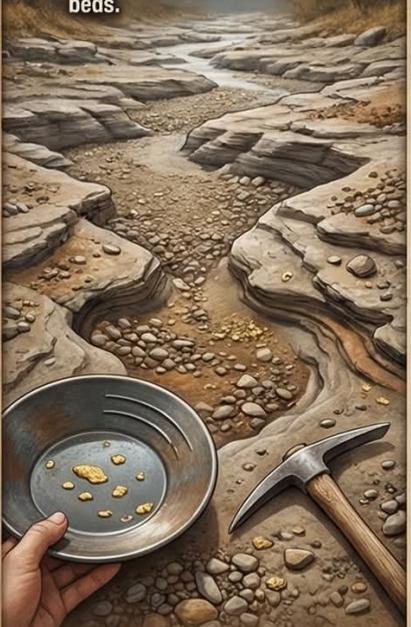
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OROGENIC GOLD

Mountain building riches.

TYPICAL PROSPECTING (Surface/Placer)

- ✓ **SEDIMENTARY / TRANSPORTED**
Loose material in river & stream beds.



- ✓ **SEDIMENTARY / TRANSPORTED**
Loose material in river & stream beds.
- ✓ **ALLUVIAL DEPOSITS** -
Gold freed from source rock & moved by water.
- ✓ **LOW PRESSURE & TEMP** -
Formed near the surface, easily accessible.
- ✓ **SIMPLE TOOLS** -
Pans, sluices, shovels.

OROGENIC DISCOVERY (Lode/Hard Rock)

- ✓ **SHEAR ZONE HOSTED**
Located in deep fault systems & fractures.



- ✓ **METAMORPHIC SETTING** -
Formed during intense heat, pressure & mountain building.
- ✓ **QUARTZ-CARBONATE VEINS** -
Hydrothermal fluids deposit minerals in cracks.
- ✓ **MESOTHERMAL DEPTH** -
Deep earth origin (1.5 - 6 km), high temperature.
- ✓ **LODE MINING** -
Requires specialized drilling, blasting & processing.



**FROM DEEP EARTH TO SURFACE RICHES:
THE OROGENIC PROCESS**

The silver-gold mix. Telluride minerals — calaverite (AuTe \blacksquare), sylvanite (Au,Ag)Te \blacksquare , and petzite (Ag \blacksquare AuTe \blacksquare) — are high-grade discovery targets associated with deep vein systems. These minerals signal some of the richest gold deposits on Earth, particularly in high-grade epithermal systems.

Gold Prospecting Field Guide • Chapter 7

THE GREENSTONE CLUE

Search the contact zones where ancient lava meets granite.



PROSPECTING THE ARCHAEOAN

- 
• **Identify Mafic Rocks:** Look for dark, dense greenstone signaling ancient volcanic activity.
- 
• **Follow Shear Zones:** Map out 'smeared' rock textures that acted as plumbing for gold-rich fluids.
- 
• **Quartz Veining:** Seek out 'sugary' or smoky quartz hosted within the greenstone layers.
- 
• **Pressure Shadows:** Focus on the edges where hard granite pushed into softer volcanic sequences.
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• **Alteration Halos:** Watch for rusty carbonate or iron-sulfide staining on the rock surface.
- 
• **Pressure Halos:** Focus on the edges where hard granite pushed into softer volcanic sequences.

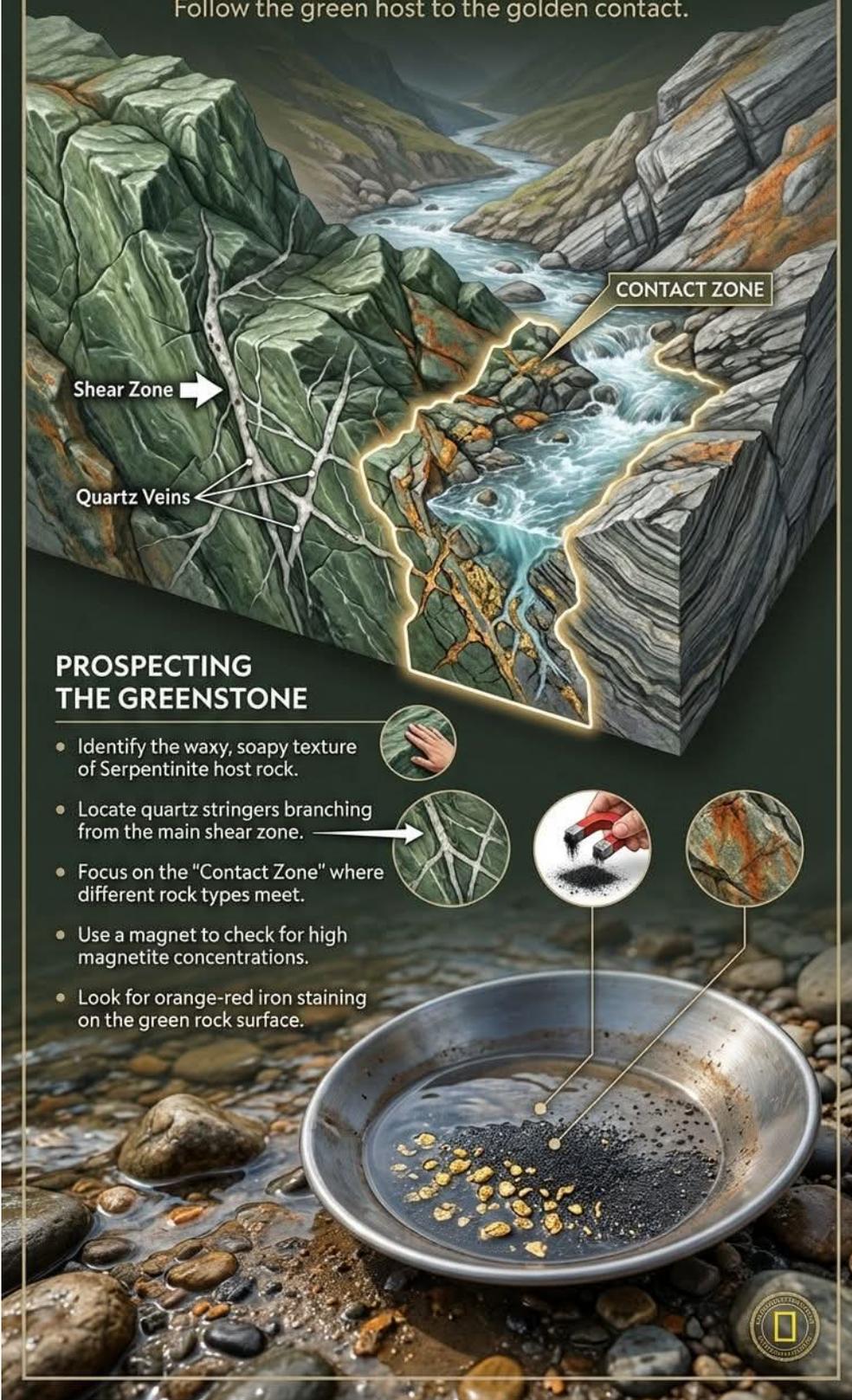


Empty pockets in the rock are full of hidden potential. Boxwork structures — honeycomb patterns where pyrite or chalcopyrite once lived — are key indicators of leached ore. Deep maroon or chocolate browns signal copper-rich precursors, while hard quartz walls (siliceous ribs) suggest high-temperature hydrothermal activity. Gold is chemically stable; it stays in the boxwork while trash minerals dissolve.

Gold Prospecting Field Guide • Chapter 8

THE SERPENTINE SIGNATURE

Follow the green host to the golden contact.



PROSPECTING THE GREENSTONE

- Identify the waxy, soapy texture of Serpentine host rock.
- Locate quartz stringers branching from the main shear zone.
- Focus on the "Contact Zone" where different rock types meet.
- Use a magnet to check for high magnetite concentrations.
- Look for orange-red iron staining on the green rock surface.

Pure white is usually light; dark and crusty is likely trusty. A sulfide indicator checklist: identify boxwork textures left by weathered minerals, search for vugs (small internal cavities where gold precipitates), focus on limonite yellow-brown staining, prioritise fractured quartz, and look for fool's gold — pyrite and arsenopyrite are the primary neighbours of real gold.

WEATHERING THE VEIN

Heavy gold stays put while the mountain turns to dust.

'FRESH BEDROCK'

'RESIDUAL SAPROLITE'

Original Hard Rock Source

Locate the Goccan—the rusty red iron-cap indicating oxidized sulfides.

Examine Quartz texture: sugary, 'rotten' quartz is a prime gold host.

Differentiate Saprolite from common clay—look for preserved rock textures.

Scan contact zones between decomposed top-soil and solid bedrock.

Pan the V-channels where heavy metals settle in the weathered matrix.



Field Notes

- Gold concentrates in low pressure zones
- Water flow aids concentration
- Look for iron staining



Look for the soot, not the shine. Signs of disseminated gold include jasperoid ridges (dark weather-resistant silica ribs replacing limestone), sooty sulfides (fine-grained dark coatings indicating gold-bearing pyrite), decarbonatization, arsenic indicators such as bright orange orpiment or red realgar crystals, and fault junctions where high-angle faults cross silty limestone layers.

THE NOCTURNAL KALEIDOSCOPE: BLACK OPAL OF LIGHTNING RIDGE

An anatomical study of silica diffraction and the dark majesty of the Australian outback.

THE ANATOMY OF PLAY-OF-COLOR

Sub-microscopic silica spheres

Varying diameter

Sub-microscopic silica spheres

- Diffraction Mechanism: Unlike standard refraction, opalescence is caused by light passing through an orderly arrangement of sub-microscopic silica spheres.

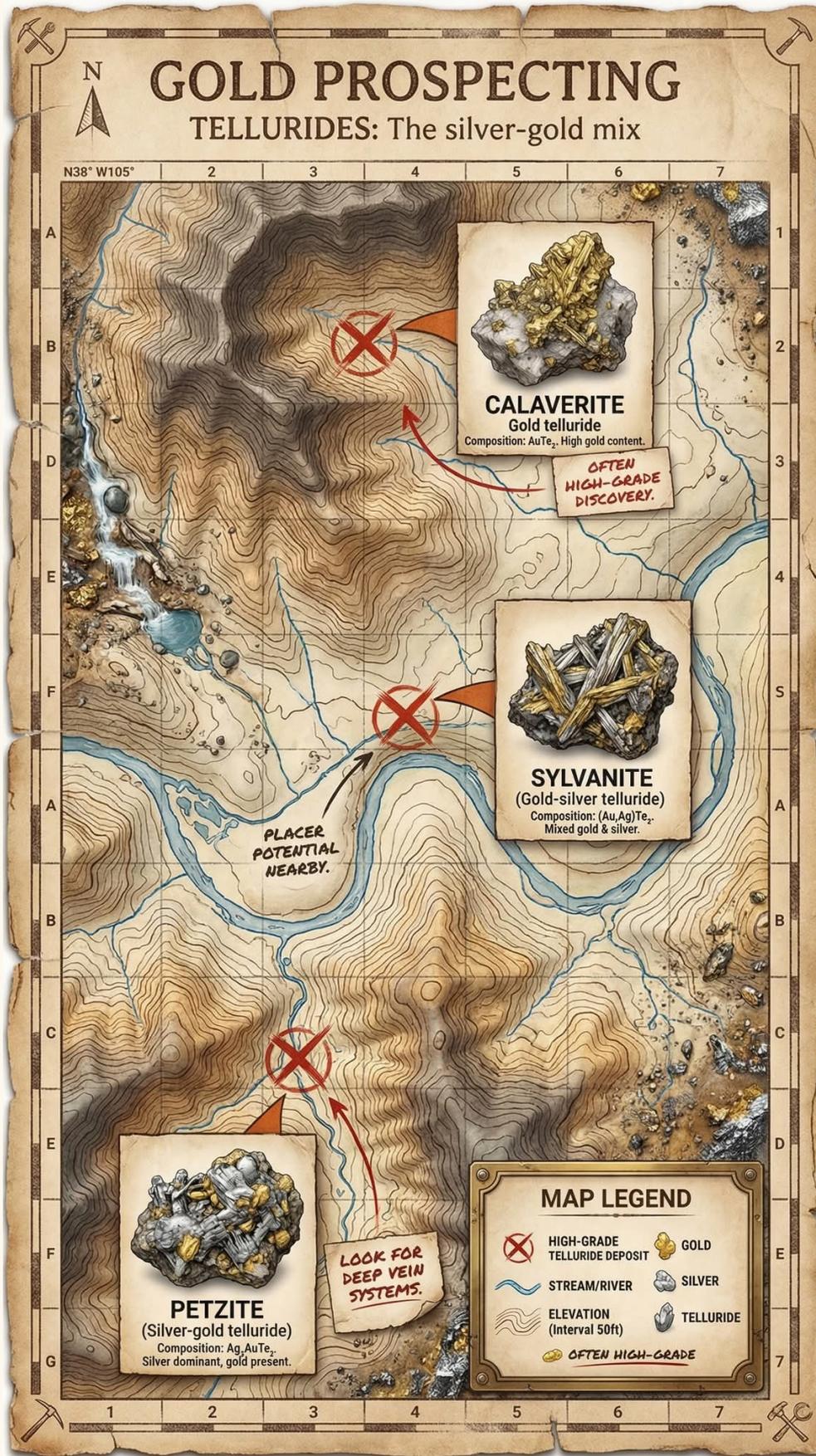
- Body Tone N1: The most prized black opals possess a jet-black base, providing the ultimate canvas for vivid pleochroism and spectral flash.

- Carat Value: Due to extreme rarity, fine Lightning Ridge specimens can exceed the price-per-carat of colorless diamonds.

Lightning Ridge Geology

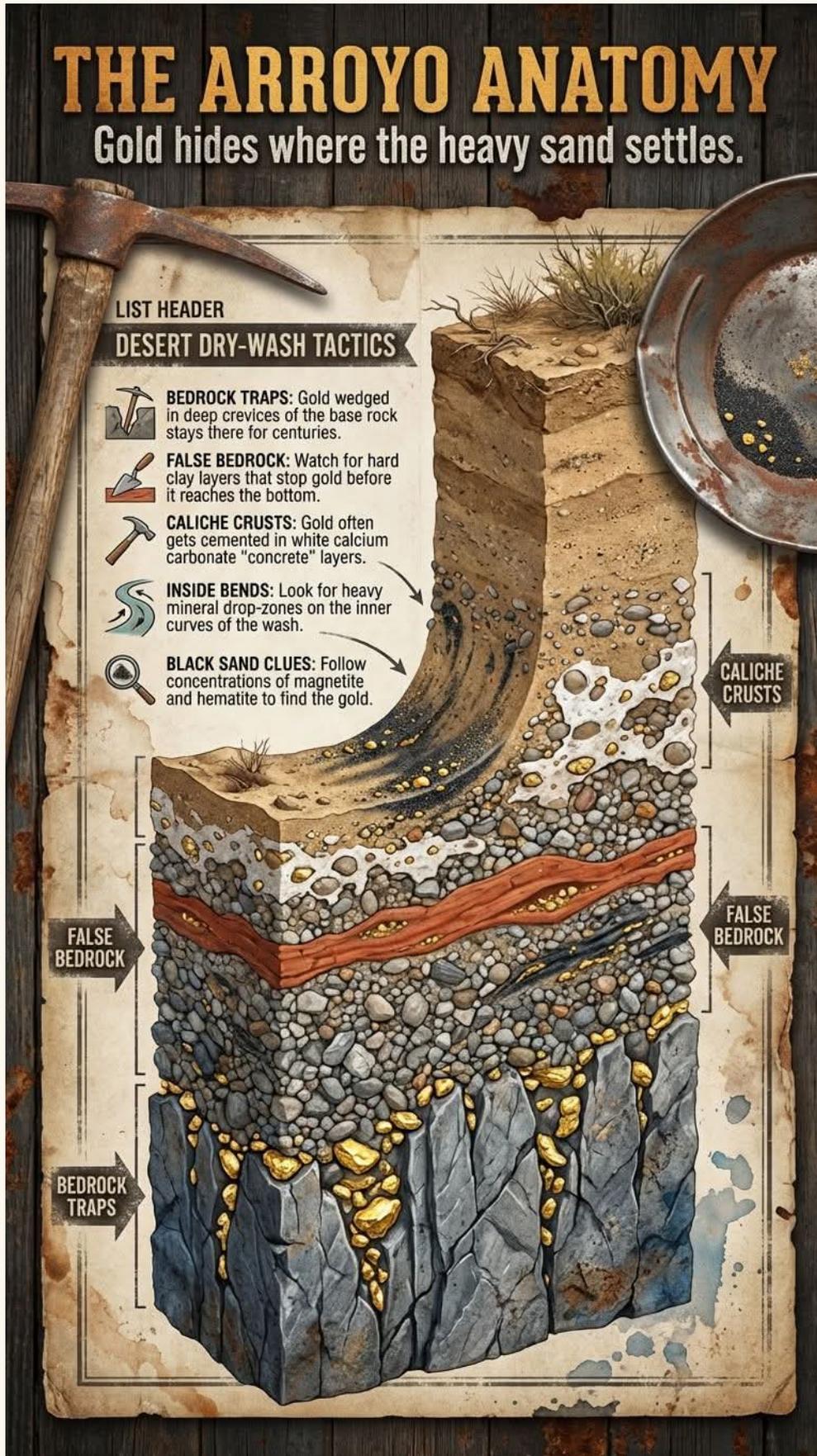
- Geological Formation: Formed over 100 million years ago as silica-rich solutions filled voids in ironstone and sandstone layers.

- Durability and Care: With a Mohs hardness of 5.5 to 6.5, these treasures require expert handling to protect their intricate internal inclusions.



In tropical climates, intense rainfall and high temperatures chemically weather bedrock to great depths, producing a laterite profile. Gold concentrates via supergene enrichment at the base of the profile (saprolite zone). Target iron-rich lateritic soil caps and stream sediment sample locations to trace the gold enrichment zone.

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Four essential steps to protect your discovery: (1) Research available land using official government maps and mineral databases; (2) Mark boundaries properly with durable posts; (3) File with authorities at the appropriate recording office within the required timeframe; (4) Pay annual maintenance fees or complete required assessment work to keep the claim valid.

GOLD PROSPECTING

A Complete Field Guide for Prospectors

■ Find Gold with Confidence ■

"Read the rocks — gold whispers through geology."

"Follow black sand, iron staining, and quartz veins."

"Always sample before you dig deep."

"Respect the land and know the law."