



## PRODUCERS

|                                                                                                                        |                                          |
|------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| Ammolite                                                                                                               | 1 Aurora Power Pole                      |
| Fly ash (produced from coal combustion by-product generated as a by-product of historical coal-fired power generation) | 2 St. Mary River                         |
| Gold (placer) (by-product of sand and gravel production)                                                               | 3 Battle River (Forestsburg) power plant |
| Humalite                                                                                                               | 4 Genesee power plant                    |
| Limestone and/or dolomite                                                                                              | 5 H.R. Milner power plant                |
|                                                                                                                        | 6 Keehills power plant                   |
|                                                                                                                        | 7 Sheerness power plant                  |
|                                                                                                                        | 8 Sundance power plant                   |
|                                                                                                                        | 9 Onoway                                 |
|                                                                                                                        | 10 Villerene                             |
|                                                                                                                        | 11 WestMet Ag                            |
|                                                                                                                        | 12 Clearwater                            |
|                                                                                                                        | 13 Cougar Ridge (Prairie Creek)          |
|                                                                                                                        | 14 Exshaw                                |
|                                                                                                                        | 15 Fish Creek (Nordegg)                  |
|                                                                                                                        | 16 Fort Hills                            |
|                                                                                                                        | 17 Fort McMurray west                    |
|                                                                                                                        | 18 Gap                                   |
|                                                                                                                        | 19 Horizon                               |
|                                                                                                                        | 20 McLeod (Cadam)                        |
|                                                                                                                        | 21 Muskeg                                |
|                                                                                                                        | 22 Parsons Creek                         |
|                                                                                                                        | 23 Steepbank                             |
|                                                                                                                        | 24 Summit Lake                           |
|                                                                                                                        | 25 Grande Cache                          |
|                                                                                                                        | 26 Calling Lake                          |
|                                                                                                                        | 27 Mitis                                 |
|                                                                                                                        | 28 Sunnyside                             |
|                                                                                                                        | 29 Drift Pile                            |
|                                                                                                                        | 30 Racehorse                             |
|                                                                                                                        | 31 Seebe                                 |
|                                                                                                                        | 32 Kalka                                 |
|                                                                                                                        | 33 Fickle Lake                           |
| Silica sand                                                                                                            | 34 Peace River Silica                    |
|                                                                                                                        | 35 Bruderheim plant                      |
| Building stone                                                                                                         | 36 Bay Tree                              |
|                                                                                                                        | 37 Beaverdam                             |
|                                                                                                                        | 38 Edco Hill                             |
|                                                                                                                        | 39 Jura Creek                            |
|                                                                                                                        | 40 Lundbreck Falls                       |
|                                                                                                                        | 41 Oldman River                          |
|                                                                                                                        | 42 Pigeon Mountain                       |
|                                                                                                                        | 43 Rundle Stone                          |
|                                                                                                                        | 44 Sheep Creek                           |
|                                                                                                                        | 45 Spray Falls                           |
|                                                                                                                        | 46 Sunnyside                             |
|                                                                                                                        | 47 Victory                               |
|                                                                                                                        | 48 Yannuska                              |
| Sulphur (by-product of oil and gas processing)                                                                         | 49 Gas plant                             |
|                                                                                                                        | 50 Oil sands processing plant            |
| Sand, gravel, peat, or marl/tufa                                                                                       | 51 Industrial pit                        |

## PAST PRODUCERS

|                            |                             |
|----------------------------|-----------------------------|
| Ammolite                   | ▲ Lead-zinc-silver          |
| Bentonite                  | ▲ Limestone and/or dolomite |
| Building stone             | ▲ Marl and/or tufa          |
| Calcium/magnesium chloride | ▲ Metallurgical coal        |
| Clay                       | ▲ Pumicite                  |
| Copper                     | ▲ Salt and storage caverns  |
| Fly ash                    | ▲ Silica sand               |
| Humalite                   | ▲ Sodium sulphate           |

## SELECTED EXPLORATION PROJECTS

|                                 |                                       |
|---------------------------------|---------------------------------------|
| Diamond                         | ① Buffalo Head Hills                  |
|                                 | ② Calling Lake                        |
| Iron-vanadium                   | ③ Rampling Creek-North Westmud River* |
| Limestone and/or dolomite       | ④ Baseline Ridge                      |
|                                 | ⑤ Brazeau                             |
|                                 | ⑥ Idylwilde Mountain                  |
| Lithium                         | ⑦ Boardwalk*                          |
|                                 | ⑧ Clear Hills*                        |
|                                 | ⑨ Clearwater*                         |
|                                 | ⑩ Drumheller*                         |
|                                 | ⑪ Exshaw West*                        |
|                                 | ⑫ Fox Creek West*                     |
|                                 | ⑬ North Rocky*                        |
|                                 | ⑭ Park Place*                         |
|                                 | ⑮ Peace River*                        |
| Magnete (heavy minerals)        | ⑯ Silvert Ridge                       |
| Metallurgical coal              | ⑰ Grassy Mountain                     |
| Phosphate                       | ⑲ Crownest                            |
| Potash                          | ⑳ Alberta Potash Project - North      |
| Uranium                         | ⑳ Provost                             |
| Zinc-vanadium-nickel-REEs       | ⑳ Dragon Lake                         |
| ① NI 43-101 compliant resources | ⑳ Buckton*                            |

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PEAT                       | has been harvested in Alberta for peat and peat products since the 1950s. Active peat harvesting pits exist in many areas of central and northern Alberta. Prospective areas for peat are wetlands throughout northern Alberta that contain partially decomposed organic materials.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| PHOSPHATE                  | occurs in sedimentary rock beds that may extend over tens to hundreds of kilometers along the Rocky Mountains and Foothills. Prospective areas are in the Upper Devonian-Mississippian Exshaw Formation, Permian Johnston Canyon and Ranger Canyon formations, Thetis Spray River Group, and Jurassic Fernie Formation. The province is considered a major phosphate producer because potentially mineable phosphate beds in British Columbia extend into Alberta.                                                                                                                                                                                                                                                                                                                                                                                          |
| POTASH                     | occurrences are found in oil and gas wells and during mineral exploration drilling. Alberta is prospective for potash because mineable deposits occur within the same strata in Saskatchewan. Prospective areas for potash occur in the Devonian Prairie Evaporite Formation in east-central and southeastern Alberta. In particular, industry has identified potash intersections that warrant further exploration near Provost.                                                                                                                                                                                                                                                                                                                                                                                                                           |
| RARE-EARTH ELEMENTS (REEs) | are documented in various alkaline igneous and pegmatitic rocks in the Canadian Shield. Research efforts are focused on a secondary community in other areas, such as the phosphate and Zinc-Van-REEs in the Canadian Shield. REEs in the Mesoarchean-Paleoproterozoic Tallson basement and Margerite River complexes in the Canadian Shield, Permian-Jurassic phosphate-bearing strata in the Rocky Mountain region, the Cretaceous Keg River Formation, the Lower-Middle Devonian V-Ni-REE black shale deposits in the Upper Cretaceous Second White Specks Formation in the northeast, in the Lower Cretaceous Loco River Formation in the northwest, and Jurassic Fernie Formation shales and Devonian-Mississippian shales of the Exshaw and Banff formations in the Rocky Mountains and Foothills. Also, REEs occur in oil sands and talc as fly ash. |

For clarity, prospective areas for the following commodities are not displayed on the map but are available in the AGS Digital Data 2025-2000 (prospective areas): aggregate, boron, bromine, building stone, ceramic clay, iodine, metal oxide, peat, sand and gravel, and sodium sulphate.

## SELECTED PROSPECTIVE AREAS

|    |                            |
|----|----------------------------|
| Am | Ammolite                   |
| Bn | Bentonite                  |
| Ca | Calcium/magnesium chloride |
| Cu | Copper                     |
| Di | Diamond                    |
| Au | Gold                       |
| Gy | Gypsum                     |
| Hu | Humalite                   |
| Fe | Iron-vanadium              |
| Pb | Lead-zinc                  |
| Lm | Limestone and/or dolomite  |
| Zn | Zinc-vanadium-nickel-REEs  |

This map presents a current view of producers, past producers, selected exploration projects, and geological areas prospective for the exploration of mineral deposits.

Materials include metals and industrial minerals, diamond, ammolite, metallurgical coal, and bentonite, as well as materials that may be recoverable as by-products of industrial processes, such as sulphur.

Fundamentally, this map serves as an updated version of AGS Map 250, originally published in 2020. The producers, past producers, and selected exploration projects information has been revised to reflect changes in industry production and mineral exploration in the province since the publication of Map 250. Additionally, new datasets have been added to AGS Digital Data 2025-2000. The industry, have refined the understanding of mineral potential in the province which prompted an update of the selected prospective areas information on the map.

This map is a view of more detailed digital files that include additional mineral occurrences and materials, such as peat, bromine, iodine, building stone, and sand and gravel, and subdivides the prospective areas based on deposit type, geological unit, deposit size, and mineral potential.

The digital files should be consulted to resolve boundary edges on overlapping regions. No attempt was made to quantify or rank mineral prospectivity or potential.

**Producer:** a mineral concentration from which ore grade material is being extracted. Public and private surface deposits for material extraction are included for completeness and are labelled as industrial pits.

**Past producer:** a mineral concentration from which ore grade material has been extracted in the past.

**Exploration project:** an exploration project with a mineral concentration that has been drilled or investigated and may warrant further exploration or development. May or may not have a mineral resource estimate.

**Prospective area:** an area generally favourable to host mineral occurrences and materials favourable for the exploration of mineral deposits. Prospective areas were qualitatively defined using geological unit extents from geological maps and 3D geological models and informed by mineral occurrence datasets, geochemical data, mineralogy data, resource estimates, mineral tenure agreements, and satellite imagery.

Detailed methodology, data sources, descriptions, and bibliography are provided in the AGS Information PDF document available for download with the map and digital files.

Digital files for this map and mineral occurrence data are available for viewing or download at <https://ags.agr.ca>, through the Alberta Interactive Minerals Map (AIMM) and on the AGS Data Portal.

Information related to minerals permits, leasing and maintenance can be found at [Alberta Energy and Minerals](https://albertaenergy.ca).

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**REFERRED REFERENCE FORM:** Alberta Geological Survey (2020): Minerals of Alberta; Alberta Energy Regulator / Alberta Geological Survey; AERAGS Map 655, scale 1:250 000.

## DESCRIPTIONS

The geological units mentioned here are described in the Alberta Table of Formations and the Bedrock Geology of Alberta and Surface Geology of Alberta maps which are available at the Alberta Geological Survey's website <https://ags.agr.ca>.

**AMMOLITE** has been extracted by surface collecting or open-pit mining for jewelry and specimen collection in the province since the 1990s. Currently, ammolite is extracted by mechanized open-pit mining near Lethbridge. Prospective areas for ammolite are the Upper Cretaceous Bearpaw Formation that beds along river valleys in southern Alberta.

**BENTONITE** has been mined west and southeast of Edmonton and near Drumheller for use as a drilling mud additive, foundry sand, iron ore pellets, pot waste in the steel industry, agricultural fertilizer, and as a soil amendment. Prospective areas for bentonite are the Wapiti Formation (the northwest Swan Hills project). Prospective areas for bentonite are in near-surface Upper Cretaceous Horseshoe Canyon, Bearpaw, Pasaskao, and Wapiti formations throughout Alberta.

**BUILDING STONE** is mined in west-central to southwestern Alberta. Rock types include shale, sandstone, granite, limestone, and dolomitic siltstone.

**CALCIUM/MAGNESIUM CHLORIDE** and associated compounds containing potassium and bromine are found in calcium-rich formation brines. Currently, calcium/magnesium chloride is extracted from brines pumped to the surface in the Middle Devonian Oldman River and Wapiti formations (the northwest Swan Hills project). Prospective areas for calcium/magnesium chloride include anti-icing, de-icing, dust control, road stabilization, and in manufacturing off-field fluids. Prospective areas for calcium/magnesium chloride are the Upper Devonian Bearpaw Group in southern Alberta, and the Middle Devonian Elk Group in north-central Alberta.

**CLAY** and **SHALE** were extracted at various times for manufacturing bricks, ceramics (e.g., pottery, and crockery), and lightweight aggregate. Today, clay and shale are mainly produced from surface industrial pits for construction and cement manufacturing near Edmonton and Calgary.

**COPPER** occurs in different types of deposits associated with other metals throughout Alberta. Copper-silver occurrences were found in stratobeds, stringer and disseminated occurrences in quartz, quartzarenite, and green argillite conglomerate of the Mesoproterozoic Grinnell Formation. Copper-silver occurrences are also found in the Middle Devonian Oldman River and Wapiti formations (the northwest Swan Hills project). Prospective areas for copper-silver are the Middle Devonian Elk Group in central Alberta, and the Middle Devonian Elk Group in north-central Alberta.

**DIAMONDS** are found in kimberlite and related ultrabasic alkaline rocks, which occur as clusters of pyrolytic and volcanoclastic rocks, as well as dikes and sills of Late Cretaceous to Paleogene age. Prospective areas for diamonds are the kimberlite fields in the Buffalo Head Hills and Calling Lake area, where alluvial diamond occurrences were previously found, as well as where the chemistry of kimberlite-indicator minerals such as garnet, clinopyroxene, olivine, limeite, and spinel, collected from glacial and alluvial sediments, suggest a nearby kimberlite source.

**FLY ASH** is the by-product of burning coal to generate electricity. Fly ash is available from electric utilities for use in the manufacturing of cement and concrete for building construction and cementing of oil and gas wells. Fly ash may also contain concentrations of rare-earth elements.

**GOLD** occurs in different types of deposits throughout Alberta. Gold occurs in placer deposits as very fine grains (i.e., flour gold) usually in association with other economic metals such as silver and platinum-group elements (PGE). placer gold is often found along a stretch of the North Saskatchewan River in the Edmonton area. Elsewhere in Alberta, gold occurs in active stream sediments in the Peace River, Athabasca, and Peace River Delta, and in gravel and sand in northern and central Alberta, and paleoplacer gold occurs in clastic sedimentary rocks in central and southeastern Alberta. placer gold is currently being recovered as a by-product of two oil sands projects in the Peace River Delta. Gold and other base metals, such as silver, occur in quartz-jadeite veins, stockworks, and masses, spatially related to granitoids or shear zones in metasedimentary rocks in northeastern Alberta. Prospective areas for gold-decorated lead-zinc deposits are reported in the Devonian Keg River Formation because mineralization is associated with the lead-zinc deposits in the Peace River Delta and the Lower Cretaceous Wapiti Formation northeast of Fort McMurray.

**GYPSTUM** deposits are widespread in the province and occur as extensive beds or lenses in Devonian and Triassic evaporite units. However, no development has occurred because of depth or remoteness of the resource. Prospective areas for gypsum are in near-surface Devonian Elk Point Group and Fort Vermilion Formation strata in central Alberta.

**HUMALITE** is extracted from sub-bituminous and sub-bituminous coal mines and processed into liquid and solid cinders and draining fluid additives. Prospective areas for humalite are in shallow coal zones of the Upper Cretaceous Horseshoe Canyon Formation in central Alberta.

**IRON-VANADIUM** iron-vanadium deposits were evaluated by industry in northwestern Alberta (Clear Hills project) for producing carboniferous iron powder and vanadium electrolyte. Several other iron-vanadium occurrences were found near the surface in the region surrounding the Clear Hills project. Prospective areas for the exploration of additional iron-vanadium iron-vanadium deposits are in the Upper Cretaceous Bearpaw and Head and Dunnigan formations in northwestern Alberta.

**LEAD-ZINC** occurrences were found in carbonate rocks at the border with British Columbia in southwest Alberta. Other occurrences in carbonate rocks were from core and gas wells in southwest Alberta. Prospective areas for lead-zinc deposits include Devonian carbonate platforms, stratigraphic traps, and lead-zinc-bearing carbonates in northwestern Alberta, Cambrian and Devonian carbonate platforms cropping out in the Rocky Mountain fold-and-thrust belt. The existence of hydrothermal dolomitization, spatially related to reefs or stratigraphic traps, is associated with lead-zinc deposits. Other types of lead-zinc occurrences were reported in siliciclastic rocks in the Mesoproterozoic Grinnell, Synder, and Sheppard formations in the mountains of southwestern Alberta. Alberta is considered prospective for lead-zinc because mineralization is associated with the lead-zinc deposits in the Peace River Delta and the Lower Cretaceous Wapiti Formation northeast of Fort McMurray.

**LIMESTONE** and **DOLOMITE** are mined from several locations in the Rocky Mountains, Foothills, and in the Fort McMurray area. Limestone is used to manufacture high-calcium quicklime (for cement), hydrated lime, pulverized limestone, screened limestone, building stone, and crushed rock aggregate. Dolomite is primarily used for aggregate, building stone, neutralizing agents, and as a source of limestone. Prospective areas for dolomite and limestone are in Cambrian-Triassic carbonate strata in the Rocky Mountains and Foothills, and in Devonian strata in northeastern Alberta.

**LITHIUM** is a dissolved constituent of some oil field brines in Alberta. After hydrocarbon extraction, the remaining lithium-rich brine is typically removed from the subsurface as wastewater. In western Alberta, lithium-bearing brines have been identified in the Middle to Upper Devonian Keg River Formation, Athabasca Group, and the Lower Cretaceous Wapiti Formation. Prospective areas for lithium are in the Cretaceous Keg River Formation and the Thetis Spray River Group and the Jurassic Fernie Formation contain lower lithium concentrations. However, these concentrations could become economically viable with improved extraction techniques.

**MAGNETITE** and other heavy minerals, such as titanium dioxide, occur in sand and gravel deposits along riversides and in glacial outwash plains (e.g., the Peace River and Calling Lake). The Burns project area located in the Foothills has been explored as a potential source of iron ore for steelmaking, and magnetite for use in the coal industry. The Pelican Mountain project area was explored as a source of titaniferous magnetite for aggregate, phosphate, and heavy minerals in the Upper Cretaceous Belly River Group