
























PAST PRODUCERS			
Annulite		Lead-zinc-silver	
Bentonite		Limestone and/or dolomite	
Building stone		Mari 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	<p>A Buffalo Head Hills</p> <p>B Calling Lake</p>
Iron-vanadium	<p>C Rambling Creek-North Whitemud River ^a</p>
Limestone and/or dolomite	<p>D Baseline Ridge</p> <p>E Brazeau</p> <p>F Inlandside Mountain</p>

SELECTED PROSPECTIVE AREAS

Am	Ammolite	Mt	Magnetite
Bn	Bentonite	Mc	Metallurgical coal
Cc	Calcium/magnesium chloride	Ph	Phosphate
Cu	Copper	P	Potash

Basemap Legend

Urban area	
City	
Park and protected area	
Major road and highway	
Railway	
River	

Fundamentally, this map serves as an updated version of AGS Map 590, 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 590. Additionally, new datasets, both published by the AGS and released to the public by industry, have refined the understanding of mineral potential in the province which prompted an update of the selected prospective areas information on the map.

Producer: a mineral concentration from which ore grade material currently is being extracted. Public and private surficial dispositions 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.

Prospective area: a region geologically favourable to host mineral occurrences and therefore, 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 Map 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.aer.ca>, through the Alberta Interactive Minerals Map (AIMM) and on the AGS Oreg Data Portal.

Information related to minerals permits, leasing and maintenance can be found at [Alberta Energy and Minerals](#).

AMMOLITE has been extracted by surface collecting or open-pit mining for jewelry and specimen collection in the province since the 1960s. Currently, ammolite is extracted by mechanized open-pit mining near Lethbridge. Prospective areas for ammolite are the Upper Cretaceous Bearpaw Formation shale beds along river valleys in southern Alberta.

BENTONITE has been mined west and southeast of Edmonton and near Drumheller for use

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

CLAY and SHALE were extracted at various times for manufacturing bricks, ceramics (e.g., tile, 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.

DIAMONDS are found in kimberlite and related ultrabasic alkaline rocks, which occur as clusters of pyroclastic and volcanoclastic rocks, as well as dikes and sills of Late Cretaceous to Paleocene age. Prospective areas for diamonds are within the known diamond-bearing 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, ilmenite, and chromite), collected from glacial alluvial sediments, suggest a nearby kimberlite source.

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 northern Saskatchewan River near Edmonton. Elsewhere in Alberta, placer gold occurs in active streambed sediments in the Peace, Athabasca, and Red Deer rivers and preglacial sand and gravel in northern and central Alberta, and paleoplacer gold occurs in clastic sedimentary rocks in central and southwestern Alberta. Placer gold is currently being recovered as a by-

GYPSUM 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 the northeast.

HUMALITE is extracted from open-pit, sub-bituminous coal mines and processed into liquid

IRON-VANADIUM Ironstone deposits were evaluated by industry in northwestern Alberta (Clear Hills project) for producing carbonyl iron powder and vanadium electrolyte. Several other iron-rich ironstone occurrences were found near the surface in the region surrounding Clear Hills. Prospective areas for the exploration of additional iron-vanadium ironstone deposits are in the Upper Cretaceous Bad Heart and Dunvegan formations in northwestern Alberta.

regional structures, is another important factor when considering the prospectivity for carbonate-hosted lead-zinc deposits. Other types of lead-zinc occurrences were reported in siliciclastic rocks in the Mesoproterozoic Grinnell, Siyeh, and Sheppard formations in the mountains of southwestern Alberta. Alberta is considered prospective for lead-zinc because mineable lead-zinc deposits occur within equivalent stratigraphic units of the Western Canadian Sedimentary Basin in British Columbia and the Northwest Territories.

LITHIUM is a dissolved constituent of some oil field brines in Alberta. After hydrocarbon extraction, the remaining lithium-rich brine is typically reinjected into the subsurface as wastewater. In western Alberta, lithium brines have been identified in the Middle to Upper Devonian Swan Hills Formation, Upper Devonian Leduc and Nisku formations, and Wabamun Group. Upper Devonian aquifers extend across geological formations known in some cases, by the northern, eastern and southern margins of the Middle Devonian Kanabik Formation.

MARL and/or TUFFA are mined in Alberta for cement and agricultural liming. Both marl and tuffa contain calcium bicarbonate derived from glacial drift or bedrock; marl generally forms in

PEAT has been harvested in Alberta for horticultural purposes since the 1960s. 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 material.

PHOSPHATE occurs in sedimentary rock beds that may extend over tens to hundreds of kilometres along the Rocky Mountains and Foothills. Prospective areas are in the Upper

RARE-EARTH ELEMENTS (REEs) are documented in various alkaline granite and pegmatite units in the Canadian Shield. Rare-earth elements also occur as a secondary commodity in other mineral deposits such as phosphate and Zn-V-Ni-REE black shales. Prospective areas for intersections that warrant further exploration near Provost.

SALT is used for de-icing, water softening, and preserving food product. Salt is also extracted to create artificial caverns for storage of petroleum products by the upstream petroleum industry in east-central and northeastern Alberta. Productive areas for salt production and the creation of caverns are in the Lower-Middle Devonian lower and upper Lotsberg, and Prairie Evaporite formations in northeastern and east-central Alberta.

SILICA SAND is produced from Lower Cretaceous sandstone in the Peace River area and from unconsolidated sand deposits northeast of Edmonton. Industrial uses include glass, fiberglass, and proppant (for hydraulic fracturing). Prospective areas for silica sand are in the Lower Cretaceous Paddy Member of the Peace River Formation in the northwest, silica-rich unconsolidated sand deposits at shallow depths in central Alberta, the Lower Cretaceous McMurray, Grand Rapids, and Pelican formations in the northeast, and sand dunes and

conventional natural gas, crude bitumen, crude oil, and coal. Current production is largely derived from hydrogen sulphide (H₂S)-rich natural gas. Oil sands deposits also contain significant amounts of sulphur, which is either recovered during upgrading in the form of elemental sulphur or remains in the coke.

TITANIUM-ZIRCONIUM-RARE-EARTH ELEMENTS naturally occur in small quantities in oil sands, but they are concentrated during the bitumen extraction process and can potentially be

project where historical pilling intersected a high-grade uranium zone in the Late Paleoproterozoic Fair Point Formation, along the Maybelle River shear zone and above the unconformity between the Athabasca Group and basement rocks. Since large, mineable, unconformity-related uranium deposits occur in the Athabasca Basin in Saskatchewan, it is expected that similar deposits may also occur in the Alberta side of the basin. Prospective areas for unconformity-related uranium deposits are in the Late Paleoproterozoic–Early Mesoproterozoic Athabasca Group or underlying basement rocks, particularly along shear

ZINC-VANADIUM-NICKEL-RARE EARTH ELEMENTS occur in thin metalliferous horizons laterally extensive organic-rich marine black shale. Other metals present include copper, cobalt, uranium, and silver. The Buckton near-surface deposit in the Upper Cretaceous Coudewitz Shale, Brandon Formation south of Fort McMurray, was initially for vanadium, nickel and by-products, such as petroleum coke and petroleum coke fly ash, during the bitumen upgrading process for both mined and in situ oil sands production.

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