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# SHAMBHALA 2024 EXPLORATION

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Phase 1B soil sampling and geological mapping summary



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## Shambhala Area Summer 2024 Exploration

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### Executive Summary

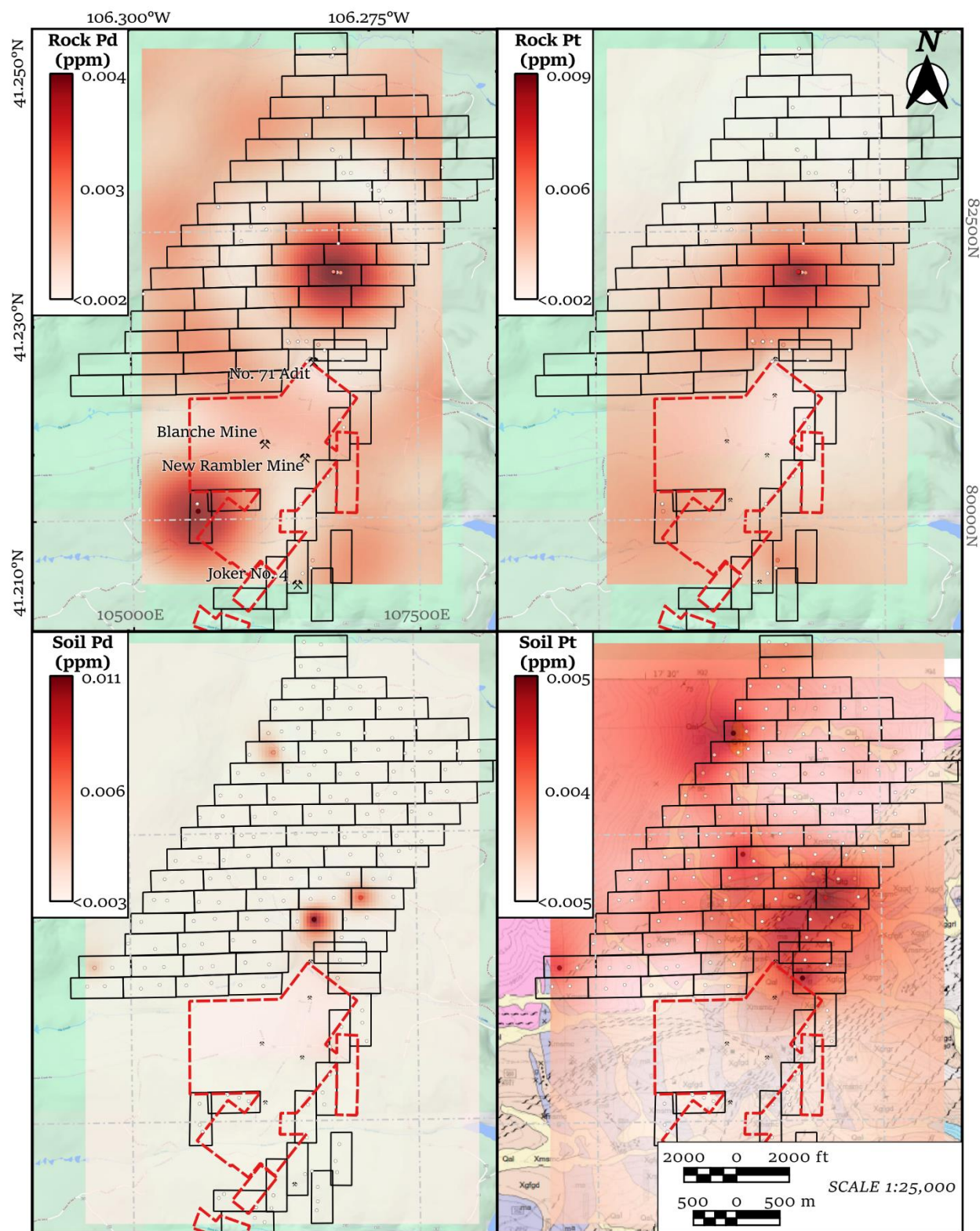
The following document summarizes BYRG's 2024 field exploration campaign in the Shambhala Project claims area (herein referred to as the project) near the historic Cu-PGE New Rambler mine in the Medicine Bow Mountains, southeastern Wyoming. The deposit is one of very few hydrothermal PGE systems in the world and is hosted in complexly deformed and altered rocks of the Paleoproterozoic Colorado Province in southern Wyoming. Summer 2024 exploration sought to expand on surface geochemical modeling results from 2023 soil sampling in addition to a high-resolution investigation of the exposed bedrock through geological mapping and sampling.

### Surface Sampling 2023 Summary

Geologic investigation of the project in summer 2023 revealed a complexly and variably deformed bedrock geology consisting of predominantly metaigneous rocks and lesser amounts of metasedimentary rocks. Mining shafts and prospect pits in the area focus on variably deformed and intensely altered-to-gossanous metamorphosed mafic-to-ultramafic host rocks. These foliations define many narrow and intense structural or shear zones that occur throughout the area. In total, 64 rock and 176 soil samples were collected and sent to American Assay Laboratories ("AAL"), Inc., in Sparks, Nevada for multi-element, gold, and platinum group element ("PGE") analyses.

Following geostatistical analyses of the returned surface sample assay data, two geochemical anomalies (Figure 1) in the Shambhala Project were identified as meriting further investigation: (1) a base metal hotspot spatially coincident with altered mafic-to-ultramafic rocks just north (~1,400 ft) of the Shambhala 71 adit; and (2) a sharp geochemical discontinuity that represents a roughly southwestern to northeastern break in geochemistry and geology. This break is currently interpreted to be a shear zone or sharp contact between older, intensely deformed mafic-to-ultramafic rocks and younger granitic rocks, or some combination of the two, i.e., a contact that was exploited as a structural weakness upon tectonic forcings.

These identified anomalies will be geographically refined with the assay results of Phase 1B soil samples and mapping activities herein. Phase 1B sampling will offer higher spatial resolution and a more in-depth geologic investigation of both anomalies, particularly the hotspot, thereby improving interpolation model precision, smoothing, and geologic interpretations. Ultimately, these sampling efforts will provide valuable insight into the best places to conduct surficial diamond core drilling during Phase 2 exploration, which we have tentatively planned for summer, 2025.



EPSG: 3857 -- 2,500 ft grid ticks via NAD83 WY State Plane -- Basemap from Google

Figure 1 Rock and Soil Pd and Pt ordinary kriging heat maps.

## Phase 1B Soil Sampling

The goal of Phase 1B soil sampling is to improve the resolution of the anomalies identified with 2023 surface sampling to inform future surface drilling. To do so, a total of 167 soil samples were collected from 161 unique localities between June 10th and June 27th, 2024. Six duplicate soil samples were collected as well to maintain quality control and quality assurance. Soil samples were approximately 500 g each and collected from roughly 1 ft by 1 ft holes dug with a steel shovel. A photograph and GPS location of each sampling location was obtained with StraboSpot™. Care was taken to remove organic matter such as sticks and leaves, clean the shovel between samples, and to not collect samples on roads, in standing water, or where the ground surface was highly saturated. Samples were geologically described and placed into plastic bags with a unique numeric sample number. Overall, the collected soil samples can be described as tan-to-brown-to-amber, dominated by clays with subordinate silt, poorly sorted with coarse sand and fine gravels. The bedrock underlying the sampled area (Figure 2) exposed numerous units, including amphibolite, pyroxene amphibolite, metadiabase, and multiple granites ranging in composition from monzonite-to-luxullianite.

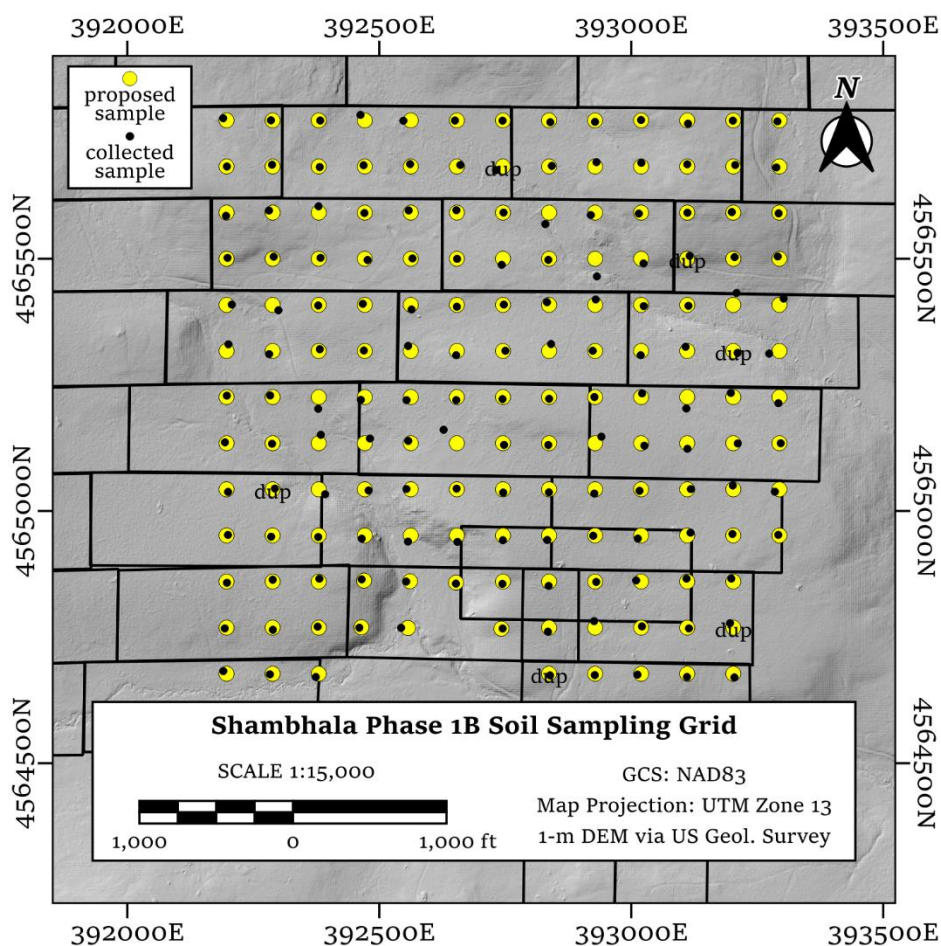


Figure 2 Phase 1B soil samples (black) overlain atop originally proposed 300 x 300 ft sampling grid. Duplicated samples are labeled "dup."



Collected soil samples were shipped to American Assay Laboratories, Inc., in Sparks, NV. Each soil sample was analyzed for platinum group elements (IM-NF5) as well as a suite of 26 major, minor, and trace elements (IM-4AB26). Soil sample assay results were delivered to us in late August and the data are currently being processed and analyzed. Overall, the results are promising as several soil samples contain anomalous (for soils) levels of platinum group elements, particularly Iridium, Platinum, Palladium, and Rhodium (Figure 3). These soils are interpreted to represent bedrock geochemistry at depth, modeling their elemental concentrations once a thorough geostatistical analysis is completed will strongly refine the formerly identified anomalies and ideally guide drilling plans for next season.

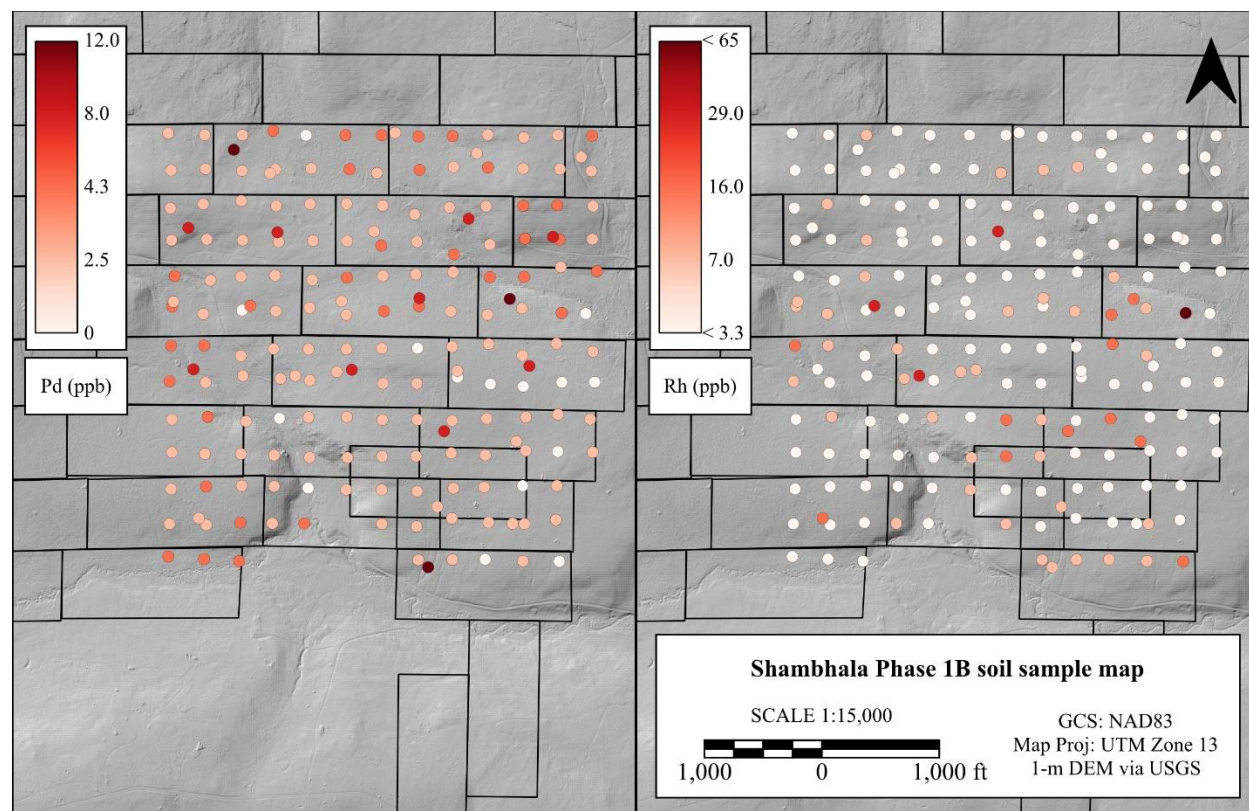


Figure 3 Phase 1B soil samples displayed by raw assay Pd and Rh values in parts per billion.

The return soil assay data will be filtered, processed, and geostatistically analyzed using R studio. The data will ultimately be modeled either through inverse distance weighted or ordinary kriging methods to produce heat maps like those generated last year (Figure 1). These heat maps will be used in conjunction with available geologic maps and geophysical data to pinpoint prospective drilling areas next season.

### USGS Aeromagnetic Survey

The United States Geological Survey have recently made their 2023 aeromagnetic and airborne radiometric surveys public as part of the Earth MRI program. These new data have already been immensely useful as they will allow us to skip a ground magnetic survey, which would have otherwise been our first means of geophysical examination of the project. The aeromagnetic data indicates the presence of what may be several highly magnetic bodies, which could correspond

with copper and PGE mineralization. Based on the data, it appears as if the New Rambler mine itself as well as the Joker No. 4 shaft and other historic prospects within our claims area coincide with these magnetic highs. If mineralization is in fact associated with the presence of highly magnetic minerals (e.g., magnetite, pyrrhotite, marcasite, etc..) then this aeromagnetic data will certainly be used to adjust and expand our claims package while informing future geophysical surveying locations. We tentatively plan to conduct future IP surveys in the areas of magnetic highs (Figure 4).

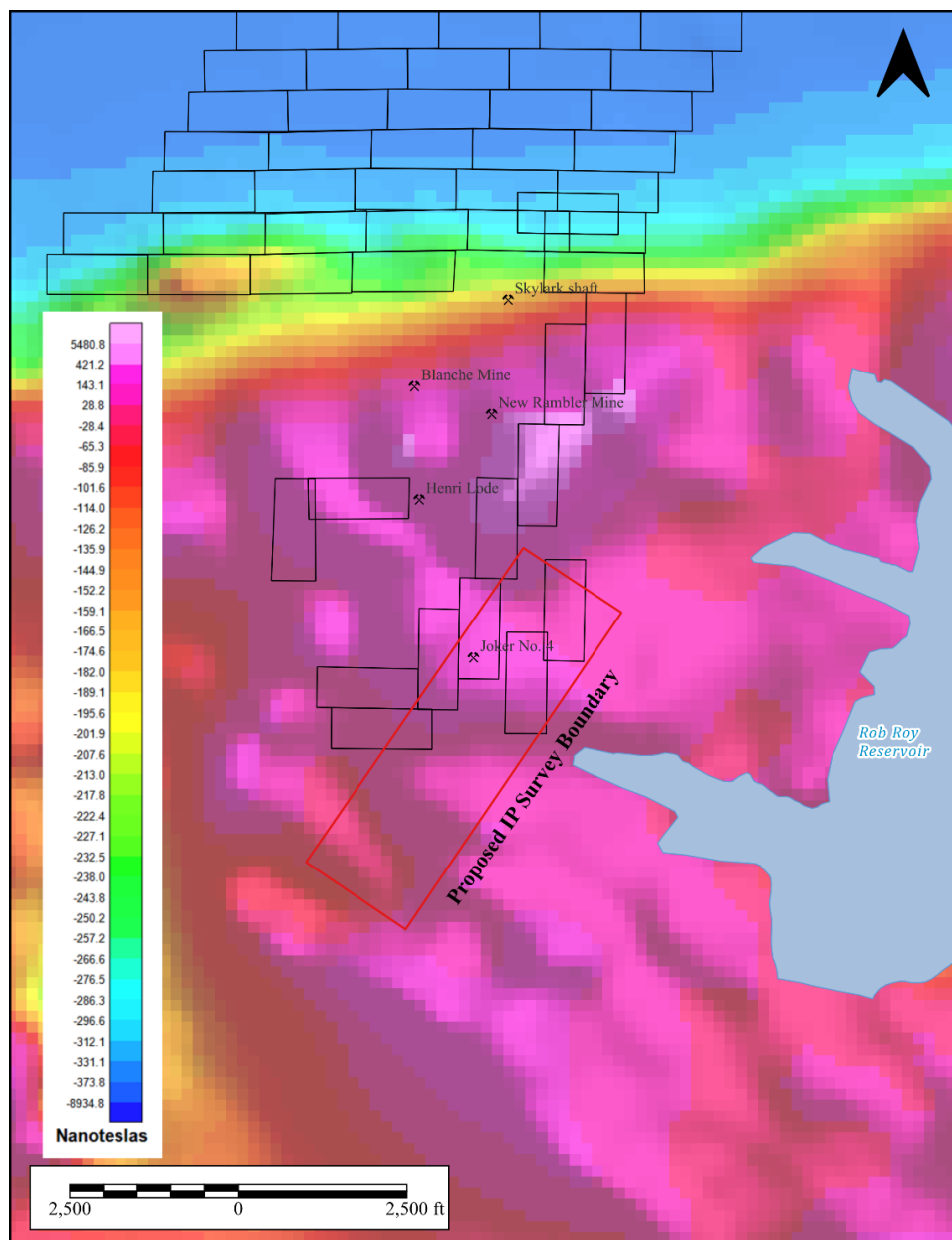


Figure 4 Map of proposed IP survey boundary overlain on the project claims and 2023 USGS aeromagnetic data (in nanoteslas, rotated to pole); historic mines are labeled by the black mining symbols.

## Phase 1B Geological Mapping

Geologic mapping of the areas near identified geochemical anomalies is the best means of investigating their validity, geometry, and mineralogic qualities. Currently, the highest-resolution map of the Shambhala claims area is the 1:24,000 scale Preliminary Geologic Map of the Keystone Quadrangle, Albany and Carbon Counties, Wyoming (Hausel & Sutherland, 2005). While effective at illustrating regional features and bedrock geology, the Keystone Quadrangle geologic map lacks sufficient detail for mineral exploration. Furthermore, following a comprehensive on the ground investigation of the exposed bedrock geology, there are several areas mapped incorrectly with regards to lithology and the orientation (and presence) of structures.

Over the course of several months during Summer 2024, a high-resolution geological mapping effort was undergone at the project. A finalized geologic map of the New Rambler area is still in prep., and much was learned by campaign. The bedrock geology of the project area consists of multiple units, from youngest to oldest these are:

- **Amphibole microgranite** – fine grained, hornblende granite-monzonite.
- **Biotite granite-monzonite** – fine-to-coarse grained, biotite granite, massive to weakly foliated.
- **Luxullianite** – fine-to-coarse grained, tourmaline-rich granite.
- **Rambler granite** – mylonitic, silicified, medium-to-fine grained granite proximal to New Rambler workings, mostly seen in tailings/workings, not exposed on the surface.
- **Quartzofeldspathic gneiss** – formerly mapped as the Horse Creek foliated granodiorite, still unclear whether that unit and this gneiss are correlative. Overall, a planar-to-ptygmatic gneiss with localized migmatite.
- **Mullen Creek Mafic Complex** – encompasses the following units, generally described as an amalgamation of variably deformed and altered mafic-to-ultramafic rocks.
  - **Metadiorite** – epidotic-chloritic metadiorite, locally gneissic with augen-gneiss like textures, commonly very fine grained
  - **Metabasalt** – chloritic, very fine grained
  - **Metadiabase** – epidotic-chloritic, fine-to-medium grained, locally altered
  - **Amphibolite** – massive-to-gneissic amphibolite, some intermingled felsic intrusions with localized metaporphyritic lenses.
  - **Metagabbro** – massive, medium-to-coarse grained with anorthitic feldspar, only exposed in New Rambler tailings (on private property, investigated and sampled with landowner permission)
  - **Amphibolitized pyroxenite** – massive-to-brecciated (magmatically) pyroxene amphibolite with localized patches or lenses of metapyroxenite. Intensely epidotic-chloritic and variably mylonitized.
- **Biotite quartz gneiss** – well-indurated to weakly friable biotite-quartz gneiss with lesser epidote and feldspar. Locally folded and intensely altered, several “rafted” bodies of this unit are entrained in the Mullen Creek Mafic Complex, where these are observed they are highly gossanous and decomposed.

Generally speaking, the project area is dominated by the younger granitic-monzonitic units in the northern part of the project, and the southern area is dominated by an intensely and complexly

deformed amalgamation of Mullen Creek Mafic Complex rocks in structural and/or intrusive contact with intensely deformed gneissic rocks (Figure 5). The dominant structural fabrics in the area are a regional tectonometamorphic foliation (gneissic foliation) and localized mylonitic foliations that are interpreted to define larger shear zones that constitute the regional Cheyenne Belt, which is a major Precambrian suture between the Archean Wyoming and Paleoproterozoic Colorado Provinces (Chamberlain, 1998; Duebendorfer, 1988; Duebendorfer & Houston, 1986, 1987; Jones et al., 2010, 2011; Karlstrom & Houston, 1984; McCallum, 1974; McCallum et al., 1976; Sullivan et al., 2011; Sullivan & Beane, 2013). The gneissic foliations in the area strike and dip variably, sometimes steeply to shallowly, and are predominantly east-west striking and subvertical in the vicinity of the major contact between northern granitic rocks and the southern package of rocks, this discontinuity in lithology is plainly observed in the aeromagnetic data as well (Figure 4). Measurements of mylonitic foliations are more consistently east-west and steeply to subvertically dipping, this agrees well with the mapped orientation of the more regionally exposed Rambler shear zone, which is an eastern-striking splay of the Cheyenne Belt (Hausel & Sutherland, 2005; McCallum et al., 1976).

Geologic mapping within the vicinity of the phase 1B soil sampling boundary revealed the bedrock there to be mostly comprised of amphibolite with localized metapyroxenite. In McCallum et al. (1976), it was found that metapyroxenite in the New Rambler area consistently contained elevated PGEs and base metals in comparison to the other units (McCallum et al., 1976; McCallum & Orback, 1968). It is therefore currently interpreted that the source of the precious and base metal hotspot in the northern claims area is exposed metapyroxenite. Furthermore, this outcrop of pyroxenite exposes discrete mylonitic shear zones that may serve as conduits for mineralizing fluid flow, if these structures become more significant at depth (in terms of width), then they will make for viable drilling targets to be explored next field season. Further insight into the distribution of this unit as it relates to surficial geochemistry will be assessed upon completion of geologic map interpretation and phase 1B soil sample modeling.

Mineralization in the project area seems to coincide with the development of intense gossan (Figure 5C and 5D), and can be surmised as massive sulfides, native copper, and native gold in addition to various platinum group minerals described in McCallum et al. 1976. Visible economic mineralization was mostly witnessed in historic tailing piles in the southern part of the project, most notably in the “trident” or “three fingers” just west of the project claims and in the Joker No. 4 shaft area and areas immediate to it. Figures 5C and 5D display massive-to-disseminated-to-veinlet style sulfide and native metal mineralization in the Joker No. 4 shaft area. Mineralization is hosted in intensely altered, gossanous metadiabasic rocks interpreted to be a part of the Mullen Creek Mafic Complex. Near these historic workings are small outcrops of massive amphibolite and variably epidotized, strongly deformed gneissic rocks including the quartzofeldspathic gneiss and biotite quartz gneiss. Five representative samples of the Joker No. 4 tailings pile were collected and sent to American Assay Labs for Au, PGE, and multi-element analysis. We are eagerly anticipating these results. In addition to these samples, 35 other samples were collected for geochemical, petrographic, and structural analyses and research. These samples will be prepped and worked on at the University of Wyoming by PhD student Justin Mistikawy (this author) and the economic geology group led by Dr. Joseph Biasi. This research will be used to investigate the petrogenesis of PGEs in the project area, thereby informing future exploration on site and beyond.





Figure 5 (A) Hematite alteration in intensely weathered amphibole microgranite from northern project area; (B) Magmatic flow banding in luxullianite from northern project area; (C) Gossanous sulfidic metadiabase from the Joker No. 4 shaft (for location refer to Figure 4); and (D) Massive chalcopyrite (bronze-ish mineral) in a quartz vein hosted in silicified metadiabase from an unnamed tailings pile ~2,000 ft southeast of the Joker No. 4 shaft. Mineral abbreviations: Cpy – chalcopyrite, Py – pyrite, and Qtz – quartz.

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