Gold Commissioner's Office VANCOUVER, B.C.

Assessment Report for the

## Sanca Creek Property

Nelson Mining Division
N. T. S. 82 F/7

Latitude: $49^{\circ} 25^{\prime} \mathrm{N}$, Longitude: $116^{\circ} 43^{\prime} \mathrm{W}$
for


June $1^{\text {st }}, 2005$

## SUMMARY

The Sanca Creek property is located on the east side of Kootenay Lake and overlies the northern contact of the Sanca Stock / Mount Skelly Pluton with metamorphosed sedimentary host strata of Proterozoic age. The three phase intrusive complex consists of fine- to coarse-grained granites correlated to the Cretaceous Bayonne Magmatic Suite. The granite has local iron-stained veins with variable amounts of iron sulphide, predominantly as pyrite. The veins appear to occupy apparent discontinuous brittle shear zones which trend essentially north-south $\left( \pm 20^{\circ}\right)$.

Sedimentary strata are present along Akokli Creek at the northern contact with the Sanca Stock / Mount Skelly Pluton and as a pendant located at the mouth of Sanca Creek. The sediments are strongly iron stained and metamorphosed. The strata, as mapped, have been correlated to Proterozoic sediments ranging from the Purcell Supergroup (middle Creston Formation) to the Windermere Supergroup (Horsethief Creek Group).

A number of Minfile occurrences are present within, or immediately adjacent to, the Sanca Creek property, with mineralization reportedly comprised of sulphides hosted by generally north-south trending faults, fractures and/or veins. The best described are located on the Valparaiso Crown Grant, which trend onto the immediately adjacent Government claims. This vein system consists of the Valparaiso and Sarah $2^{\text {nd }}$ veins, which are sub-parallel to one another and have been discontinuously exposed over approximately $1,500 \mathrm{~m}$. Mineralization is described as consisting of variable quantities of sulphides, including pyrite, arsenopyrite, sphalerite, galena, chalcopyrite, occurring with wolframite in a quartz gangue. High grade values have been documented in arsenic, silver, gold, tungsten $\pm$ lead $\pm$ zinc. The veins appear to be well developed, hosted within granite of the Sanca Stock and trending approximately $015^{\circ} / 35^{\circ}$.

Recent work on mineralization associated with intrusions has resulted in the Intrusion-Related Gold (IRG) Model. Examples include numerous examples in Alaska (i.e. Fort Knox, Pogo) and continue southeastward through the Tintina Gold Belt. Several occurrences in B.C. have been examined in a preliminary manner to evaluate Intrusion-Related Gold potential, including the Baldy Batholith and the Mt. Skelley Pluton. With reference to this model, elevated As, $\mathrm{Bi}, \mathrm{Sb}, \mathrm{W}$ are considered as "pathfinder" elements for potential IRG deposits. In this context, the locally moderately to highly anomalous $\mathrm{Bi}(\leq 344 \mathrm{ppm})$ and $\mathrm{W}(\leq 7100 \mathrm{ppm})$, associated with high grade arsenic ( $1.02 \%$ ) and gold $(14.4 \mathrm{~g} / \mathrm{t}$, or $0.42 \mathrm{oz} / \mathrm{t})$ in mineralized veins within a granitic intrusion is of potential interest. Furthermore, the Sanca Stock and Mount Skelly Pluton are of Cretaceous age with a prominent magnetic halo, both features characteristic of many occurrences along the Tintina Gold Belt. Several locations, including many of the documented MINFILE occurrences, may be compatible with an IRG-type model, particularly those associated with the northwestern lobe (Sanca Stock) of the exposed granitic phases.

The 2004 field program was limited to acquisition of a preliminary suite of soil and silt samples along predominantly east-west transects, approximately perpendicular to the structural trend of both the host sediments and mineralized veins.

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## INTRODUCTION

The Sanca Creek property is located on the east side of Kootenay Lake (Fig. 1 and 2) and overlies the northern contact of the Sanca Stock / Mount Skelly Pluton (Fig. 3) with metamorphosed Proterozoic sedimentary host. The three phase intrusive complex (Logan and Mann 2000) consists of fine- to coarse-grained granites correlated to the Cretaceous Bayonne Magmatic Suite. Near contacts with sedimentary strata, the granite appears to be both finer grained and perhaps more mafic, having a darker colour. In addition, there are more xenoliths of (an) earlier phase(s) of intrusive material and rounded sedimentary inclusions, ranging from several centimetres to several tens of metres in long dimension. Phenocrysts of alkali feldspar are present, ranging in size from less than a centimetre to approximately 2 centimetres in diameter, within a matrix of plagioclase feldspar, quartz and biotite $\pm$ hornblende. The granite has local iron-stained veins with variable amounts of iron sulphide, predominantly as pyrite. The veins appear to occupy apparent discontinuous brittle shear zones which trend essentially north-south ( $\pm 20^{\circ}$ ).

Sedimentary strata have been mapped along Akokli Creek at the northern contact with the Sanca Stock / Mount Skelly Pluton and as a pendant located at the mouth of Sanca Creek (Logan and Mann 2000). The sediments are strongly iron stained and metamorphosed. The strata, as mapped, have been correlated to Proterozoic sediments ranging from the Purcell Supergroup (middle Creston Formation) to the Windermere Supergroup (Horsethief Creek Group).

A number of Minfile occurrences are present within or immediately adjacent to the Sanca property (Fig. 3), including the Country Girl, Gold Basin, Vancouver, Iolanthe, Lakeview, Royal, Sarah $2^{\text {nd }}$, Government and Valparaiso (see descriptions in Appendix D). Mineralization, as described, consists of sulphides hosted by generally north-south trending faults, fractures and/or veins. The best described are located in surface and underground workings on the Valparaiso Crown Grant, which trend onto the adjacent Government Crown Grant and are completely surrounded by claims comprising the Sanca Creek property. This vein system consists of the Valparaiso and Sarah $2^{\text {nd }}$ veins, which are sub-parallel to one another and have been discontinuously exposed over approximately $1,500 \mathrm{~m}$. Other veins may be present, including two airphoto linears reported between the Valparaiso and Sarah veins, and mineralization reported on the Royal MINFILE occurrence.

A number of Minfile occurrences are present within, or immediately adjacent to, the Sanca Creek property, with mineralization reportedly comprised of sulphides hosted by generally north-south trending faults, fractures and/or veins. The best described are located on the Valparaiso Crown Grant, which trend onto the immediately adjacent Government claims. This vein system consists of the Valparaiso and Sarah $2^{\text {nd }}$ veins, which are sub-parallel to one another and have been discontinuously exposed over approximately $1,500 \mathrm{~m}$. Mineralization is described as consisting of variable quantities of sulphides, including pyrite, arsenopyrite, sphalerite, galena, chalcopyrite, occurring with wolframite in a quartz gangue. High grade values have been documented in arsenic, silver, gold, tungsten $\pm$ lead $\pm$ zinc. The veins appear to be well developed, hosted within granite of the Sanca Stock and trending approximately $015^{\circ} / 35^{\circ}$.




Figure 3 - Property Geology Map for southern claims (Sparky 9 and 10) with claims indicated. (Scale $1: 54,277$ ). Taken from the provincial MapPlace web-site.

Recent work on mineralization associated with intrusions has resulted in the Intrusion-Related Gold (IRG) Model. Examples include numerous examples in Alaska (i.e. Fort Knox, Pogo) and continue southeastward through the Tintina Gold Belt. Several occurrences in B.C. have been examined in a preliminary manner to evaluate Intrusion-Related Gold potential, including the Baldy Batholith and the Mt. Skelley Pluton. With reference to this model, elevated As, Bi, $\mathrm{Sb}, \mathrm{W}$ are considered as "pathfinder" elements for potential IRG deposits. In this context, the locally moderately to highly anomalous $\mathrm{Bi}(\leq 344 \mathrm{ppm})$ and $\mathrm{W}(\leq 7100 \mathrm{ppm})$, associated with high grade arsenic ( $1.02 \%$ ) and gold $(14.4 \mathrm{~g} / \mathrm{t}$, or $0.42 \mathrm{oz} / \mathrm{t})$ in mineralized veins within a granitic intrusion is of potential interest. Furthermore, the Sanca Stock and Mount Skelly Pluton are of Cretaceous age with a prominent magnetic halo, both features characteristic of many occurrences along the Tintina Gold Belt. Several locations, including many of the documented MINFILE occurrences, may be compatible with an IRG-type model, particularly those associated with the northwestern lobe (Sanca Stock) of the exposed granitic phases.

The 2004 field program was limited to acquisition of a preliminary suite of 335 soil and 6 silt samples along predominantly east-west transects, approximately perpendicular to the structural trend of both the host sediments and mineralized veins. Soil samples included in this report were collected from the "B Horizon" along active and inactive logging roads south of Sanca Creek, extending south from the highway to Twin Bays Creek.

Samples were submitted to Acme Analytical Laboratories for processing using the SS80 package and analysis using the Group 1EX package. Partial results are plotted on Figure 5 and 6, using the $1 ; 20,000$ provincial TRIM base.

## LOCATION AND ACCESS

The property is located along the east side of Kootenay Lake (Fig. 1 and 2), approximately 40 kilometres north of Creston, BC. The property is comprised to two separate claim blocks which, together, extends from the community of Kuskanook (Fig. 3), north to Akokli Creek. The centre of the claim group lies at approximate coordinates $49^{\circ} 25^{\prime} \mathrm{N}$ latitude and $116^{\circ} 43^{\prime} \mathrm{W}$ longitude on N.T.S. mapsheet 82 F/7E in the Nelson Mining Division.

The claims can be accessed by four wheel drive vehicle along existing logging roads from Highway 3A, north of Kuskanook and south of Boswell (Fig. 3 and 4). Overgrown logging roads at mid- to upper elevations can be utilized to access the Valparaiso vein system from a logging road along the south side of Akokli Creek immediately east of Columbia Point. The lower logging road also ties into a system of logging road at higher elevations on the south side of Akokli Creek, east of the Valparaiso workings, to provide access to German Basin. Well developed and maintained logging roads are present on both sides of Sanca Creek and provide ready access for two wheel drive vehicles along Sanca Creek and the western portion of claims south of Sanca Creek. Many of the logging roads to higher elevations north of Sanca Creek are in poor to moderate condition for four wheel drives vehicles, but can still be utilized by ATV's (i.e. to access workings of the Vancouver MINFILE occurrence).

## PHYSIOGRAPHY AND CLIMATE

The topography of the claims consists of steep slopes at lower to middle elevations (Fig. 3 to 5) with low to moderate relief at higher elevations. Ridges, however, consist of very steep slopes and belts of cliffs between drainages. Topography ranges from 540 metres along Kootenay Lake to 2,420 metres north of Sanca Creek.

Vegetation at mid- to upper elevations along west- and south-facing slopes consists of moderately open coniferous forest cover with sparse to moderate undergrowth. At lower elevations, and along the north-facing slopes of Sanca and Akokli Creeks, denser forest cover accompanied by dense undergrowth is present. Undergrowth consists of shrub willows, slide alder and Devil's Club.

The claims are located on the east side of Kootenay Lake and are therefore subject to greater precipitation than slightly farther east. High altitude snow may persist into late June, particularly in north-facing exposures. The lower and middle elevation portions of the property can conceivably be worked from mid-May to late October.

## CLAIM STATUS

The Sanca Creek property consists of 9 4-post mineral claims, staked in accordance with existing government claim location regulations. Two additional tenures were acquired under Mineral Titles Online. All claim information was verified using the BC Government's Mineral Title website and is current as of this writing. The property comprises 191.28 units and encompasses a total area of approximately 4,782 ha ( 1,816 acres). The Sparky 9 and 10 comprise the southern claims (Fig. 3).

Significant claim data are summarized below:

| Tenure <br> Number | Claim <br> Name | Anniversary <br> Date |  |
| :--- | :--- | :--- | :--- |
| 390210 | JONDON 1 |  | Units |
| 390579 | JONDON 2 |  | 2007.10 .13 |

## PROPERTY GEOLOGY

The geology of the Sanca Creek property (Fig 3) is dominated by the Mount Skelly Pluton, which underlies approximately $70 \%$ or more of the area covered by the claims. Recently there has been limited mapping undertaken on the pluton as part of a regional study of the Bayonne Magmatic Belt (Logan 2002), with local sampling and mapping of the Mount Skelly Pluton and Sanca Stock (Lett et al. 2000, Logan and Mann 2000). Only minor geological mapping has been completed in localized areas on the Valparaiso / Government Crown Grants and a portion of the north side of Sanca Creek.

## Mount Skelly Pluton / Sanca Stock

A brief examination of lithologies comprising the Mount Skelly Pluton has been completed in the course of work completed on the property to date. The dominant lithology observed on the property, noted in the vicinity of the Valparaiso - Government workings and on both sides of Sanca Creek is
that of a biotite granite. In areas proximal to the mapped contact between the pluton and host sediments, the grain size is slightly reduced to that of a medium- to coarse-grained granite. At low to middle elevations along the eastern portion of Sanca Creek, the granite assumes a porphyritic texture due to the presence of megacrystic alkali feldspar phenocrysts. Individual, equant crystals of white to pinkish alkali feldspar phenocrysts up to 2 cm in diameter were noted in a finer grained matrix of medium- to coarse-grained white plagioclase and biotite $\pm$ hornblende. Xenoliths are rare to absent at deeper levels within the pluton, becoming more abundant and larger both at higher elevations and along Sanca Creek to the west. Xenoliths are predominantly sedimentary, however, inclusions of finer grained, more mafic granite were noted and may have been derived from an earlier phase of the intrusion or a separate, deeper intrusion altogether.

Recent mapping and geochronology by Logan and Mann (2000) have resolved the granite exposures of the Sanca Creek area into three separate phases, specifically, the Mount Skelly Pluton and the Sanca Stock. The Mount Skelly Pluton is further sub-divided into:

1) Granite - "Fine to medium grained, equigranular biotite monzogranite. Minor aphanitic, leucocratic phases and dikes", and
2) Granodiorite - "Coarse grained biotite-hornblende granodiorite. Common euhedral megacrystic potassium feldspar and mafic (hornblende-biotite-titanite-rich) inclusions. Biotite, K-AR dates of 97.1 to 98.7 Ma

The younger Sanca Stock is described as a "Medium to coarse grained biotite granodiorite. Characteristic coarse, sub-rounded violet to grey quartz crystal aggregates. Biotite, K-Ar dates of 78.9 to 80.9 Ma ".

Therefore, the granites of the Sanca Creek area (Fig. 3) can be differentiated into three phases, the older Mount Skelly Pluton (at 97.1 to 98.7 Ma ) and the younger Sanca Creek Stock (at 78.9 to 80.9 Ma). The only MINFILE occurrence documented within the older Mount Skelly Pluton is the ELMO (82FSE 137), comprised of "Multiple narrow, sheeted veinlets/fracture fillings of quartzmuscovite, molybdenum, scheelite and rare chalcopyrite. The veinlets occur in groups of up to 3-10 per meter ...". The remainder of the documented MINFILE occurrences are located within or immediately adjacent to the younger Sanca Stock.

## Sediments

Highly altered sediments are present north of the contact in Akokli Creek (Fig. 4) and within an interpreted pendant at the western end of Sanca Creek. The sediments can still be recognized due to the distinctly bedded nature and compositional contrasts between beds, however, they are locally strongly iron-stained and deeply weathered. Local occurrences of highly anomalous lead $+\mathrm{zinc} \pm$ copper were noted in hand sample, consistent with reported Minfile occurrences described on and in the vicinity of the property, as summarized below:

## Mineral Showings / Workings

The following descriptions have modified from Rice (1941) and Minfile descriptions:

## Lakeshore Group (082FSE010)

The Lakeshore mine is beside the main highway along the east side of Kootenay Lake about one-half mile south of Sanca Creek. The occurrence is located within a small roof pendant of much altered sediments at the northern termination of the Bayonne Batholith. Near the south edge of this roof pendant the sediments have been deformed by a zone of fracturing running roughly north at right angles to the contact.

About 300 ft from the granite a shaft has been sunk on this zone, beside the main highway. Below the road, $50-100 \mathrm{ft}$ vertically below the collar of the shaft, a crosscut adit has been driven cutting the fracture zone some 50 ft north of the bottom of the shaft and with which it is connected by a drift along the zone. Short sub-level drifts have been driven north and south off the shaft from about half-way down it.

Lenses of galena, sphalerite, and a little chalcopyrite and pyrite lie within a fracture zone from 10 to 20 feet wide. The fracture is associated with a porphyry dyke, with mineralization most frequently occurring as replacements of the dyke. Post-mineral faulting has shattered these lenses, and in places dragged out ore along the zone. The largest lens is near the collar of the shaft, where massive sulphides occur over a width of 3 to 4 feet and for about 20 feet both horizontally and vertically. In the sub-level drifts lenses are smaller and discontinuous. In the drift on the lowest level ore is confined to two narrow veinlets on the two walls of the fracture zone.

## Valparaiso Group (082FSE038)

The Valporaiso group is located on the east side of Kootenay Lake directly above Columbia Point. The principal deposit is a persistent, quartz-filled fissure in a lobe of the Bayonne Batholith near its contact with the sediments. Nowhere has the vein been traced into the sediments. It strikes roughly north and dips east about 45 degrees. It has been traced nearly continuously for 1,500 to 2,000 feet and varies in width from 1 to 25 feet. The average width is probably between 3 and 5 feet. It is mineralized with pyrite, arsenopyrite, chalcopyrite, sphalerite, and galena, but only the two former are abundant. The main value is in gold. Sulphides are everywhere scattered through the quartz, but occur principally in bands of almost solid sulphides from a few inches to a foot in width.

A shaft at the south end of the line of workings is in fair condition. For approximately 100 feet, it follows a quartz vein from 2 to 3 feet wide. About 600 feet north of this shaft is another cave shaft. The vein between the two is exposed by open-cuts. It is up to 5 feet wide, but beyond some pyrite and much limonite stain no metallic minerals were seen. For about another 600 feet the vein is exposed in a series of closely spaced open-cuts. It is from 1 to 5 feet wide and carries streaks of sulphides from a few inches to a foot in width. At the north end of this series a deep open-cut has been excavated in a wide part of the vein and exposes a band of solid arsenopyrite and pyrite from 6 to 8 inches wide.

Below this open-cut an adit crosscut has been driven for about 180 feet to intersect the vein. From the face of this crosscut a drift about 120 feet long has been driven north along the vein and one about 80 feet long south. The fracture in the north drift is about 3 feet wide and is partly occupied by a 2-foot quartz vein carrying 6 to 8 inches of solid pyrite and arsenopyrite. There is no diminution in the size or sulphide content of the vein in the face. The south drift is in barren looking material until the near the face. A foot or two before the face the vein is well mineralized, as if the beginning of another ore-shoot. Briefly in 200 feet of drift on the vein a little over 120 feet is well mineralized and 80 feet is low grade or barren.

To the north of these showings strong, mineralized fractures are exposed in a number of open-cuts and two short adits. These are too widely separated to determine if they all belong to a single vein. The quartz is much leached and stained and not much sulphide was seen. Other parallel veins are reported.

The work was completed to develop and expose mineralization within a persistent, quartz-filled vein system along the western edge of the Mount Skelly Pluton, south of Akokli Creek and near the contact with host sediments. The vein(s) strike roughly north, dip approximately $45^{\circ}$ east and has reportedly been traced nearly continuously for up to 600 metres along strike with variable width, ranging between 0.3 to 8 metres thick. The average width of the vein is reported to be between 1 and 1.5 metres, containing pyrite, arsenopyrite, chalcopyrite, sphalerite and galena. Highly anomalous values in gold have been reported, together with silver and tungsten.

## Gold Basin Group (082FSE039)

The property lies in German Basin on the south side of Akokli Creek at an elevation of 7,000 feet. The deposit consists of a quartz vein, exposed in the east wall of the cirque below the nidge crest, in the same granitic body as the Valporaiso, close to its contact with the sediments. It strikes roughly north and, near the surface, dips about 30 degrees west. The workings consist of a long adit driven from a point just above the floor of the basin, and a shorter adit higher up the vein. Several raises have been driven from these adits through to the surface. In addition to the underground workings, a line of open-cuts expose the vein on the surface for about 300 feet.

The vein in the open-cuts occupies a strong fracture in the granite and is from 3 to 8 feet wide. It apparently dies out where the fracture passes from the granite to the sediments. The quartz is milky white and contains scattered galena, pyrite, and chalcopyrite. Some orange-yellow scheelite (calcium tungstate) was seen. Gold is reported associated with the sulphides.

## Hope of Discovery Claims (082FSE044)

A lower tunnel was driven for approximately 140 feet along a quartz vein ranging from $21 / 2$ to 4 feet wide and "... mineralized with irregular disseminations, stringers, and bunches of pyrite and chalcopyrite and stains of copper carbonates". An upper tunnel is located approximately 40 to 50 feet above the lower tunnel and is approximately 35 feet in length. It was driven into the same quartz vein which is up to 4 feet wide and contains similar mineralization. "Grab samples from small piles of selected material derived from these workings assayed ..." up to 0.02 o.p.t. $\mathrm{Au}, 1.1$ o.p.t. Ag and
"The main mineral occurrence is at an elevation of 5,000 feet on the steep south slope of the mountain and is a galena-bearing quartz vein ranging in width from 1 inch to 2.3 feet over an exposed length of 200 feet. The vein strikes north 12 degrees west and dips 77 degrees east, and is in folded, thinly bedded white limestone of the Dutch Creek formation. At the upper or north end the vein pinches to a fracture, and at this point the white limestone merges with a less thinly bedded zone of blue-grey limestone. Galena occurs in bands and pockets within the quartz and in minor concentrations in the bedding planes of the limestone adjacent to the vein. Minor scattered disseminations of galena are in the blue-grey limestone beyond the end of the vein" (Minister of Mines Report 1956).

## Copper Canyon (082FSE045)

Reports of "ore" have been made from this occurrence, consisting of copper sulphides in a quartz gangue taken from a vein. Minor workings reportedly include two tunnels and several open cuts on the vein. These occurrences lie off the property, north of Akokli Creek

## Sarah $2^{\text {nd }}$ (082FSE055)

The Sarah $2^{\text {nd }}$ vein parallels the Valparaiso vein and is located approximately 200 metres higher. Old workings exposed the vein which consisted of rusty, locally honeycombed, quartz with irregular disseminated pyrite and galena mineralization with minor copper carbonate staining. Wolframite was also noted.

## Country Girl (082 FSE057)

An old tunnel is described, driven a short distance east along a silicified fractured zone in granite. Sparsely disseminated pyrite, zinc-blend (sphalerite) and galena is described, associated with quartz and apparently, in places, altering the host granite.

A showing is described from just below water-level (now probably deep underwater), comprised of quartz ( 4 feet wide) containing disseminated galena. A sample of this showing, taken from a small pile of ore, assayed: $0.03 \mathrm{oz} / \mathrm{t}$ gold, $2.3 \mathrm{oz} . / \mathrm{t}$ silver, $11.2 \%$ lead and $0.8 \%$ zinc. Another northstriking quartz vein was identified along the lakeshore to the south, between 18 and 24 inches wide comprised of irregular disseminations of galena.

## Iolanthe Group (082FSE058)

Workings near lakeshore consisted of two shallow shafts and minor trenching in south-east striking, east dipping quartzose mica-schist, talc-schist and quartzite. Pyrite-, sphalerite- and galena-bearing quartz stringers and veinlets are oriented parallel to the foliation in the metamorphosed sediments. A grab sample from a small pile of ore associated with the strongest mineralization in the vicinity
assayed $0.04 \mathrm{oz} / \mathrm{t}$ gold, $5.5 \mathrm{oz} / \mathrm{t}$ silver, $3.4 \%$ lead and $16.5 \%$ zinc.

## Royal (082FSE060)

The Royal group is located south of the Valparaiso-Government workings, between 850 and 1,350 feet vertically above the lake. At an elevation of approximately "... 1,350 feet above the lake, an open-cut exposes a short section of oxidized vein ..." between 2 and 2.5 feet wide. An average sample of this north striking, east dipping vein material assayed trace gold, $0.3 \mathrm{oz} / \mathrm{t}$ silver, $1.1 \%$ lead and $0.7 \%$ zinc. A tunnel is located "... a short distance southerly along the outcrop and at a slightly lower elevation ..." and was driven approximately 170 feet without intersecting any ore with no vein observed in the face.

A few hundred feet south and approximately 350 feet lower, "... a short length of flat-lying quartz vein..." is exposed, locally well mineralized with galena. A (chip?) sample across 18 inches of the strongest observed mineralization assayed $0.02 \mathrm{oz} / \mathrm{t}$ gold, $4.1 \mathrm{oz} / \mathrm{t}$ silver, $38.9 \%$ lead and $0.6 \%$ zinc. A small sample of hand picked galena assayed $0.04 \mathrm{oz} / \mathrm{t}$ gold, $19.8 \mathrm{oz} / \mathrm{t}$ silver, $76.5 \%$ lead and $7 \%$ zinc.

A few hundred feet farther south and approximately 150 below the above samples, short segments of quartz vein were observed in two open-cuts, with sparsely disseminated galena. A (chip?) sample across 18 inches in the southernmost open-cut assayed $0.01 \mathrm{oz} / \mathrm{tgold}, 1.4 \mathrm{oz} / \mathrm{t}$ silver, $1.1 \%$ lead and $0.6 \%$ zinc.

## 2004 PROGRAM

A total of 325 soil and 6 silt samples were collected from the property from generally east-west trending roads on, or immediately adjacent to, the property. Samples reported herein were collected from the logging road immediately south of Sanca Creek, extending south to Twin bays Creek.

Samples were collected from a variably developed "B Horizon", with many of the samples taken from the road cut exposures. Sample depths ranged from 5 cm to 50 cm and notes pertaining to the samples are included in Appendix B.

A total of 136 soil samples were submitted and included in this Assessment Report, comprising those within or immediately adjacent to the southern block of claims (Sparky 9 and10). The samples were submitted to Acme Analytical Laboratories Ltd for processing using the SS80 package and analysis using the Group 1EX package. Samples locations are plotted on Figure 4, results are included in Appendix B, with results plotted for lead / zinc (Fig. 5).

## DISCUSSION

This report presents the results from the 2004 sampling program. The two main targets of interest are high grade, low tonnage $\mathrm{Ag}-\mathrm{Pb}-\mathrm{Zn} \pm \mathrm{Au} \pm \mathrm{W}$ polymetallic veins, as previously reported in the MINFILE occurrences within, and adjacent to, the property (see "Mineral Showings / Workings") and intrusion-related gold potential. Therefore, the elements of interest include $\mathrm{Ag}, \mathrm{Au}, \mathrm{Cu}, \mathrm{Pb}$ and $\mathrm{Zn} \pm \mathrm{As}, \mathrm{Bi}, \mathrm{Sb}$ and W . In addition, the Elmo MINFILE occurrence (east of the existing claims) documented anomalous Mo associated with fractures in granite of the Mt. Skelly pluton.

## Southern Claims

The regional trend of the host stratigraphy is north-northeast - south-southwest and the polymetallic veins identified to date apparently trend $\pm 20^{\circ}$ north. Therefore, the east-west oriented road network provides the best means for acquiring soil samples at a high angle to this regional trend. Using this working hypothesis, soil samples were recovered from along the logging road immediately south of Sanca Creek, extending south to Twin Bays Creek.

A total of 136 soil samples were recovered along the logging road network, predominantly from granitic lithologies assigned to the Cretaceous Mount Skelly Pluton, with a highly subordinate subset from meta-sediments correlated to the undivided Creston Formation, adjacent to the highway. Undivided Creston strata along, and south of, Sanca Creek have been interpreted as a roof pendant but may also represent a sedimentary septa along the margin of the intrusive complex.

The elements of most interest at the current time for the purposes of evaluating Intrusion-Related Gold (IRG) potential are bismuth, copper, gold, molybdenum, tin and tungsten. The possibility of silver-enriched base metal veins similar to the Gold Basin, Lakeshore and other MINFILE occurrences, as well as those identified by the author in 2003, suggest evaluation of lead and zinc is advisable. The Hope of Discovery and Copper Canyon MIINFILE occurrences to the north of Akokli Creek suggest potential for copper as well. The following brief discussion is based on qualitative review of the data. No statistical values to identify background from anomalous values have been derived at this point.

## Bismuth

Values returned for bismuth are low but above the detection limit, reaching a maximum value of 14.3 ppm . There are only 6 values greater than 1.0 ppm .

## Copper

There were 21 samples that returned copper values greater than 30 ppm and 4 greater than 100 ppm . The maximum value from the southern set of soil data was 221 ppm . With the exception of several single value highs, the values greater than an arbitrary cut-off of 30 ppm occur between sample 202 and the end of the soil line. This corresponds spatially with the contact between granitic lithologies
of the Mount Skelly Pluton and the roof pendant comprising of iron-stained strata correlated to the Creston Formation.

## Gold

The results (or, more accurately, lack of results) for gold is not necessarily a concern as the expectation for gold arising from the intrusion-related gold model is that is would be localized within sheeted veins, particularly at higher elevations within the intrusion and immediately overlying sedimentary strata. Therefore, gold values are anticipated, if intrusion-related gold mineralization is present, at topographically and structurally higher elevations within the intrusive complex and associated with the Sanca Stock. Therefore, exploration emphasizing the Sanca Stock at higher elevations should be undertaken (i.e. within the Sparky 3, 12 and 16; Jondon 2 claims).

## Lead (Silver)

Lead is interpreted to be hosted within the feldspars comprising the Mount Skelly Pluton and therefore returned very low values. However, base metal veins, some of which are silver-enriched, have been documented within and/or adjacent to the Sanca property. Therefore, values in excess of an arbitrary value of 50 ppm may indicate proximity to base metal veins. The low values returned for silver (maximum of 3.1 ppm ) suggest any base metal veins proximal to the soil line(s) are negligibly enriched in silver.

There were four lead analyses greater than 200 ppm , with only ten greater than 50 ppm . This suggests that base metal veins in the immediate vicinity of the soil lines are galena poor (as the interpreted primary lead-bearing phase) or of sufficient distance from the soil lines that the lead, which is relatively immobile in the soil environment, was not detected.

## Molybdenum

The Sanca property is one of the properties comprising Jasper Mining Corporation's Cretaceous Granite project, assigned on the basis of an association with intrusive lithologies correlated to the Bayonne Magmatic Belt (BMB) (Logan 2002). As a generalization, the BMB is characterized by a strong magnetic signature, associated with the granitic lithologies and/or the immediately adjacent host strata within the thermal aureole, and anomalous molybdenum, both in the provincial Regional Geochemical Survey (RGS) and/or documented MINFILE occurrences (i.e. Jaim / Elmo). In contrast to other properties within Jasper's Cretaceous Granite Project, the Sanca property is not considered to have potential to host a potential molybdenum deposit, due to the depth of erosion into the Mount Skelly Pluton. However, the soil samples (and MINFILE occurrence) document the widespread occurrence of molybdenum associated with the pluton, ranging between 0.5 and 6.8 ppm .

## Tin

In a manner similar to bismuth, tin returned predominantly low values, with only ten samples returning values greater than 4 ppm and a maximum of 5.7 pm . This is somewhat disappointing with regard to pursuit of an IRG model in which the general geochemical signature includes tin.

## Tungsten

Tungsten similarly returned predominantly low values, having a maximum of 76.6 ppm , four samples greater than 5 ppm and eighteen greater than 3 ppm .

## Zinc

Somewhat surprisingly, given the lead values, zinc returned eighty nine values greater than 100 ppm , with eighteen greater than 200 ppm and a maximum of 559 ppm . This suggests that any base metal veins in the vicinity of the soil lines may be zinc-enriched relative to lead. Walker (2004) documented a base metal vein along the logging roads subsequently soil sampled in 2004 (Sample 2 to 5,37 to 38 ). In contrast with the soil results, the rock data document a silver-enriched base metal vein having a higher proportion of lead relative to silver (Walker 2004).

## Cumulative Data

The data returned for the entirety of field season, comprising 339 analyses, can be utilized for subsequent programs. A table of statistical data (Table 1) and a correlation matrix of the data (Table 2) are included in the following pages for reference.

Table 1 contains limited statistical data comprised of the:

1) mean for all analyses greater than the detection limit,
2) standard deviation,
3) boundary between background and anomalous values (defined as the mean $+(2 x$ Standard Deviation), and
4) the number of analyses greater than the detection limit ( N ).

No further work has been completed on the data at this time.

Table 1 - Descriptive Statistics

|  | Mean | Deviation | Anomalous | N |
| :---: | :---: | :---: | :---: | :---: |
| Ag | 0.21 | 0.260 | 0.73 | 189 |
| Al | 7.62 | 0.993 | 9.60 | 339 |
| As | 8.42 | 10.448 | 29.32 | 339 |
| Ba | 694.32 | 131.753 | 957.82 | 339 |
| Be | 2.52 | 0.763 | 4.04 | 339 |
| Bi | 0.55 | 1.030 | 2.61 | 339 |
| Ca | 1.56 | 0.884 | 3.33 | 339 |
| Cd | 0.22 | 0.213 | 0.65 | 290 |
| Ce | 91.86 | 34.140 | 160.14 | 339 |
| Co | 9.63 | 8.744 | 27.12 | 339 |
| Cr | 31.24 | 17.642 | 66.52 | 339 |
| Cu | 23.12 | 21.384 | 65.89 | 339 |
| Fe | 3.21 | 1.128 | 5.47 | 339 |
| Ga | 18.55 | 2.577 | 23.71 | 339 |
| Hf | 1.55 | 0.968 | 3.49 | 339 |
| K | 2.35 | 0.574 | 3.49 | 339 |
| La | 47.29 | 17.651 | 82.59 | 339 |
| Li | 39.86 | 11.577 | 63.01 | 339 |
| Mg | 0.78 | 0.396 | 1.58 | 339 |
| Mn | 661.05 | 287.829 | 1236.71 | 339 |
| Mo | 0.94 | 0.790 | 2.52 | 337 |
| Na | 1.76 | 0.595 | 2.95 | 339 |
| Nb | 30.82 | 19.873 | 70.57 | 339 |
| Ni | 16.44 | 14.359 | 45.16 | 339 |
| P | 0.1277 | 0.11060 | 0.35 | 339 |
| Pb | 37.61 | 33.045 | 103.70 | 339 |
| Rb | 106.70 | 32.852 | 172.40 | 339 |
| s | 0.12 | 0.068 | 0.25 | 40 |
| Sb | 0.29 | 0.168 | 0.63 | 338 |
| Sc | 8.88 | 2.679 | 14.24 | 339 |
| Sn | 2.69 | 0.638 | 3.96 | 339 |
| Sr | 365.65 | 182.914 | 731.47 | 339 |
| Ta | 2.21 | 1.525 | 5.26 | 339 |
| Th | 16.72 | 10.195 | 37.11 | 339 |
| Ti | 0.41 | 0.134 | 0.67 | 339 |
| U | 8.73 | 10.770 | 30.27 | 339 |
| v | 77.76 | 32.584 | 142.93 | 339 |
| w | 2.57 | 4.686 | 11.95 | 339 |
| Y | 23.20 | 10.688 | 44.57 | 339 |
| Zn | 118.39 | 71.811 | 262.01 | 339 |
| Zr | 38.64 | 29.681 | 98.00 | 339 |


|  |  | Ag | AI | As | 日a | Be | 81 | Ca | Cd | Ce | Co | Cr | Cu | Fe | Ga | Hf | K | La | $\underline{1}$ | Mg | Mn | Mo | Na | 0 | Ni |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Ag | Pearson Correlation Sig. (2-tailed) N <br> Pearson Correlation | $\frac{189}{0.108}$ | $\begin{array}{r\|} \hline 0.108 \\ 0.138 \\ 185 \end{array}$ | $\begin{gathered} \hline 0.805 \\ 0.000 \\ 189 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline 0.014 \\ 0.844 \\ 189 \\ \hline 0.233 \end{array}$ | $\begin{array}{r} \hline 0.033 \\ 0.656 \\ 189 \\ \hline 0.526 \end{array}$ | $\begin{array}{r} \hline 0.703 \\ 0.000 \\ 189 \\ \hline 0.166 \end{array}$ | $\begin{array}{r} \hline 0.018 \\ 0.807 \\ 189 \\ \hline 0.106 \end{array}$ | $\begin{array}{r} \hline 0.256 \\ 0.001 \\ 171 \\ \hline-0.007 \end{array}$ | $\begin{array}{r} \hline-0.014 \\ 0.847 \\ 189 \\ \hline-0.317 \end{array}$ | $\begin{array}{r} 0.700 \\ 0.000 \\ 189 \\ \hline-0.113 \end{array}$ | $\begin{array}{r} 0.060 \\ 0.410 \\ 189 \\ \hline-0.257 \end{array}$ | $\begin{array}{r} 0.562 \\ 0.000 \\ 189 \end{array}$ | 0.160 0.028 $\qquad$ | $\begin{array}{r} \hline 0.101 \\ 0.167 \\ 189 \\ \hline 0.795 \end{array}$ | $\begin{array}{r} \hline 0.160 \\ 0.026 \\ 189 \\ \hline 0.184 \end{array}$ | $\begin{array}{r} \hline 0.015 \\ 0.835 \\ 189 \\ \hline 0.234 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.088 \\ 0.353 \\ 188 \\ \hline-0.311 \end{array}$ | $\begin{array}{r} \hline 0.251 \\ 0.000 \\ 189 \\ \hline 0.287 \end{array}$ | $\begin{array}{r} \hline 0.017 \\ 0.816 \\ 189 \\ \hline-0.196 \end{array}$ | $\begin{array}{r} \hline 0.241 \\ 0.001 \\ 189 \\ \hline 0.153 \end{array}$ | $\begin{array}{r} 0.187 \\ 0.010 \\ 188 \\ \hline-0.141 \end{array}$ | $\begin{array}{r} \hline-0.004 \\ 0.958 \\ 188 \\ \hline 0.506 \end{array}$ | $\begin{array}{r\|} \hline-0.026 \\ 0.720 \\ 189 \\ \hline 0.128 \end{array}$ | $\begin{array}{r} \hline 0.494 \\ 0.000 \\ 188 \\ \hline-0.125 \end{array}$ |
| A] | Pearson Correlation Sig . (2-tailed) N | $\begin{array}{r} 0.108 \\ 0.139 \\ 189 \\ \hline \end{array}$ |  | $\begin{array}{r} \hline 0.052 \\ 0.336 \\ 339 \end{array}$ | $\begin{gathered} 0.233 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{gathered} \hline 0.525 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} \hline 0.166 \\ 0.002 \\ 336 \end{array}$ | $\begin{array}{r\|} \hline 0.106 \\ 0.052 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.007 \\ 0.900 \\ 290 \end{array}$ | $\begin{array}{r} \hline-0.317 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.113 \\ 0.037 \\ 339 \end{array}$ | $\begin{array}{r} -0.257 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline-0.015 \\ 0.779 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.152 \\ 0.005 \\ 338 \end{array}$ | $\begin{gathered} \hline 0.795 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r\|} \hline 0.184 \\ 0.001 \\ 338 \end{array}$ | $\begin{gathered} \hline 0.234 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} -0.311 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.287 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.196 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.153 \\ 0.005 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.141 \\ 0.009 \\ 337 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.506 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} \hline 0.128 \\ 0.018 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.125 \\ 0.021 \\ 338 \\ \hline \end{array}$ |
| As | $\qquad$ <br> Pearson Correlation sig. (2-tailed) N | $\begin{gathered} 0.805 \\ 0.000 \\ 189 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline 0.052 \\ 0.336 \\ 339 \end{array}$ | 339 | $\begin{array}{r} 0.035 \\ 0.518 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.048 \\ 0.382 \\ 339 \end{array}$ | $\begin{array}{c\|} \hline 0.725 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.005 \\ 0.925 \\ 339 \end{array}$ | $\begin{array}{r\|} \hline 0.035 \\ 0.551 \\ 290 \end{array}$ | $\begin{aligned} & \hline 0.148 \\ & 0.006 \\ & 339 \\ & \hline \end{aligned}$ | $\begin{gathered} 0.712 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} \hline 0.113 \\ 0.038 \\ 339 \end{array}$ | $\begin{aligned} & 0.505 \\ & 0.000 \\ & 339 \end{aligned}$ | $\begin{array}{r} 0.226 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.026 \\ 0.639 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.007 \\ 0.892 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.037 \\ 0.493 \\ 339 \end{array}$ | $\begin{gathered} \hline 0.088 \\ 0.105 \\ 339 \end{gathered}$ | $\begin{array}{r} 0.141 \\ 0.008 \\ 338 \end{array}$ | $\begin{aligned} & \hline 0.011 \\ & 0.836 \\ & 339 \end{aligned}$ | $\begin{gathered} \hline 0.170 \\ 0.002 \\ 339 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline 0.167 \\ 0.002 \\ 337 \end{array}$ | $\begin{array}{r} \hline-0.016 \\ 0.763 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.080 \\ 0.142 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.453 \\ 0.000 \\ 339 \end{array}$ |
| Ba | Pearson Correlation Sig. (2-talled) N | $\begin{array}{r\|} \hline 0.014 \\ 0.844 \\ 188 \end{array}$ | $\begin{array}{r} 0.233 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r\|} \hline 0.035 \\ 0.518 \\ 338 \end{array}$ | 338 | $\begin{array}{r} 0.200 \\ 0.000 \\ 330 \end{array}$ | $\begin{array}{r} 0.020 \\ 0.710 \\ 330 \end{array}$ | $\begin{array}{r} \hline 0.155 \\ 0.004 \\ 338 \end{array}$ | $\begin{array}{r} 0.091 \\ 0.123 \\ 290 \end{array}$ | $\begin{array}{r} \hline 0.115 \\ 0.034 \\ 338 \end{array}$ | $\begin{array}{r} -0.180 \\ 0.001 \\ 339 \end{array}$ | $\begin{array}{r} -0.283 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.228 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline-0.116 \\ 0.033 \end{array}$ | $\begin{array}{r} 0.185 \\ 0.001 \\ 330 \end{array}$ | $\begin{array}{r\|} \hline 0.097 \\ 0.075 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.112 \\ 0.040 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.147 \\ 0.007 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.225 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.136 \\ 0.012 \\ 338 \end{array}$ | $\begin{gathered} 0.273 \\ 0.000 \\ 330 \end{gathered}$ | $\begin{array}{r} \hline-0.017 \\ 0.758 \\ 337 \end{array}$ | $\begin{array}{r} \hline 0.409 \\ 0.000 \\ 339 \end{array}$ | $\begin{aligned} & \hline 0.288 \\ & 0.000 \\ & 338 \end{aligned}$ | $\begin{gathered} -0.261 \\ 0.000 \end{gathered}$ |
| Be | Pearson Corrolation <br> Sig. (2-tailed) <br> N | $\begin{array}{r} \hline 0.033 \\ 0.656 \\ 189 \end{array}$ | $\begin{aligned} & 0.528 \\ & 0.000 \\ & 339 \end{aligned}$ | $\begin{array}{r} 0.048 \\ 0.382 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.200 \\ 0.000 \\ 339 \end{array}$ |  | $\begin{array}{r} 0.181 \\ 0.003 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.157 \\ 0.004 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.089 \\ 0.128 \\ 290 \\ \hline \end{array}$ | $\begin{array}{r} -0.102 \\ 0.062 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.183 \\ 0.001 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.337 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.171 \\ 0.002 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.267 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.482 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.167 \\ 0.002 \\ 338 \\ \hline \end{array}$ | $\begin{aligned} & 0.356 \\ & 0.000 \\ & 339 \\ & \hline \end{aligned}$ | $\begin{array}{r} -0.100 \\ 0.067 \\ 338 \\ \hline \end{array}$ | $\begin{array}{c\|} \hline 0.098 \\ 0.068 \\ 338 \end{array}$ | $\begin{array}{r} -0.262 \\ 0.000 \\ 339 \end{array}$ | $\begin{gathered} 0.127 \\ 0.020 \\ 330 \end{gathered}$ | $\begin{array}{r} \hline-0.084 \\ 0.126 \\ 337 \end{array}$ | $\begin{array}{r} 0.463 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.308 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline-0.241 \\ 0.000 \\ 338 \end{array}$ |
| Bi | Pearson Correlation Sig. (2-talied) N | $\begin{gathered} \hline 0.703 \\ 0.000 \\ 189 \\ \hline \end{gathered}$ | $\begin{array}{r\|} \hline 0.166 \\ 0.002 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.725 \\ 0.000 \\ 339 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline 0.020 \\ 0.710 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline 0.161 \\ 0.003 \\ 339 \\ \hline \end{array}$ | 339 | $\begin{array}{r} -0.044 \\ 0.423 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.021 \\ 0.721 \\ 290 \\ \hline \end{array}$ | $\begin{array}{r} -0.027 \\ 0.617 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.509 \\ 0.000 \\ 339 \\ \hline \end{gathered}$ | $\begin{array}{r} 0.031 \\ 0.574 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.442 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.078 \\ 0.153 \\ 339 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.122 \\ 0.024 \\ 339 \end{gathered}$ | $\begin{array}{r} \hline-0.034 \\ 0.528 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.108 \\ 0.048 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.070 \\ 0.186 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.157 \\ 0.004 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.008 \\ 0.868 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.134 \\ 0.014 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.106 \\ 0.051 \\ 337 \\ \hline \end{array}$ | $\begin{array}{\|r\|} \hline-0.021 \\ 0.698 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.022 \\ 0.680 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.330 \\ 0.000 \\ 339 \\ \hline \end{gathered}$ |
| Ca | Pearson Correlation Sig. (2-talled) N | $\begin{array}{r} \hline 0.018 \\ 0.807 \\ 189 \end{array}$ | $\begin{array}{r} 0.106 \\ 0.052 \\ 339 \end{array}$ | $\begin{array}{r} -0.005 \\ 0.925 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.155 \\ 0.004 \\ 335 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.157 \\ 0.004 \\ 339 \end{array}$ | $\begin{array}{r} -0.044 \\ 0.423 \\ 338 \\ \hline \end{array}$ |  | $\begin{array}{r} 0.070 \\ 0.234 \\ 290 \end{array}$ | $\begin{array}{r} \hline 0.148 \\ 0.006 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.087 \\ 0.110 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.280 \\ 0.000 \\ 336 \end{array}$ | $\begin{array}{r} -0.042 \\ 0.440 \\ 339 \end{array}$ | $\begin{aligned} & \hline 0.033 \\ & 0.540 \\ & 338 \\ & \hline \end{aligned}$ | $\begin{array}{r} \hline 0.050 \\ 0.350 \\ 339 \end{array}$ | $\begin{array}{r} -0.089 \\ 0.101 \\ 339 \end{array}$ | $\begin{array}{r} -0.254 \\ 0.000 \\ 336 \end{array}$ | $\begin{aligned} & 0.206 \\ & 0.000 \\ & 336 \end{aligned}$ | $\begin{array}{r} 0.105 \\ 0.054 \\ 338 \end{array}$ | $\begin{aligned} & \hline 0.037 \\ & 0.502 \\ & 338 \\ & \hline \end{aligned}$ | $\begin{array}{r} \hline 0.379 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.101 \\ 0.064 \\ 337 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.432 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.507 \\ 0.008 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.282 \\ 0.000 \\ 330 \\ \hline \end{array}$ |
| Cd | Pearson Correlation Sig. (2-tailed) N | $\begin{array}{r} \hline 0.255 \\ 0.001 \\ 171 \end{array}$ | $\begin{array}{r} -0.007 \\ 0.800 \\ 290 \end{array}$ | $\begin{array}{r} \hline 0.035 \\ 0.551 \\ 290 \end{array}$ | $\begin{array}{r} \hline 0.091 \\ 0.123 \\ 290 \end{array}$ | $\begin{array}{r} -0.089 \\ 0.128 \\ 290 \end{array}$ | $\begin{array}{r} 0.021 \\ 0.721 \\ 290 \end{array}$ | $\begin{array}{r} 0.070 \\ 0.234 \\ 290 \end{array}$ | 290 | $\begin{array}{r} \hline 0.021 \\ 0.717 \\ 290 \end{array}$ | $\begin{array}{r} \hline 0.101 \\ 0.087 \\ 290 \end{array}$ | $\begin{gathered} \hline 0.018 \\ 0.788 \\ 290 \end{gathered}$ | $\begin{aligned} & \hline 0.118 \\ & 0.044 \\ & 290 \end{aligned}$ | $\begin{array}{r\|} \hline 0.103 \\ 0.078 \\ 290 \end{array}$ | $\begin{array}{r} -0.015 \\ 0.796 \\ 290 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.207 \\ 0.000 \\ 290 \end{array}$ | $\begin{array}{r} -0.177 \\ 0.002 \\ 290 \end{array}$ | $\begin{array}{r} \hline 0.009 \\ 0.872 \\ 280 \end{array}$ | $\begin{array}{r} 0.126 \\ 0.032 \\ 280 \end{array}$ | $\begin{gathered} \hline 0.080 \\ 0.308 \\ 290 \\ \hline \end{gathered}$ | $\begin{gathered} \hline 0.330 \\ 0.000 \\ 280 \end{gathered}$ | $\begin{aligned} & \hline 0.128 \\ & 0.033 \\ & 289 \end{aligned}$ | $\begin{array}{r} \hline-0.047 \\ 0.423 \\ 290 \end{array}$ | $\begin{gathered} \hline 0.039 \\ 0.508 \\ 290 \end{gathered}$ | $\begin{array}{r} \hline 0.062 \\ 0.293 \\ 290 \\ \hline \end{array}$ |
| Ce | Pearson Correlation Sig. (2-tailed) N | $\begin{array}{r} -0.014 \\ 0.847 \\ 189 \end{array}$ | $\begin{array}{r} -0.317 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.149 \\ 0.006 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.115 \\ 0.034 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.102 \\ 0.062 \\ 338 \end{array}$ | $\begin{array}{r} -0.027 \\ 0.817 \\ 338 \end{array}$ | $\begin{gathered} 0.148 \\ 0.008 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} 0.021 \\ 0.717 \\ 290 \end{array}$ | 338 | $\begin{array}{r} 0.142 \\ 0.009 \\ 339 \end{array}$ | $\begin{array}{r} 0.120 \\ 0.027 \\ 330 \end{array}$ | $\begin{array}{r} -0.097 \\ 0.075 \\ 338 \end{array}$ | $\begin{array}{r} 0.446 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.325 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} -0.115 \\ 0.034 \\ 336 \end{array}$ | $\begin{array}{r} \hline-0.273 \\ 0.000 \\ 339 \end{array}$ | $\begin{aligned} & 0.958 \\ & 0.000 \\ & 338 \end{aligned}$ | $\begin{array}{r} -0.168 \\ 0.002 \\ 338 \end{array}$ | $\begin{array}{r} 0.044 \\ 0.424 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.146 \\ 0.007 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.178 \\ 0.001 \\ 337 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.031 \\ 0.568 \\ 338 \end{array}$ | $\begin{array}{r} 0.589 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} 0.020 \\ 0.713 \\ 339 \\ \hline \end{array}$ |
| Co | Pearson Correlation Sig . (2-talled) N | $\begin{gathered} 0.700 \\ 0.000 \\ 189 \end{gathered}$ | $\begin{array}{r} -0.113 \\ 0.037 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.712 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.180 \\ 0.001 \\ 339 \end{array}$ | $\begin{array}{r} -0.183 \\ 0.001 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.509 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.087 \\ 0.110 \\ 338 \\ \hline \end{array}$ | 0.101 0.087 290 | $\begin{gathered} 0.142 \\ 0.008 \\ 339 \\ \hline \end{gathered}$ |  | $\begin{array}{r} 0.597 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} 0.842 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline 0.616 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.035 \\ 0.522 \\ 338 \\ \hline \end{array}$ | $\begin{aligned} & \hline 0.046 \\ & 0.403 \\ & 339 \end{aligned}$ | $\begin{array}{r} -0.172 \\ 0.001 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} 0.032 \\ 0.555 \\ 338 \\ \hline \end{gathered}$ | $\begin{gathered} \hline 0.308 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} \hline 0.465 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.154 \\ 0.004 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.338 \\ 0.000 \\ 337 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0,402 \\ 0.000 \\ 330 \end{array}$ | $\begin{array}{r} -0.225 \\ 0.000 \\ 335 \\ \hline \end{array}$ | $\begin{aligned} & \hline 0.886 \\ & 0.000 \\ & 338 \\ & \hline \end{aligned}$ |
| Cr | Pearson Correlation Sig. $(2$-tailed $)$ N | $\begin{gathered} 0.060 \\ 0.410 \\ 189 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.257 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} 0.113 \\ 0.038 \\ 338 \end{gathered}$ | $\begin{array}{r} -0.283 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.337 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.031 \\ 0.574 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.280 \\ 0.000 \\ 330 \\ \hline \end{array}$ | $\begin{gathered} 0.016 \\ 0.788 \\ 290 \end{gathered}$ | $\begin{array}{r} \hline 0.120 \\ 0.027 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.597 \\ 0.000 \\ 339 \\ \hline \end{array}$ | 338 | $\begin{gathered} 0.608 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} 0.751 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.080 \\ 0.140 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.100 \\ 0.066 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.044 \\ 0.416 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline 0.079 \\ 0.148 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.147 \\ 0.007 \\ 330 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.684 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} -0.077 \\ 0.157 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.271 \\ 0.000 \\ 337 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0,687 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.391 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.765 \\ 0.000 \\ 339 \\ \hline \end{gathered}$ |
| Cu | Pearson Correlation Sig. (2-tailed) N | $\begin{gathered} 0.562 \\ 0.000 \\ 189 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.015 \\ 0.778 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.505 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.228 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.171 \\ 0.002 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.442 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.042 \\ 0.440 \\ 335 \end{array}$ | $\begin{array}{r} 0.118 \\ 0.044 \\ 290 \end{array}$ | $\begin{array}{r} -0.097 \\ 0.075 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.842 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.609 \\ 0.000 \\ 338 \end{array}$ | 338 | $\begin{array}{r} 0.545 \\ 0.000 \\ 338 \\ \hline \end{array}$ | 0.088 0.210 339 | $\begin{array}{r} \hline 0.110 \\ 0.042 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.096 \\ 0.079 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.176 \\ 0.001 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.296 \\ 0.000 \\ 330 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline 0.486 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.105 \\ 0.052 \\ 330 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline 0.340 \\ 0.000 \\ 337 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.424 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.396 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.859 \\ 0.000 \\ 338 \\ \hline \end{array}$ |
| Fe | Pearson Correlation <br> Sig. (2-tailed) <br> N | $\begin{array}{r} \hline 0.180 \\ 0.028 \\ 189 \\ \hline \end{array}$ | $\begin{array}{r} -0.152 \\ 0.005 \\ 339 \\ \hline \end{array}$ | $\begin{gathered} 0.226 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.116 \\ 0.033 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.267 \\ 0.000 \\ 330 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.078 \\ 0.153 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} 0.033 \\ 0.540 \\ 330 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline 0.103 \\ 0.078 \\ 200 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.448 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.616 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} 0.751 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{gathered} \hline 0.545 \\ 0.000 \\ 339 \\ \hline \end{gathered}$ | 339 | $\begin{array}{r} 0.019 \\ 0.722 \\ 339 \\ \hline \end{array}$ | $\begin{aligned} & \hline 0.016 \\ & 0.776 \\ & 339 \end{aligned}$ | $\begin{array}{r} -0.294 \\ 0.000 \\ 339 \end{array}$ | $\begin{aligned} & \hline 0.407 \\ & 0.000 \\ & 338 \end{aligned}$ | $\begin{gathered} \hline 0.270 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} \hline 0.650 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.194 \\ 0.000 \\ 336 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.372 \\ 0.000 \\ 337 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.388 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.071 \\ 0.192 \\ 339 \\ \hline 0.102 \end{array}$ | $\begin{array}{r} 0.605 \\ 0.000 \\ 339 \\ \hline \end{array}$ |
| Ga | Pearson Correlation Sig. (2-tailed) N | $\begin{array}{r} 0.101 \\ 0.167 \\ 189 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.795 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.026 \\ 0.638 \\ 338 \end{array}$ | $\begin{array}{r} 0.185 \\ 0.001 \\ 335 \end{array}$ | $\begin{array}{r} 0.482 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.122 \\ 0.024 \\ 339 \\ \hline \end{array}$ | $\begin{aligned} & \hline 0.050 \\ & 0.360 \\ & 338 \\ & \hline \end{aligned}$ | $\begin{array}{r} -0.015 \\ 0.796 \\ 290 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.328 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.035 \\ 0.522 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.080 \\ 0.140 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.068 \\ 0.210 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.018 \\ 0.722 \\ 339 \\ \hline \end{array}$ |  | $\begin{array}{r} 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.231 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.331 \\ 0.000 \\ 330 \\ \hline \end{array}$ | $\begin{gathered} 0.410 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.071 \\ 0.191 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.240 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.011 \\ 0.836 \\ 337 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline 0.410 \\ 0.000 \\ 330 \\ \hline \end{array}$ | $\begin{array}{\|} \hline 0.120 \\ 0.027 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} -0.010 \\ 0.848 \\ 338 \\ \hline \end{gathered}$ |
| Hf | Pearson Correlation Sig. (2-tailed) N | $\begin{array}{r} 0.160 \\ 0.028 \\ 189 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.184 \\ 0.001 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.007 \\ 0.882 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.097 \\ 0.075 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.167 \\ 0.002 \\ \quad 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.034 \\ 0.523 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.088 \\ 0.101 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.207 \\ 0.000 \\ 250 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.115 \\ 0.034 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.046 \\ 0.403 \\ \quad 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.100 \\ 0.068 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.110 \\ 0.042 \\ 338 \\ \hline 0.096 \end{array}$ | $\begin{array}{\|c\|} \hline 0.016 \\ 0.776 \\ 330 \\ \hline \end{array}$ | $\begin{array}{l\|} \hline 0.198 \\ 0.000 \\ 338 \\ \hline \end{array}$ |  | $\begin{array}{r} \hline-0.437 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.158 \\ 0.004 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.267 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.143 \\ 0.006 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline 0.008 \\ 0.885 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.268 \\ 0.000 \\ 337 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline 0.148 \\ 0.006 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.175 \\ 0.001 \\ 338 \\ \hline-0.113 \end{array}$ | 0.062 0.258 |
| $\bar{K}$ | Pearson Correlation Sig. (2-tailed) N | $\begin{array}{r\|} \hline 0.015 \\ 0.835 \\ 188 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.234 \\ 0.000 \\ 339 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.037 \\ 0.493 \\ 339 \end{array}$ | $\begin{aligned} & 0.112 \\ & 0.040 \\ & 339 \end{aligned}$ | $\begin{array}{r} 0.356 \\ 0.000 \\ 338 \end{array}$ | $\begin{gathered} 0.108 \\ 0.048 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline-0.254 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline-0.177 \\ 0.002 \\ 280 \end{array}$ | $\begin{array}{r} \hline-0.273 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.172 \\ 0.001 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.044 \\ 0.416 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.096 \\ 0.079 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.294 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.231 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.437 \\ 0.000 \\ 338 \\ \hline \end{array}$ | 338 | $\begin{array}{r} \hline-0.297 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} -0.182 \\ 0.001 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.065 \\ 0.230 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.140 \\ 0.010 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.207 \\ 0.000 \\ 337 \end{array}$ | $\begin{array}{\|c\|} \hline-0.091 \\ 0.095 \\ 338 \\ \hline \end{array}$ | $\begin{array}{\|c\|} \hline-0.118 \\ 0.038 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r}\text { res } \\ \hline 100 \\ 338 \\ \hline\end{array}$ |
| La | Pearson Correlatio Sig. (2-tailed) N | $\begin{array}{r} \hline 0.068 \\ 0.353 \\ 188 \\ \hline \end{array}$ | $\begin{array}{r} -0.311 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.088 \\ 0.105 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.147 \\ 0.007 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.100 \\ 0.067 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.079 \\ 0.188 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.206 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.009 \\ 0.872 \\ 290 \\ \hline \end{array}$ | $\begin{array}{r} 0.954 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.032 \\ 0.555 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.078 \\ 0.148 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.176 \\ 0.001 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.407 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.331 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.158 \\ 0.004 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.297 \\ 0.000 \\ 338 \\ \hline \end{array}$ |  | $\begin{array}{r} \hline-0.180 \\ 0.003 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.025 \\ 0.641 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.178 \\ 0.001 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.117 \\ 0.031 \\ 337 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.094 \\ 0.083 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.606 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | 0.080 |
| LI | Pearson Correlation Sig, (2-tailed) <br> N | $\begin{array}{r} 0.251 \\ 0.000 \\ 180 \end{array}$ | $\begin{aligned} & 0.28 \\ & 0.000 \\ & 338 \end{aligned}$ | $\begin{array}{r} 0.141 \\ 0.008 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.225 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.098 \\ 0.068 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.157 \\ 0.004 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.105 \\ 0.054 \\ 338 \\ \hline \end{array}$ | $\begin{aligned} & 0.126 \\ & 0.032 \\ & 290 \\ & \hline \end{aligned}$ | $\begin{array}{r} -0.166 \\ 0.002 \\ 339 \\ \hline \end{array}$ | $\begin{gathered} 0.308 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r\|} \hline 0.147 \\ 0.007 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.296 \\ 0.000 \\ 330 \\ \hline \end{array}$ | $\begin{array}{r} 0.270 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.410 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.267 \\ 0.000 \\ 330 \end{array}$ | $\begin{array}{r} \hline-0.182 \\ 0.001 \\ 330 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.160 \\ 0.003 \\ 338 \\ \hline \end{array}$ | 0330 | $\begin{array}{r} \hline 0.307 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r}0.37 \\ 0.00 \\ 33 \\ \hline 0.06\end{array}$ | $\begin{array}{r} 0.185 \\ 0.001 \\ 337 \end{array}$ | $\begin{array}{r}0.078 \\ 0.166 \\ 338 \\ \hline-0.568 \\ \hline\end{array}$ | $\begin{array}{r}\text {-0.058 } \\ 0.290 \\ 338 \\ \hline-0.250\end{array}$ | $\begin{array}{r}0.265 \\ 0.000 \\ 339 \\ \hline 0.504\end{array}$ |
| M9 | Pearson Correlation Sig. (2-talled) N | $\begin{array}{r} \hline 0.017 \\ 0.816 \\ 188 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.196 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.011 \\ 0.836 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.138 \\ 0.012 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.282 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0,008 \\ 0.868 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.037 \\ 0.502 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.060 \\ 0.309 \\ 290 \\ \hline \end{array}$ | $\begin{array}{r} 0.044 \\ 0.424 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.465 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} 0.684 \\ 0.000 \\ 339 \\ \hline \end{gathered}$ | $\begin{array}{r} 0.486 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} 0.650 \\ 0.000 \\ 330 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.071 \\ 0.181 \\ 330 \\ \hline \end{array}$ | $\begin{array}{\|r\|} \hline-0.143 \\ 0.006 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.065 \\ 0.230 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.025 \\ 0.641 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.307 \\ 0.000 \\ 339 \end{array}$ | 338 | $\begin{gathered} \hline 0.068 \\ 0.203 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} 0.101 \\ 0.064 \\ 337 \\ \hline \end{array}$ | $\begin{array}{r} -0.568 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.250 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r}0.504 \\ 0.000 \\ 339 \\ \hline\end{array}$ |
| Mn | Pearson Correlation Sig. (2-tailed) N | $\begin{array}{r} \hline 0.241 \\ 0.001 \\ 188 \\ \hline \end{array}$ | $\begin{array}{r} 0.153 \\ 0.005 \\ 338 \end{array}$ | $\begin{aligned} & \hline 0.170 \\ & 0.002 \\ & 338 \\ & \hline \end{aligned}$ | $\begin{array}{r} \hline 0.273 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} 0.127 \\ 0.020 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.134 \\ 0.014 \\ 339 \end{array}$ | $\begin{gathered} 0.379 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} 0.330 \\ 0.000 \\ 290 \end{array}$ | $\begin{array}{r} 0.146 \\ 0.007 \\ 339 \end{array}$ | $\begin{aligned} & \hline 0.154 \\ & 0.004 \\ & 338 \\ & \hline \end{aligned}$ | $\begin{array}{r} -0.077 \\ 0.157 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.105 \\ 0.052 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.194 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} \hline 0.240 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{c\|} \hline 0.000 \\ 0.885 \\ 338 \end{array}$ | $\begin{array}{r} \hline-0.140 \\ 0.010 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.178 \\ 0.001 \\ 339 \\ \hline \end{array}$ | $\begin{gathered} 0.371 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} \hline 0.068 \\ 0.203 \\ 338 \end{array}$ | 339 | $\begin{array}{r} \hline 0.017 \\ 0.761 \\ 337 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.238 \\ 0.000 \\ 338 \\ \hline \end{array}$ | 0.337 0.000 330 | $\begin{array}{r}\text { - } 0.006 \\ 0.907 \\ 339 \\ \hline\end{array}$ |
| Mo | Pearson Correlation Sig. (2-tailed) | $\begin{aligned} & 1087 \\ & 0.187 \\ & 0.010 \end{aligned}$ | $\begin{array}{r} -0.141 \\ 0.008 \end{array}$ | $\begin{aligned} & 0.167 \\ & 0.002 \end{aligned}$ | $\begin{array}{r} -0.017 \\ 0.759 \end{array}$ | $\begin{array}{r} -0.084 \\ 0.126 \end{array}$ | $\begin{aligned} & 0.106 \\ & 0.051 \end{aligned}$ | $\begin{array}{r} -0.101 \\ 0.064 \end{array}$ | $\begin{aligned} & 0.126 \\ & 0.033 \end{aligned}$ | $\begin{aligned} & 0.179 \\ & 0.001 \end{aligned}$ | $\begin{aligned} & 0.330 \\ & 0.000 \end{aligned}$ | $\begin{aligned} & 0.271 \\ & 0.000 \end{aligned}$ | $\begin{aligned} & 0.340 \\ & 0.000 \end{aligned}$ | $\begin{aligned} & 0.372 \\ & 0.000 \end{aligned}$ | $\begin{gathered} \hline-0.011 \\ 0.836 \end{gathered}$ | $\begin{aligned} & 0.288 \\ & 0.000 \end{aligned}$ | $\begin{array}{\|c\|} \hline-0.207 \\ 0.000 \end{array}$ | $\begin{aligned} & 0.117 \\ & 0.031 \end{aligned}$ | $\begin{aligned} & \hline 0.186 \\ & 0.001 \end{aligned}$ | $\begin{aligned} & 0.101 \\ & 0.084 \end{aligned}$ | $\begin{aligned} & 0.017 \\ & 0.761 \end{aligned}$ |  | $\begin{gathered} \hline-0.136 \\ 0.013 \end{gathered}$ |  <br> -0.032 <br> 0.558 | 0.357 0.000 |


|  | p | Pb | Rb | Sb | Sc | Sn | Sr | Ta | Th | II | U | V | W | $Y$ | 2 n | 2 F |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Ag | $\begin{array}{r} \hline 0.064 \\ 0.383 \\ 188 \\ \hline \end{array}$ | $\begin{array}{r} 0.645 \\ 0.000 \\ 185 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.012 \\ 0.865 \\ 188 \\ \hline \end{gathered}$ | $\begin{array}{r} 0.270 \\ 0.000 \\ 188 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.036 \\ 0.624 \\ 109 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline 0.024 \\ 0.744 \\ 189 \\ \hline \end{array}$ | $\begin{array}{r} -0.041 \\ 0.571 \\ 189 \\ \hline \end{array}$ | $\begin{array}{r} -0.013 \\ 0.857 \\ 188 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline-0.026 \\ 0.718 \\ 188 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.008 \\ 0.912 \\ 188 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline 0.125 \\ 0.088 \\ 188 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.030 \\ 0.684 \\ 189 \\ \hline \end{array}$ | $\begin{array}{r} 0.731 \\ 0.000 \\ 189 \\ \hline \end{array}$ | $\begin{array}{\|c\|} \hline 0.262 \\ 0.000 \\ 180 \\ \hline \end{array}$ | $\begin{array}{r} 0.427 \\ 0.000 \\ 188 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.150 \\ 0.038 \\ 188 \end{array}$ |
| A] | $\begin{array}{r} \hline 0.018 \\ 0.733 \\ 338 \end{array}$ | $\begin{array}{r} 0.215 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} 0.281 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.085 \\ 0.118 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.143 \\ 0.008 \\ 339 \end{array}$ | $\begin{array}{r} 0.136 \\ 0.012 \\ 339 \end{array}$ | $\begin{array}{r} 0.481 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.188 \\ 0.001 \\ 338 \end{array}$ | $\begin{array}{r} -0.206 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.150 \\ 0.006 \\ 338 \end{array}$ | $\begin{gathered} \hline 0.028 \\ 0.597 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.183 \\ 0.001 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline 0.070 \\ 0.202 \\ 339 \end{array}$ | $\begin{array}{r} 0.208 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline 0.103 \\ 0.058 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.136 \\ 0.012 \\ 339 \\ \hline \end{array}$ |
| As | $\begin{array}{r} \hline 0.084 \\ 0.239 \\ 338 \end{array}$ | $\begin{gathered} \hline 0.571 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline-0.057 \\ 0.292 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.213 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.084 \\ 0.241 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r\|} \hline 0.104 \\ 0.055 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.003 \\ 0.952 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.081 \\ 0.137 \\ 330 \end{array}$ | $\begin{array}{r\|} \hline 0.097 \\ 0.075 \\ 336 \\ \hline \end{array}$ | $\begin{array}{r} 0.032 \\ 0.562 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline 0.103 \\ 0.058 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.104 \\ 0.055 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.826 \\ 0.000 \\ 339 \end{array}$ | $\begin{gathered} 0.248 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} \hline 0.288 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.008 \\ 0.870 \\ 330 \\ \hline \end{array}$ |
| Ba | $\begin{gathered} \hline 0.207 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r\|} \hline 0.144 \\ 0.008 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline 0.048 \\ 0.378 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.218 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} -0.127 \\ 0.018 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.372 \\ 0.000 \\ 338 \end{array}$ | $\begin{gathered} \hline 0.407 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline 0.200 \\ 0.000 \\ 338 \end{array}$ | $\begin{aligned} & \hline 0.180 \\ & 0.001 \\ & 339 \end{aligned}$ | $\begin{array}{r} \hline 0.073 \\ 0.181 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.036 \\ 0.505 \\ 338 \end{array}$ | $\begin{array}{r} \hline-0.034 \\ 0.535 \\ 335 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.029 \\ 0.594 \\ 339 \end{array}$ | $\begin{gathered} 0.200 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} 0.244 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.061 \\ 0.285 \\ 338 \\ \hline \end{array}$ |
| Be | $\begin{array}{r} -0.032 \\ 0.555 \\ 338 \end{array}$ | $\begin{array}{r} 0.163 \\ 0.003 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.270 \\ 0.000 \\ 330 \end{array}$ | $\begin{array}{r} -0.201 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} -0.244 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} 0.338 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.463 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.363 \\ 0.000 \\ 330 \\ \hline \end{array}$ | $\begin{array}{r} -0.038 \\ 0.511 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.128 \\ 0.017 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.131 \\ 0.016 \\ 338 \end{array}$ | $\begin{array}{r} -0.197 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} 0.125 \\ 0.022 \\ 339 \end{array}$ | $\begin{array}{r} 0.287 \\ 0.000 \\ 335 \end{array}$ | $\begin{array}{r} -0.082 \\ 0.130 \\ 338 \end{array}$ | $\begin{array}{r} \hline-0.218 \\ 0.000 \\ 336 \end{array}$ |
| Bi | $\begin{array}{r} \hline-0.037 \\ 0.502 \\ 339 \end{array}$ | $\begin{gathered} \hline 0.549 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline 0.146 \\ 0.007 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.121 \\ 0.026 \\ 338 \end{array}$ | $\begin{array}{r} -0.030 \\ 0.588 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.030 \\ 0.576 \\ 339 \end{array}$ | $\begin{array}{r} 0.006 \\ 0.907 \\ 339 \end{array}$ | $\begin{gathered} \hline 0.013 \\ 0.808 \\ 338 \end{gathered}$ | $\begin{array}{r} -0.049 \\ 0.367 \\ 339 \end{array}$ | $\begin{array}{r} -0.085 \\ 0.117 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.080 \\ 0.141 \\ 330 \end{array}$ | $\begin{array}{r} -0.025 \\ 0.648 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.677 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} 0.131 \\ 0.015 \\ 335 \end{array}$ | $\begin{array}{r} 0.260 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.043 \\ 0.435 \\ 339 \\ \hline \end{array}$ |
| Ca | $\begin{array}{r} 0.34 \mathrm{E} \\ 0.000 \\ 336 \end{array}$ | $\begin{array}{r} \hline 0.074 \\ 0.174 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.178 \\ 0.001 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.114 \\ 0.036 \\ 338 \end{array}$ | $\begin{array}{r} -0.138 \\ 0.010 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.204 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} 0.597 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.435 \\ 0.000 \\ 330 \end{array}$ | $\begin{array}{r} \hline 0.243 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} 0.164 \\ 0.003 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.203 \\ 0.000 \\ 336 \end{array}$ | $\begin{gathered} \hline 0.104 \\ 0.057 \\ 339 \end{gathered}$ | $\begin{array}{r} -0.053 \\ 0.328 \\ 338 \end{array}$ | $\begin{array}{r} 0.517 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.017 \\ 0.757 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.132 \\ 0.015 \\ 339 \end{array}$ |
| Cd | $\begin{gathered} 0.204 \\ 0.000 \\ 290 \\ \hline \end{gathered}$ | $\begin{array}{r} 0.440 \\ 0.000 \\ 290 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.114 \\ 0.053 \\ 290 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.188 \\ 0.002 \\ 290 \end{array}$ | $\begin{array}{r\|} \hline 0.103 \\ 0.078 \\ 290 \end{array}$ | $\begin{array}{r} \hline 0.067 \\ 0.259 \\ 290 \end{array}$ | $\begin{array}{r} -0.072 \\ 0.221 \\ 280 \\ \hline \end{array}$ | $\begin{array}{r} -0.031 \\ 0.597 \\ 290 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.008 \\ 0.877 \\ 280 \end{gathered}$ | $\begin{aligned} & \hline 0.162 \\ & 0.006 \\ & 290 \\ & \hline \end{aligned}$ | $\begin{array}{r} \hline 0.157 \\ 0.007 \\ 290 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.061 \\ 0.304 \\ 290 \end{array}$ | $\begin{gathered} \hline 0.017 \\ 0.770 \\ 290 \end{gathered}$ | $\begin{array}{r} 0.111 \\ 0.058 \\ 200 \end{array}$ | $\begin{array}{r} 0.657 \\ 0.000 \\ 290 \\ \hline \end{array}$ | $\begin{array}{r} 0.207 \\ 0.000 \\ 290 \end{array}$ |
| Ce | $\begin{array}{r} 2.397 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.084 \\ 0.121 \\ 338 \end{array}$ | $\begin{array}{r} r-337 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.025 \\ 0.663 \\ 338 \end{array}$ | $\begin{array}{r} 0.251 \\ 0.000 \\ 335 \end{array}$ | $\begin{gathered} \hline 0.536 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{aligned} & 0.081 \\ & 0.135 \\ & 338 \end{aligned}$ | $\begin{array}{r} 0.450 \\ 0.000 \\ 330 \end{array}$ | $\begin{aligned} & 0.831 \\ & 0.000 \\ & 339 \end{aligned}$ | $\begin{array}{r} 0.445 \\ 0.000 \\ 330 \end{array}$ | $\begin{array}{r} 0.212 \\ 0.000 \\ 338 \end{array}$ | $\begin{gathered} 0.483 \\ 0.000 \\ 330 \end{gathered}$ | $\begin{array}{r} -0.014 \\ 0.793 \\ 339 \end{array}$ | $\begin{gathered} 0.497 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} -0.088 \\ 0.102 \\ 338 \end{array}$ | $\begin{array}{r} \hline-0.128 \\ 0.021 \\ 338 \end{array}$ |
| Co | $\begin{array}{r} 0.110 \\ 0.043 \\ 339 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.370 \\ 0.000 \\ 330 \\ \hline \end{gathered}$ | $\begin{array}{r} r-0.128 \\ 0.018 \\ 338 \end{array}$ | $\begin{gathered} 0.267 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} \hline 0.533 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.081 \\ 0.096 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.378 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} -0.281 \\ 0.000 \\ 330 \\ \hline \end{array}$ | $\begin{aligned} & \hline 0.024 \\ & 0.662 \\ & 338 \end{aligned}$ | $\begin{array}{r} 0.313 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.028 \\ 0.611 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.497 \\ 0.000 \\ 330 \end{array}$ | $\begin{gathered} \hline 0.648 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} -0.065 \\ 0.230 \\ 338 \end{array}$ | $\begin{array}{r} 0.441 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{aligned} & \hline 0.088 \\ & 0.115 \\ & 338 \end{aligned}$ |
| Cr | $\begin{array}{r} -0.096 \\ 0.076 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.049 \\ 0.368 \\ 339 \end{array}$ | $\begin{gathered} \hline 0.005 \\ 0.821 \\ 339 \end{gathered}$ | $\begin{array}{r\|} \hline 0.167 \\ 0.002 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.782 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.117 \\ 0.031 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.640 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.423 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.014 \\ 0.797 \\ 339 \end{array}$ | $\begin{array}{r} 0.310 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.168 \\ 0.002 \\ 338 \end{array}$ | $\begin{array}{r} 0.636 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{gathered} 0.118 \\ 0.028 \\ 338 \end{gathered}$ | $\begin{array}{r} -0.345 \\ 0.000 \\ 338 \end{array}$ | $\begin{gathered} 0.258 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline-0.028 \\ 0.594 \\ 338 \end{array}$ |
| Cu | $\begin{array}{r} -0.045 \\ 0.412 \\ 338 \end{array}$ | $\begin{gathered} 0.348 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline 0.006 \\ 0.906 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.223 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.505 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} -0.229 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.308 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.384 \\ 0.000 \\ 336 \end{array}$ | $\begin{array}{r} -0.172 \\ 0.002 \\ 338 \end{array}$ | $\begin{aligned} & \hline 0.105 \\ & 0.000 \\ & 338 \end{aligned}$ | $\begin{array}{r} \hline-0.038 \\ 0.477 \\ 338 \end{array}$ | $\begin{gathered} \hline 0.397 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} \hline 0.505 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.153 \\ 0.005 \\ 339 \end{array}$ | $\begin{gathered} \hline 0.475 \\ 0.000 \\ 339 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline 0.156 \\ 0.004 \\ 338 \\ \hline \end{array}$ |
| Fe | $\begin{array}{r} 0.337 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.024 \\ 0.662 \\ 339 \end{array}$ | $\begin{array}{r} -0.255 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.235 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} 0.809 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.219 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.307 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.078 \\ 0.144 \\ 338 \end{array}$ | $\begin{array}{r} 0.382 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{aligned} & 0.680 \\ & 0.000 \\ & 338 \end{aligned}$ | $\begin{array}{r} \hline 0.018 \\ 0.746 \\ 338 \end{array}$ | $\begin{array}{r} 0.912 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.120 \\ 0.027 \\ 339 \end{array}$ | $\begin{gathered} \hline 0.058 \\ 0.278 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline 0.316 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} 0.051 \\ 0.353 \\ 339 \\ \hline \end{array}$ |
| Ga | $\begin{array}{r} 0.037 \\ 0.495 \\ 338 \end{array}$ | $\begin{array}{r} 0.188 \\ 0.001 \\ 338 \end{array}$ | $\begin{array}{r} 0.208 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} -0.018 \\ 0.737 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} 0.023 \\ 0.668 \\ 338 \end{gathered}$ | $\begin{array}{r} \hline 0.261 \\ 0.000 \\ 330 \end{array}$ | $\begin{array}{r} 0.365 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} 0.153 \\ 0.005 \\ 338 \end{array}$ | $\begin{array}{r} -0.171 \\ 0.002 \\ 330 \end{array}$ | $\begin{aligned} & \hline 0.038 \\ & 0.471 \\ & 339 \\ & \hline \end{aligned}$ | $\begin{array}{r} -0.001 \\ 0.989 \\ 339 \end{array}$ | $\begin{gathered} 0.008 \\ 0.878 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline 0.043 \\ 0.430 \\ 339 \end{array}$ | $\begin{gathered} \hline 0.140 \\ 0.010 \\ 338 \end{gathered}$ | $\begin{array}{r} \hline 0.179 \\ 0.001 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.151 \\ 0.005 \\ 339 \end{array}$ |
| Hf | $\begin{array}{r} 0.322 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.003 \\ 0.962 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.412 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.365 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r\|} \hline-0.016 \\ 0.773 \\ 338 \end{array}$ | $\begin{array}{r} -0.113 \\ 0.038 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.093 \\ 0.086 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.198 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} -0.028 \\ 0.605 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.218 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.002 \\ 0.970 \\ 339 \end{array}$ | $\begin{array}{r\|} \hline-0.035 \\ 0.523 \\ 335 \end{array}$ | $\begin{array}{r} -0.050 \\ 0.360 \\ 338 \end{array}$ | $\begin{array}{r} -0.058 \\ 0.278 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.275 \\ 0.000 \\ 339 \end{array}$ | $\begin{aligned} & 0.985 \\ & 0.000 \\ & 335 \end{aligned}$ |
| K | $\begin{array}{r} -0.508 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} 0.094 \\ 0.085 \\ 330 \end{array}$ | $\begin{gathered} 0.793 \\ 0.000 \\ 339 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.188 \\ 0.001 \\ 338 \end{array}$ | $\begin{array}{r} -0.090 \\ 0.100 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.157 \\ 0.004 \\ 339 \end{array}$ | $\begin{array}{r} -0.056 \\ 0.303 \\ 339 \end{array}$ | $\begin{gathered} 0.031 \\ 0.568 \\ 339 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline-0.279 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.442 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.081 \\ 0.136 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.247 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.100 \\ 0.066 \\ 338 \end{gathered}$ | $\begin{array}{r} -0.135 \\ 0.013 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.151 \\ 0.005 \\ 339 \end{array}$ | $\begin{array}{r} -0.445 \\ 0.000 \\ 339 \\ \hline \end{array}$ |
| La | $\begin{array}{r} 0.373 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} -0.087 \\ 0.110 \\ 338 \end{array}$ | $\begin{array}{r} -0.311 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.017 \\ 0.748 \\ 336 \\ \hline \end{array}$ | $\begin{array}{r} 0.213 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.480 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} 0.162 \\ 0.003 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.474 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.833 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} 0.431 \\ 0.000 \\ 339 \end{array}$ | $\begin{gathered} 0.218 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} \hline 0.423 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.082 \\ 0.132 \\ 338 \end{array}$ | $\begin{gathered} \hline 0.534 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline-0.120 \\ 0.027 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.171 \\ 0.002 \\ 339 \end{array}$ |
| Li | $\begin{gathered} 0.223 \\ 0.000 \\ 330 \end{gathered}$ | $\begin{array}{r} 0.207 \\ 0.000 \\ 330 \\ \hline \end{array}$ | $\begin{array}{r} -0.058 \\ 0.288 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.170 \\ 0.002 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.288 \\ 0.000 \\ 330 \\ \hline \end{array}$ | $\begin{array}{c\|} \hline 0.025 \\ 0.648 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.059 \\ 0.276 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.176 \\ 0.001 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.058 \\ 0.280 \\ 338 \end{array}$ | $\begin{array}{r} 0.388 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} 0.104 \\ 0.056 \\ 339 \\ \hline \end{array}$ | $\begin{gathered} 0.250 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} 0.142 \\ 0.009 \\ 338 \\ \hline \end{array}$ | $\begin{aligned} & 0.026 \\ & 0.638 \\ & 338 \\ & \hline \end{aligned}$ | $\begin{array}{r} 0.465 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} 0.288 \\ 0.000 \\ 338 \\ \hline \end{array}$ |
| Mg | $\begin{array}{r} \hline 0.077 \\ 0.158 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.042 \\ 0.446 \\ 339 \end{array}$ | $\begin{array}{r} -0.025 \\ 0.646 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.176 \\ 0.001 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.712 \\ 0.000 \\ 330 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.063 \\ 0.251 \\ 339 \end{array}$ | $\begin{array}{r} -0.436 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} -0.358 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.006 \\ 0.811 \\ 330 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.373 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline-0.155 \\ 0.004 \\ 330 \\ \hline \end{array}$ | $\begin{gathered} 0.642 \\ 0.000 \\ 339 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline 0.000 \\ 0.097 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.261 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.228 \\ 0.000 \\ 335 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.088 \\ 0.104 \\ 339 \\ \hline \end{array}$ |
| $\overline{M n}$ | $\begin{array}{r} 0.318 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.384 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.038 \\ 0.482 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.160 \\ 0.003 \\ 338 \end{array}$ | $\begin{array}{r} 0.051 \\ 0.352 \\ 338 \end{array}$ | $\begin{array}{r} 0.240 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} 0.353 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.270 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} 0.228 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} 0.255 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{aligned} & \hline 0.318 \\ & 0.000 \\ & 338 \\ & \hline \end{aligned}$ | $\begin{aligned} & 0.187 \\ & 0.001 \\ & 338 \end{aligned}$ | $\begin{gathered} \hline 0.097 \\ 0.076 \\ 338 \\ \hline \end{gathered}$ | $\begin{gathered} \hline 0.428 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} 0.350 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r}\text {-0.028 } \\ 0.598 \\ 338 \\ \hline 0.28\end{array}$ |
| Mo | $\begin{aligned} & 0.211 \\ & 0.000 \end{aligned}$ | $\begin{aligned} & 0.102 \\ & 0.060 \end{aligned}$ | $\begin{array}{r} -0.291 \\ 0.000 \end{array}$ | $\begin{aligned} & \hline 0.156 \\ & 0.004 \end{aligned}$ | $\begin{aligned} & 0.294 \\ & 0.000 \end{aligned}$ | $\begin{aligned} & \hline 0.159 \\ & 0.003 \end{aligned}$ | $\begin{array}{r} -0.213 \\ 0.000 \end{array}$ | $\begin{array}{r\|} \hline-0.122 \\ 0.025 \end{array}$ | $\begin{aligned} & 0.162 \\ & 0.003 \end{aligned}$ | $\begin{aligned} & 0.412 \\ & 0.000 \end{aligned}$ | $\begin{aligned} & 0.177 \\ & 0.001 \end{aligned}$ | $\begin{aligned} & \hline 0.312 \\ & 0.000 \end{aligned}$ | $\begin{aligned} & \hline 0.128 \\ & 0.018 \end{aligned}$ | $\begin{array}{r} -0.024 \\ 0.656 \end{array}$ | $\begin{aligned} & \hline 0.194 \\ & 0.000 \end{aligned}$ | 0.295 0.000 |


|  |  | Ag | AI | As | Ba | $8{ }^{\text {e }}$ | 81 | C8 | Cd | Ce | Co | Cr | Cu | Fe | Ga | Hif | K | La | L | Mg | Mn | Mo | Na | Nb | Ni |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | N | 188 | 337 | 337 | 337 | 337 | 337 | 337 | 289 | 337 | 337 | 337 | 337 | 337 | 337 | 337 | 337 | 337 | 337 | 337 | 337 | 337 | 337 | 337 | 337 |
| Na | Pearson Correlation Sig. (2-tailed) N | $\begin{array}{r} \hline-0.004 \\ 0.958 \\ 189 \\ \hline \end{array}$ | $\begin{array}{r} 0.506 \\ 0.000 \\ 330 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.016 \\ 0.763 \\ \hline 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.408 \\ 0.000 \\ 330 \\ \hline \end{array}$ | $\begin{array}{r} 0.463 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.021 \\ 0.698 \\ 338 \end{array}$ | $\begin{gathered} 0.432 \\ 0.000 \\ 330 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.047 \\ 0.423 \\ \quad 290 \\ \hline \end{array}$ | $\begin{aligned} & \hline 0.031 \\ & 0.568 \\ & 339 \end{aligned}$ | $\begin{array}{r} -0.402 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.687 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.424 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.386 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.410 \\ 0.000 \\ 330 \end{gathered}$ | $\begin{array}{r} \hline 0.148 \\ 0.008 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline-0.091 \\ 0.095 \\ 339 \\ \hline \end{array}$ | $\begin{gathered} 0.094 \\ 0.083 \\ 339 \\ \hline \end{gathered}$ | $\begin{gathered} 0.075 \\ 0.166 \\ 335 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline-0.568 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.238 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline-0.136 \\ 0.013 \\ 337 \\ \hline \end{array}$ | 338 | $\begin{gathered} \hline 0.619 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} \hline-0.538 \\ 0.000 \\ 339 \end{array}$ |
| ND | Pearson Correlation Sig. (2-tailed) N | $\begin{array}{r} \hline-0.026 \\ 0.720 \\ 189 \end{array}$ | $\begin{array}{r} 0.128 \\ 0.018 \\ 338 \end{array}$ | $\begin{gathered} 0.080 \\ 0.142 \\ 338 \end{gathered}$ | $\begin{gathered} 0.288 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} 0.308 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline-0.022 \\ 0.680 \\ 338 \end{array}$ | $\begin{gathered} 0.507 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{gathered} \hline 0.038 \\ 0.508 \\ 290 \end{gathered}$ | $\begin{aligned} & \hline 0.539 \\ & 0.000 \\ & 339 \end{aligned}$ | $\begin{array}{r} \hline 0.225 \\ 0.000 \\ 335 \end{array}$ | $\begin{array}{r} -0.391 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.396 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} 0.071 \\ 0.192 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.120 \\ 0.027 \\ 339 \end{array}$ | $\begin{array}{r\|} \hline-0.175 \\ 0.001 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.113 \\ 0.038 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline 0.606 \\ 0.000 \\ 335 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.058 \\ 0.290 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.250 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.337 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.032 \\ 0.568 \\ 337 \end{array}$ | $\begin{array}{c\|} \hline 0.618 \\ 0.000 \\ 338 \\ \hline \end{array}$ | 338 | $\begin{array}{r} \hline 0.427 \\ 0.000 \\ 339 \\ \hline \end{array}$ |
| Ni | $\begin{aligned} & \text { Pearson Correlation } \\ & \text { Sig. (2-tailed) } \\ & \mathrm{N} \\ & \hline \end{aligned}$ | $\begin{gathered} 0.494 \\ 0.000 \\ 189 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.125 \\ 0.021 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.453 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.261 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.241 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.330 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.264 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} 0.082 \\ 0.283 \\ 280 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline 0.020 \\ 0.713 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} 0.888 \\ 0.000 \\ 339 \\ \hline \end{gathered}$ | $\begin{array}{r} 0.765 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.859 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.605 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{\|c\|} \hline-0.010 \\ 0.848 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.062 \\ 0.258 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.090 \\ 0.100 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.090 \\ 0.096 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.265 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.504 \\ 0.000 \\ 339 \\ \hline 0.077 \end{array}$ | $\begin{array}{r} \hline-0.006 \\ 0.907 \\ 3339 \\ \hline 0.318 \end{array}$ | $\begin{array}{r} \hline 0.357 \\ 0.000 \\ 337 \\ \hline 0.211 \end{array}$ | $\begin{array}{r} -0.538 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.427 \\ 0.000 \\ 338 \\ \hline \end{array}$ | 338 |
| P | Pearson Correlation Sig. (2-tailed) N | $\begin{array}{r\|} \hline 0.084 \\ 0.383 \\ 189 \end{array}$ | $\begin{array}{r} \hline 0.015 \\ 0.733 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.064 \\ 0.239 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.207 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.032 \\ 0.555 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.037 \\ 0.502 \\ 339 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.348 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{gathered} \hline 0.200 \\ 0.000 \\ 290 \end{gathered}$ | $\begin{array}{r} 0.397 \\ 0.000 \\ 339 \end{array}$ | $\begin{aligned} & \hline 0.110 \\ & 0.043 \\ & 338 \\ & \hline \end{aligned}$ | $\begin{array}{r} \hline-0.096 \\ 0.076 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.045 \\ 0.412 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.337 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.037 \\ 0.495 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.322 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} \hline-0.508 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline 0.373 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.223 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.077 \\ 0.158 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline 0.318 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.211 \\ 0.000 \\ 337 \\ \hline \end{array}$ | $\begin{array}{r} 0.189 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.400 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.090 \\ 0.098 \\ 338 \\ \hline \end{array}$ |
| Pb | Pearson Corrolation Sig. (2-talled) N | $\begin{aligned} & 0.645 \\ & 0.000 \\ & 189 \end{aligned}$ | $\begin{gathered} \hline 0.215 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{aligned} & 0.571 \\ & 0.000 \\ & 339 \end{aligned}$ | $\begin{array}{r} \hline 0.144 \\ 0.008 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.163 \\ 0.003 \\ 338 \end{array}$ | $\begin{array}{r} 0.549 \\ 0.009 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.074 \\ 0.174 \\ 338 \end{array}$ | $\begin{array}{r} 0.440 \\ 0.000 \\ 290 \end{array}$ | $\begin{array}{r} -0.084 \\ 0.121 \\ 339 \end{array}$ | $\begin{aligned} & 0.370 \\ & 0.000 \\ & 338 \end{aligned}$ | $\begin{array}{r} -0.048 \\ 0.368 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.348 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.024 \\ 0.662 \\ 338 \end{array}$ | $\begin{array}{r} 0.186 \\ 0.001 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.003 \\ 0.902 \\ 330 \end{array}$ | $\begin{array}{r} 0.094 \\ 0.085 \\ 339 \end{array}$ | $\begin{array}{r} -0.087 \\ 0.110 \\ 330 \end{array}$ | $\begin{array}{r} \hline 0.207 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.042 \\ 0.446 \\ 338 \end{array}$ | $\begin{gathered} 0.364 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} 0.102 \\ 0.060 \\ 337 \end{array}$ | $\begin{array}{r} 0.111 \\ 0.041 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.047 \\ 0.388 \\ 338 \end{array}$ | $\begin{gathered} 0.215 \\ 0.000 \\ 339 \end{gathered}$ |
| Rb | $\begin{aligned} & \text { Pearson Correlation } \\ & \text { Sig. (2-tailed) } \\ & \mathrm{N} \\ & \hline \end{aligned}$ | $\begin{array}{r} 0.012 \\ 0.885 \\ 189 \\ \hline \end{array}$ | $\begin{gathered} 0.281 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} -0.057 \\ 0.292 \\ 336 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.048 \\ 0.378 \\ 338 \\ \hline \end{array}$ | $\begin{aligned} & 0.270 \\ & 0.000 \\ & 338 \\ & \hline \end{aligned}$ | $\begin{array}{r} 0.146 \\ 0.007 \\ 335 \end{array}$ | $\begin{array}{r} -0.178 \\ 0.001 \\ 339 \end{array}$ | $\begin{array}{r} -0.114 \\ 0.053 \\ 290 \\ \hline \end{array}$ | $\begin{array}{r} -0.337 \\ 0.000 \\ 330 \end{array}$ | $\begin{array}{r} -0.128 \\ 0.018 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.005 \\ 0.921 \\ 339 \end{array}$ | $\begin{gathered} 0.006 \\ 0.906 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.255 \\ 0.000 \\ 339 \end{array}$ | $\begin{gathered} 0.208 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.412 \\ 0.000 \\ 338 \end{array}$ | $\begin{gathered} 0.793 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} -0.311 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.058 \\ 0.286 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.026 \\ 0.646 \\ 335 \end{array}$ | $\begin{array}{r} -0.038 \\ 0.482 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.291 \\ 0.000 \\ 337 \end{array}$ | $\begin{array}{\|r\|} \hline-0.082 \\ 0.133 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.186 \\ 0.001 \\ 339 \end{array}$ | $\begin{gathered} 0.003 \\ 0.954 \\ 338 \\ \hline \end{gathered}$ |
| Sb | Pearson Correlation Sig . (2-tailed) N | $\begin{gathered} \hline 0.270 \\ 0.000 \\ 180 \end{gathered}$ | $\begin{array}{r} -0.085 \\ 0.118 \\ 338 \end{array}$ | $\begin{gathered} 0.213 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} \hline 0.218 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} -0.201 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.121 \\ 0.026 \\ 338 \end{array}$ | $\begin{array}{r} \hline-0.114 \\ 0.036 \\ 336 \end{array}$ | $\begin{array}{r} \hline 0.185 \\ 0.002 \\ 290 \end{array}$ | $\begin{array}{r} \hline 0.025 \\ 0.653 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.267 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.167 \\ 0.002 \\ 338 \end{array}$ | $\begin{aligned} & \hline 0.223 \\ & 0.000 \\ & 338 \end{aligned}$ | $\begin{array}{r\|} \hline 0.235 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} -0.018 \\ 0.737 \\ 338 \end{array}$ | $\begin{array}{r} 0.385 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} -0.186 \\ 0.001 \\ 338 \end{array}$ | $\begin{array}{r} -0.017 \\ 0.748 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.170 \\ 0.002 \\ 338 \end{array}$ | $\begin{array}{r} 0.176 \\ 0.001 \\ 338 \end{array}$ | $\begin{array}{r} 0.160 \\ 0.003 \\ 338 \end{array}$ | $\begin{gathered} 0.158 \\ 0.004 \\ 336 \end{gathered}$ | $\begin{array}{r} -0.238 \\ 0.000 \\ 338 \end{array}$ | -0.178 0.001 338 | $\begin{array}{r} 0.242 \\ 0.000 \\ 338 \\ \hline \end{array}$ |
| Sc | Pearson Correlation Sig. (2-tailed) N | $\begin{array}{r\|} \hline 0.036 \\ 0.624 \\ 189 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.143 \\ 0.009 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.084 \\ 0.241 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.127 \\ 0.019 \\ 339 \end{array}$ | $\begin{array}{r} -0.244 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.030 \\ 0.588 \\ 330 \\ \hline \end{array}$ | $\begin{array}{r} -0.138 \\ 0.010 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.103 \\ 0.079 \\ 290 \end{array}$ | $\begin{array}{r} 0.251 \\ 0.000 \\ 338 \end{array}$ | $\begin{gathered} \hline 0.533 \\ 0.000 \\ 339 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline 0.782 \\ 0.000 \\ 338 \end{array}$ | $\begin{gathered} 0.505 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} \hline 0.800 \\ 0.000 \\ 338 \end{array}$ | $\begin{gathered} 0.023 \\ 0.689 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline-0.016 \\ 0.773 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.090 \\ 0.100 \\ 339 \end{array}$ | $\begin{array}{r} 0.213 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.266 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{gathered} 0.712 \\ 0.000 \\ 339 \\ \hline \end{gathered}$ | $\begin{array}{r} 0.051 \\ 0.352 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.294 \\ 0.000 \\ 337 \\ \hline \end{array}$ | $\begin{array}{r} -0.520 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} -0.167 \\ 0.002 \\ 338 \end{array}$ | $\begin{array}{r}0.606 \\ 0.000 \\ 339 \\ \hline\end{array}$ |
| Sn | Pearson correlation Sig. (2-talled) N | $\begin{array}{r} \hline 0.024 \\ 0.744 \\ 189 \\ \hline \end{array}$ | $\begin{aligned} & \hline 0.136 \\ & 0.012 \\ & 336 \end{aligned}$ | $\begin{array}{r} \hline 0.104 \\ 0.055 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.372 \\ 0.000 \\ 338 \end{array}$ | $\begin{gathered} 0.338 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{gathered} \hline 0.030 \\ 0.576 \\ 339 \end{gathered}$ | $\begin{gathered} \hline 0.204 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{gathered} \hline 0.067 \\ 0.256 \\ 290 \end{gathered}$ | $\begin{gathered} 0.536 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} -0.091 \\ 0.096 \\ 339 \end{array}$ | $\begin{array}{r} 0.117 \\ 0.031 \\ 339 \end{array}$ | $\begin{array}{r} -0.228 \\ 0.000 \\ 338 \end{array}$ | $\begin{gathered} 0.218 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{gathered} \hline 0.281 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} -0.113 \\ 0.038 \\ 339 \end{array}$ | $\begin{aligned} & \hline 0.157 \\ & 0.004 \\ & 338 \\ & \hline \end{aligned}$ | $\begin{array}{r} 0.490 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} 0.028 \\ 0.648 \\ 338 \end{array}$ | $\begin{array}{r} -0.063 \\ 0.251 \\ 338 \end{array}$ | $\begin{array}{r} 0.240 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.159 \\ 0.003 \\ 337 \\ \hline \end{array}$ | $\begin{aligned} & \hline 0.323 \\ & 0.000 \\ & 339 \end{aligned}$ | $\begin{gathered} 0.725 \\ 0.000 \\ 339 \end{gathered}$ | -0.217 0.000 338 |
| $\overline{\mathrm{Sr}}$ | $\begin{aligned} & \hline \text { Pearson Correlation } \\ & \text { Sig. (2-tailed) } \\ & \mathrm{N} . \\ & \hline \end{aligned}$ | $\begin{array}{r} -0.041 \\ 0.571 \\ 189 \end{array}$ | $\begin{array}{r} 0.481 \\ 0.000 \\ 338 \end{array}$ | $\begin{gathered} 0.003 \\ 0.952 \\ 339 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline 0.407 \\ 0.000 \\ 330 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.463 \\ 0.000 \\ 330 \end{array}$ | $\begin{gathered} 0.006 \\ 0.907 \\ 338 \end{gathered}$ | $\begin{gathered} 0.597 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} -0.072 \\ 0.221 \\ 290 \\ \hline \end{array}$ | $\begin{array}{r} 0.081 \\ 0.135 \\ 338 \end{array}$ | $\begin{array}{r} -0.378 \\ 0.000 \\ 339 \end{array}$ | $\begin{gathered} -0.640 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{gathered} -0.398 \\ 0.000 \\ 339 \\ \hline \end{gathered}$ | $\begin{array}{r} -0,307 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.365 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.093 \\ 0.088 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.056 \\ 0.303 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.162 \\ 0.003 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.058 \\ 0.276 \\ 339 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.436 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.353 \\ 0.000 \\ 330 \\ \hline \end{array}$ | $\begin{array}{r} -0.213 \\ 0.000 \\ 337 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.872 \\ 0.000 \\ 335 \\ \hline \end{gathered}$ | $\begin{gathered} 0.700 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r}-0.54 \\ 0.000 \\ 338 \\ \hline\end{array}$ |
| Ta | Pearson Correlation Sig. (2-tailed) N | $\begin{array}{r\|} \hline-0.013 \\ 0.857 \\ 189 \end{array}$ | $\begin{aligned} & 0.186 \\ & 0.001 \\ & 390 \end{aligned}$ | $\begin{array}{r} 0.081 \\ 0.137 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.204 \\ 0.000 \\ 339 \end{array}$ | $\begin{aligned} & 0.363 \\ & 0.000 \\ & 339 \end{aligned}$ | $\begin{array}{r} \hline 0.013 \\ 0.808 \\ 338 \end{array}$ | 0.435 0.000 | $\begin{array}{r} \hline-0.031 \\ 0.597 \\ 290 \end{array}$ | $\begin{array}{r} \hline 0.459 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.281 \\ 0.000 \\ 330 \end{array}$ | $\begin{array}{r} -0.423 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.384 \\ 0.000 \\ 330 \end{array}$ | $\begin{array}{r} \hline-0.078 \\ 0.144 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.153 \\ 0.005 \\ 338 \end{array}$ | $\begin{array}{r} -0.180 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.031 \\ 0.568 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.474 \\ 0.000 \\ 335 \end{array}$ | $\begin{array}{r} \hline-0.176 \\ 0.001 \\ 339 \end{array}$ | $\begin{array}{r} -0.350 \\ 0.000 \\ 339 \end{array}$ | $\begin{gathered} 0.270 \\ 0.000 \\ 330 \end{gathered}$ | $\begin{array}{r} \hline-0.122 \\ 0.025 \\ 337 \end{array}$ | $\begin{aligned} & 0.608 \\ & 0.000 \\ & 339 \end{aligned}$ | $\begin{array}{r} \hline 0.917 \\ 0.000 \\ 339 \end{array}$ | -0.425 0.000 339 |
| Th | Pearson Correlation Sig. (2-tailed) N | $\begin{array}{\|r\|} \hline-0.026 \\ 0.718 \\ 188 \\ \hline \end{array}$ | $\begin{array}{r} -0.206 \\ 0.000 \\ 336 \end{array}$ | $\begin{array}{r\|} \hline 0.097 \\ 0.075 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.180 \\ 0.001 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.036 \\ 0.511 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.048 \\ 0.367 \\ 336 \\ \hline \end{array}$ | $\begin{gathered} 0.243 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r\|} \hline 0.006 \\ 0.877 \\ 290 \\ \hline \end{array}$ | $\begin{gathered} 0.831 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} 0.024 \\ 0.662 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.014 \\ 0.797 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.172 \\ 0.002 \\ 332 \end{array}$ | $\begin{gathered} \hline 0.382 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} -0.171 \\ 0.002 \\ 338 \end{array}$ | $\begin{array}{r} \hline-0.028 \\ 0.605 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.278 \\ 0.000 \\ 338 \end{array}$ | $\begin{gathered} 0.833 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline-0.058 \\ 0.290 \\ 338 \end{array}$ | $\begin{array}{r} 0.006 \\ 0.911 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline 0.228 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.182 \\ 0.003 \\ 337 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.187 \\ 0.001 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.645 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.132 \\ 0.015 \\ 339 \\ \hline \end{array}$ |
| Ti | Pearson Correlation Sig. (2-talled) N | $\begin{aligned} & \hline 0.008 \\ & 0.812 \\ & 180 \end{aligned}$ | $\begin{array}{r} -0.150 \\ 0.006 \\ 339 \end{array}$ | $\begin{aligned} & 0.032 \\ & 0.562 \\ & 338 \end{aligned}$ | $\begin{array}{r} \hline 0.073 \\ 0.181 \\ 339 \end{array}$ | $\begin{array}{r} \hline-.128 \\ 0.017 \\ 338 \end{array}$ | $\begin{array}{r} \hline-0.085 \\ 0.117 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.164 \\ 0.003 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.162 \\ 0.006 \\ 290 \end{array}$ | $\begin{array}{r} 0.445 \\ 0.000 \\ 338 \end{array}$ | $\begin{gathered} \hline 0.313 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{aligned} & 0.310 \\ & 0.000 \\ & 339 \end{aligned}$ | $\begin{array}{r} 0.196 \\ 0.000 \\ 339 \end{array}$ | $\begin{aligned} & 0.680 \\ & 0.000 \\ & 330 \end{aligned}$ | $\begin{aligned} & \hline 0.038 \\ & 0.471 \\ & 338 \end{aligned}$ | $\begin{aligned} & \hline 0.219 \\ & 0.000 \\ & 339 \end{aligned}$ | $\begin{array}{r} -0.442 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.431 \\ 0.000 \\ 339 \end{array}$ | $\begin{gathered} 0.389 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{aligned} & 0.373 \\ & 0.000 \\ & 338 \end{aligned}$ | $\begin{array}{r} \hline 0.255 \\ 0.000 \\ 339 \end{array}$ | $\begin{aligned} & 0.412 \\ & 0.000 \\ & 337 \end{aligned}$ | $\begin{array}{r} \hline-0.023 \\ 0.678 \\ 338 \end{array}$ | $\begin{gathered} 0.322 \\ 0.000 \\ 338 \end{gathered}$ | 0.235 0.000 338 |
| U | Pearson Correlation Sig. (2-tailed) N | $\begin{array}{r} 0.125 \\ 0.088 \\ 188 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.028 \\ 0.597 \\ 330 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.103 \\ 0.058 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.036 \\ 0.505 \\ 330 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.131 \\ 0.016 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.080 \\ 0.141 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} 0.203 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{gathered} \hline 0.157 \\ 0.007 \\ 290 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline 0.212 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.028 \\ 0.611 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.168 \\ 0.002 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline-0.038 \\ 0.477 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.018 \\ 0.748 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.001 \\ 0.988 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.002 \\ 0.979 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.081 \\ 0.136 \\ \quad 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.218 \\ 0.000 \\ 330 \\ \hline \end{array}$ | $\begin{array}{r} 0.104 \\ 0.056 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.155 \\ 0.004 \\ 335 \\ \hline \end{array}$ | $\begin{array}{r} 0.318 \\ 0.000 \\ 330 \\ \hline \end{array}$ | $\begin{array}{r} 0.1777 \\ 0.001 \\ 337 \\ \hline \end{array}$ | $\begin{array}{r} 0.213 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.383 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.108 \\ 0.046 \\ 338 \\ \hline \end{array}$ |
| $\overline{\mathrm{V}}$ | Pearson Correlation Sig. (2-tailed) N | $\begin{gathered} 0.030 \\ 0.684 \\ 189 \end{gathered}$ | $\begin{array}{r} -0.183 \\ 0.001 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.104 \\ 0.055 \\ 338 \end{array}$ | $\begin{array}{r} -0.034 \\ 0.535 \\ 339 \end{array}$ | $\begin{array}{r} -0.197 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} -0.025 \\ 0.648 \\ 339 \end{array}$ | $\begin{array}{r} 0.104 \\ 0.057 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.081 \\ 0.304 \\ 200 \end{array}$ | $\begin{gathered} \hline 0.483 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} \hline 0.497 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} 0.636 \\ 0.000 \\ 339 \end{array}$ | $\begin{gathered} 0.397 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{gathered} 0.912 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{gathered} 0.008 \\ 0.878 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline-0.035 \\ 0.523 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.247 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} 0.423 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{aligned} & 0.250 \\ & 0.000 \\ & 338 \\ & \hline \end{aligned}$ | $\begin{array}{r} 0.642 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.187 \\ 0.001 \\ 338 \end{array}$ | $\begin{gathered} 0.312 \\ 0.000 \\ 337 \end{gathered}$ | $\begin{array}{r} -0.288 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.181 \\ 0.001 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r}0.455 \\ 0.000 \\ 338 \\ \hline\end{array}$ |
| W | Pearson Correlation Sig. (2-talled) N | $\begin{gathered} 0.731 \\ 0.000 \\ 189 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline 0.070 \\ 0.202 \\ 330 \end{array}$ | $\begin{gathered} 0.826 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} -0.028 \\ 0.594 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.125 \\ 0.022 \\ 339 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.677 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} \hline-0.053 \\ 0.328 \\ 336 \end{array}$ | $\begin{array}{r\|} \hline 0.017 \\ 0.770 \\ 200 \end{array}$ | $\begin{array}{r} \hline-0.014 \\ 0.793 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.648 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{aligned} & 0.118 \\ & 0.028 \\ & 338 \\ & \hline \end{aligned}$ | $\begin{gathered} 0.505 \\ 0.000 \\ 330 \end{gathered}$ | $\begin{aligned} & 0.120 \\ & 0.027 \\ & 338 \\ & \hline \end{aligned}$ | $\begin{gathered} 0.043 \\ 0.430 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.050 \\ 0.360 \\ 330 \\ \hline \end{array}$ | $\begin{aligned} & 0.100 \\ & 0.086 \\ & 330 \end{aligned}$ | $\begin{array}{r} \hline 0.082 \\ 0.132 \\ 339 \\ \hline \end{array}$ | $\begin{gathered} 0.142 \\ 0.008 \\ 338 \\ \hline \end{gathered}$ | $\begin{gathered} 0.090 \\ 0.097 \\ 339 \\ \hline \end{gathered}$ | $\begin{gathered} 0.097 \\ 0.076 \\ 339 \\ \hline \end{gathered}$ | $\begin{gathered} 0.128 \\ 0.018 \\ 337 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.106 \\ 0.051 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.090 \\ 0.098 \\ 339 \end{array}$ | $\begin{array}{r}0.428 \\ 0.000 \\ 338 \\ \hline\end{array}$ |
| Y | Pearson Correlation Sig. (2-tailed) N | $\begin{array}{r} 0.262 \\ 0.000 \\ 189 \end{array}$ | $\begin{aligned} & 0.208 \\ & 0.000 \\ & 338 \end{aligned}$ | $\begin{array}{r} \hline 0.249 \\ 0.000 \\ 339 \end{array}$ | $\begin{aligned} & 0.208 \\ & 0.000 \\ & 338 \end{aligned}$ | $\begin{array}{r} \hline 0.287 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.131 \\ 0.015 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.517 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} 0.111 \\ 0.059 \\ 290 \end{array}$ | $\begin{gathered} \hline 0.497 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} \hline-0.065 \\ 0.230 \\ 338 \end{array}$ | $\begin{array}{r} -0.345 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} -0.153 \\ 0.005 \\ 338 \end{array}$ | $\begin{aligned} & 0.058 \\ & 0.278 \\ & 338 \end{aligned}$ | $\begin{aligned} & 0.140 \\ & 0.010 \\ & 338 \end{aligned}$ | $\begin{array}{r} -0.059 \\ 0.278 \\ 339 \end{array}$ | $\begin{array}{r} -0.135 \\ 0.013 \\ \quad 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.539 \\ 0.000 \\ 338 \end{array}$ | $\begin{gathered} 0.026 \\ 0.638 \\ 339 \end{gathered}$ | $\begin{array}{r} -0.261 \\ 0.000 \\ 330 \end{array}$ | $\begin{array}{r} \hline 0.428 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} -0.024 \\ 0.856 \\ 337 \\ \hline \end{array}$ | $\begin{gathered} 0.574 \\ 0.000 \\ 308 \\ \hline \end{gathered}$ | $\begin{gathered} \hline 0.848 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | -0.247 0.000 339 |
| 2 n | Pearson Correlation Sig. (2-tailed) N | $\begin{array}{r} 0.427 \\ 0.000 \\ 188 \\ \hline \end{array}$ | $\begin{gathered} 0.103 \\ 0.058 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} 0.288 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline 0.244 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.082 \\ 0.130 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.280 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.017 \\ 0.757 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} 0.657 \\ 0.000 \\ 290 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.068 \\ 0.102 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.441 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.258 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.475 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.316 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{aligned} & \hline 0.178 \\ & 0.001 \\ & 339 \\ & \hline \end{aligned}$ | $\begin{aligned} & 0.275 \\ & 0.000 \\ & 339 \\ & \hline \end{aligned}$ | $\begin{array}{r} \hline-0.151 \\ 0.005 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.120 \\ 0.027 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.465 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{c\|} \hline 0.228 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.350 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline 0.194 \\ 0.000 \\ 337 \\ \hline \end{array}$ | $\begin{array}{r} -0.103 \\ 0.056 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.142 \\ 0.008 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r}0.420 \\ 0.000 \\ 339 \\ \hline 0.115\end{array}$ |
| Zr | Pearson Correlation Sig. (2-tailed) N | $\begin{array}{r} 0.150 \\ 0.038 \\ 189 \end{array}$ | $\begin{array}{r} 0.136 \\ 0.012 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.008 \\ 0.870 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.081 \\ 0.265 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.218 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.043 \\ 0.435 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.132 \\ 0.015 \\ 338 \end{array}$ | $\begin{gathered} 0.207 \\ 0.000 \\ 290 \end{gathered}$ | $\begin{array}{r} \hline-0.125 \\ 0.021 \\ 338 \end{array}$ | $\begin{array}{r} 0.088 \\ 0.115 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.028 \\ 0.594 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.156 \\ 0.004 \\ 339 \\ \hline \end{gathered}$ | $\begin{array}{r} 0.051 \\ 0.353 \\ 338 \\ \hline \end{array}$ | 0.151 0.005 335 | $\begin{gathered} 0.989 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} \hline-0.445 \\ 0.000 \\ 338 \\ \hline \end{array}$ | -0.171 0.002 338 | 0.268 0.000 338 | -0.088 0.104 339 | -0.028 0.598 339 | 0.295 0.000 337 | 0.074 <br> 0.178 <br> 338 | $\begin{array}{r}\text {-0.243 } \\ 0.000 \\ 338 \\ \hline\end{array}$ | $\begin{array}{r}0.115 \\ 0.034 \\ 338 \\ \hline\end{array}$ |

[^0]|  | P | Pb | Rb | Sb | Sc | Sn | Sr | Ta | h | TI | U | V | W | Y | 2 n | Z |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 337 | 337 | 337 | 336 | 337 | 337 | 337 | 337 | 337 | 337 | 337 | 337 | 337 | 337 | 337 | 337 |
| Na | 0.198 0.000 | $\begin{aligned} & 0.111 \\ & 0.041 \end{aligned}$ | $\begin{array}{r} -0.082 \\ 0.133 \end{array}$ | $\begin{array}{r} -0.236 \\ 0.000 \end{array}$ | $\begin{array}{r} -0,520 \\ 0.000 \end{array}$ | $\begin{aligned} & \hline 0.323 \\ & 0.000 \end{aligned}$ | $\begin{aligned} & 0.872 \\ & 0.000 \end{aligned}$ | $\begin{aligned} & 0.608 \\ & 0.000 \end{aligned}$ | $\begin{aligned} & 0.187 \\ & 0.001 \end{aligned}$ | $\begin{array}{r} \hline-0.023 \\ 0.678 \end{array}$ | $\begin{aligned} & 0.213 \\ & 0.000 \end{aligned}$ | $\begin{array}{r} \hline-0.288 \\ 0.000 \\ 330 \end{array}$ | $\begin{array}{r} \hline 0.106 \\ 0.051 \\ 330 \end{array}$ | $\begin{aligned} & \hline 0.574 \\ & 0.000 \\ & 330 \end{aligned}$ | $\begin{array}{r} \hline-0.103 \\ 0.058 \\ 338 \end{array}$ | $\begin{gathered} \hline 0.074 \\ 0.176 \\ 338 \end{gathered}$ |
| Nb | $\begin{array}{r} \hline 0.400 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} 0.047 \\ 0.388 \\ 338 \end{array}$ | $\begin{array}{r} \hline-0.186 \\ 0.001 \\ 330 \end{array}$ | $\begin{array}{r} \hline-0.178 \\ 0.001 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.167 \\ 0.002 \\ 330 \end{array}$ | $\begin{gathered} 0.729 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} \hline 0.700 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.917 \\ 0.000 \\ 338 \end{array}$ | $\begin{gathered} \hline 0.645 \\ 0.000 \\ 335 \end{gathered}$ | $\begin{gathered} \hline 0.322 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} 0.383 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.181 \\ 0.001 \\ 330 \end{array}$ | $\begin{array}{r} \hline-0.050 \\ 0.096 \\ 339 \end{array}$ | $\begin{gathered} \hline 0.849 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} \hline-0.142 \\ 0.008 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.243 \\ 0.000 \\ 339 \\ \hline \end{array}$ |
| Ni | $\begin{array}{r} \hline-0.090 \\ 0.096 \\ 330 \end{array}$ | $\begin{array}{r} \hline 0.215 \\ 0.000 \\ 330 \end{array}$ | $\begin{gathered} \hline 0.003 \\ 0.954 \\ 339 \end{gathered}$ | $\begin{aligned} & \hline 0.242 \\ & 0.000 \\ & 338 \end{aligned}$ | $\begin{aligned} & \hline 0.600 \\ & 0.000 \\ & 339 \end{aligned}$ | $\begin{array}{r} \hline-0.217 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r\|} \hline-0.544 \\ 0.000 \\ 330 \end{array}$ | $\begin{array}{r} \hline-0.425 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline-0.132 \\ 0.015 \\ 339 \end{array}$ | $\begin{gathered} \hline 0235 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} -0.108 \\ 0.046 \\ 338 \end{array}$ | $\begin{array}{r} 0.455 \\ 0.000 \\ 330 \end{array}$ | $\begin{array}{r} \hline 0.428 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.247 \\ 0.000 \\ 330 \end{array}$ | $\begin{array}{r} \hline 0.420 \\ 0.000 \\ 330 \end{array}$ | $\begin{array}{r} \hline 0.115 \\ 0.036 \\ 338 \end{array}$ |
| P |  | $\begin{array}{r} -0.065 \\ 0.235 \\ 330 \end{array}$ | $\begin{array}{r} -0.566 \\ 0.000 \\ 339 \end{array}$ | $\begin{aligned} & \hline 0.238 \\ & 0.000 \\ & 338 \end{aligned}$ | $\begin{gathered} 0.188 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} 0.352 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} 0.184 \\ 0.001 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.167 \\ 0.002 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.423 \\ 0.000 \\ 330 \end{array}$ | $\begin{gathered} 0.614 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} \hline 0.113 \\ 0.036 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.418 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} \hline-0.043 \\ 0.433 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} 0.277 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r\|} \hline 0.150 \\ 0.006 \\ 339 \end{array}$ | $\begin{aligned} & 0.296 \\ & 0.000 \\ & 338 \end{aligned}$ |
| Pb | $\begin{array}{r} -0.065 \\ 0.235 \\ 335 \end{array}$ |  | $\begin{array}{r} 0.155 \\ 0.004 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.166 \\ 0.002 \\ 336 \end{array}$ | $\begin{array}{r} -0.097 \\ 0.075 \\ 338 \\ \hline \end{array}$ | $\begin{aligned} & \hline 0.046 \\ & 0.395 \\ & 338 \\ & \hline \end{aligned}$ | $\begin{array}{r} 0.132 \\ 0.015 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.083 \\ 0.126 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.073 \\ 0.180 \\ 330 \end{array}$ | $\begin{array}{r} -0.088 \\ 0.104 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} 0.138 \\ 0.010 \\ 338 \end{gathered}$ | $\begin{array}{r} -0.071 \\ 0.192 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} 0.515 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{gathered} \hline .218 \\ 0.000 \\ 335 \\ \hline \end{gathered}$ | $\begin{gathered} \hline 0.505 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} -0.023 \\ 0.674 \\ 339 \\ \hline \end{array}$ |
| Rb | $\begin{gathered} -0.566 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r\|} \hline 0.158 \\ 0.004 \\ 338 \end{array}$ | 339 | $\begin{array}{r} -0.228 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.055 \\ 0.280 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.070 \\ 0.189 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.002 \\ 0.973 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.008 \\ 0.854 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.357 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} -0.383 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{\|c\|} \hline 0.002 \\ 0.975 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.230 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.088 \\ 0.106 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.082 \\ 0.134 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.023 \\ 0.677 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.422 \\ 0.000 \\ 339 \\ \hline \end{array}$ |
| Sb | $\begin{array}{r} 0.238 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} 0.166 \\ 0.002 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.228 \\ 0.000 \\ 338 \end{array}$ |  | $\begin{gathered} 0.203 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{gathered} \hline 0.052 \\ 0.340 \\ 338 \end{gathered}$ | $\begin{array}{r} -0.301 \\ 0.000 \\ 336 \\ \hline \end{array}$ | $\begin{array}{r} -0.250 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{aligned} & 0.051 \\ & 0.348 \\ & 338 \\ & \hline \end{aligned}$ | $\begin{array}{r\|} \hline 0.136 \\ 0.012 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.090 \\ 0.100 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.178 \\ 0.001 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.114 \\ 0.036 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0,174 \\ 0.001 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.398 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} \hline 0.364 \\ 0.000 \\ 338 \\ \hline \end{array}$ |
| So | $\begin{array}{r} 0.189 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} -0.097 \\ 0.075 \\ 335 \end{array}$ | $\begin{array}{r} -0.058 \\ 0.280 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.203 \\ 0.000 \\ 338 \end{array}$ |  | $\begin{array}{r} \hline 0.130 \\ 0.011 \\ 330 \end{array}$ | $\begin{array}{r} -0.450 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} -0.341 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} 0.151 \\ 0.005 \\ 339 \end{array}$ | $\begin{array}{r} 0.601 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.127 \\ 0.020 \\ 338 \end{array}$ | $\begin{array}{r} 0.770 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{aligned} & \hline 0.056 \\ & 0.300 \\ & 338 \\ & \hline \end{aligned}$ | $\begin{array}{r} -0.206 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.258 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.048 \\ 0.412 \\ 338 \end{array}$ |
| Sn | $\begin{array}{r} 0.352 \\ 0.000 \\ 338 \end{array}$ | $\begin{aligned} & \hline 0.046 \\ & 0.395 \\ & 338 \\ & \hline \end{aligned}$ | $\begin{array}{r} \hline-0.070 \\ 0.109 \\ 338 \end{array}$ | $\begin{array}{r} 0.052 \\ 0.340 \\ 338 \end{array}$ | $\begin{array}{r} 0.130 \\ 0.011 \\ 330 \end{array}$ |  | $\begin{array}{r} \hline 0.320 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline 0.592 \\ 0.000 \\ 339 \end{array}$ | $\begin{aligned} & 0.582 \\ & 0.000 \\ & 339 \end{aligned}$ | $\begin{gathered} 0.370 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{gathered} 0.144 \\ 0.008 \\ 330 \\ \hline \end{gathered}$ | $\begin{array}{r} 0.305 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} 0.001 \\ 0.968 \\ 338 \\ \hline \end{gathered}$ | $\begin{aligned} & 0.488 \\ & 0.000 \\ & 338 \end{aligned}$ | $\begin{gathered} \hline 0.010 \\ 0.858 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.154 \\ 0.004 \\ 336 \end{array}$ |
| St | $\begin{gathered} 0.184 \\ 0.001 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} 0.132 \\ 0.015 \\ 336 \end{array}$ | $\begin{gathered} 0.002 \\ 0.973 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline-0.301 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.490 \\ 0.000 \\ 330 \end{array}$ | $\begin{array}{r} \hline 0.326 \\ 0.000 \\ 336 \end{array}$ |  | $\begin{aligned} & 0.705 \\ & 0.000 \\ & 338 \end{aligned}$ | $\begin{gathered} 0.223 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{gathered} -0.034 \\ 0.534 \\ 338 \\ \hline \end{gathered}$ | $\begin{aligned} & 0.290 \\ & 0.000 \\ & 339 \end{aligned}$ | $\begin{array}{r} -0.202 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.098 \\ 0.070 \\ 338 \end{array}$ | $\begin{aligned} & \hline 0.691 \\ & 0.000 \\ & 339 \end{aligned}$ | $\begin{array}{r} -0.131 \\ 0.016 \\ 338 \end{array}$ | $\begin{array}{r} -0.174 \\ 0.001 \\ 339 \end{array}$ |
| Ta | $\begin{array}{r} 0.167 \\ 0.002 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.083 \\ 0.126 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.008 \\ 0.884 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.250 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} -0.341 \\ 0.000 \\ 338 \end{array}$ | $\begin{gathered} 0.592 \\ 0.000 \\ 335 \\ \hline \end{gathered}$ | $\begin{array}{r\|} \hline 0.708 \\ 0.000 \\ 339 \end{array}$ | 339 | $\begin{gathered} 0.516 \\ 0.000 \\ 339 \\ \hline \end{gathered}$ | $\begin{gathered} 0.076 \\ 0.160 \\ 338 \\ \hline \end{gathered}$ | $\begin{gathered} \hline 0.424 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{\|c\|} \hline-0.004 \\ 0.940 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.069 \\ 0.204 \\ 339 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.863 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} \hline 0.197 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} -0.276 \\ 0.000 \\ 339 \end{array}$ |
| Th | $\begin{array}{r} 0.423 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.073 \\ \hline 0.180 \\ 339 \end{array}$ | $\begin{array}{r} -0.357 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} 0.051 \\ 0.348 \\ 338 \end{array}$ | $\begin{array}{r} 0.151 \\ 0.005 \\ 335 \end{array}$ | $\begin{gathered} 0.582 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} 0.223 \\ 0.000 \\ 339 \end{array}$ | $\begin{aligned} & 0.516 \\ & 0.000 \\ & 330 \end{aligned}$ |  | $\begin{gathered} \hline 0.453 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{gathered} 0.263 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} 0.432 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline-0.033 \\ 0.548 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.507 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} -0.063 \\ 0.247 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.044 \\ 0.415 \\ 338 \end{array}$ |
| Ti | $\begin{gathered} 0.614 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.088 \\ 0.104 \\ 338 \end{array}$ | $\begin{array}{r} -0.383 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.136 \\ 0.012 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} 0.601 \\ 0.000 \\ 339 \\ \hline \end{gathered}$ | $\begin{gathered} 0.370 \\ 0.000 \\ 330 \end{gathered}$ | $\begin{array}{r} -0.034 \\ 0.534 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.076 \\ 0.160 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.453 \\ 0.000 \\ 338 \\ \hline \end{array}$ |  | $\begin{gathered} 0.095 \\ 0.080 \\ 339 \end{gathered}$ | $\begin{gathered} \hline 0.775 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline-0.086 \\ 0.224 \\ 338 \\ \hline \end{array}$ | $\begin{aligned} & \hline 0.190 \\ & 0.000 \\ & 338 \\ & \hline \end{aligned}$ | $\begin{gathered} \hline 0.242 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r}0.231 \\ 0.000 \\ 338 \\ \hline\end{array}$ |
| U | $\begin{array}{r} 0.113 \\ 0.038 \\ 338 \end{array}$ | $\begin{array}{r} 0.138 \\ 0.010 \\ 338 \end{array}$ | $\begin{array}{r} 0.002 \\ 0.975 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.080 \\ 0.100 \\ 338 \end{array}$ | $\begin{array}{r} -0.127 \\ 0.020 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.144 \\ 0.008 \\ 338 \end{gathered}$ | $\begin{gathered} \hline 0.290 \\ 0.000 \\ 330 \end{gathered}$ | $\begin{array}{r} 0.424 \\ 0.000 \\ 330 \end{array}$ | $\begin{gathered} 0.263 \\ 0.000 \\ 330 \end{gathered}$ | $\begin{gathered} 0.095 \\ 0.080 \\ 338 \end{gathered}$ | 338 | $\begin{array}{r} 0.037 \\ 0.503 \\ 338 \\ \hline \end{array}$ | $\begin{aligned} & \hline 0.052 \\ & 0.340 \\ & 339 \end{aligned}$ | $\begin{aligned} & \hline 0.520 \\ & 0.000 \\ & 339 \end{aligned}$ | $\begin{aligned} & \hline 0.1122 \\ & 0.039 \\ & 339 \end{aligned}$ | $\begin{array}{r}-0.030 \\ 0.578 \\ 335 \\ \hline\end{array}$ |
| V | $\begin{array}{r} 0.419 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.071 \\ 0.192 \\ 339 \end{array}$ | $\begin{array}{r} -0.230 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.178 \\ 0.001 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.779 \\ 0.000 \\ 339 \\ \hline \end{gathered}$ | $\begin{gathered} 0.305 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.202 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.004 \\ 0.940 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.432 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{gathered} 0.775 \\ 0.000 \\ 339 \\ \hline \end{gathered}$ | $\begin{array}{r} \hline 0.037 \\ 0.503 \\ 338 \\ \hline \end{array}$ |  | $\begin{array}{r} 0.023 \\ 0.672 \\ 339 \\ \hline \end{array}$ | $\begin{aligned} & \hline 0.074 \\ & 0.175 \\ & 338 \\ & \hline \end{aligned}$ | $\begin{array}{r\|} \hline 0.259 \\ 0.000 \\ 335 \\ \hline \end{array}$ | $\begin{array}{r}-0.012 \\ 0.826 \\ 33 \\ \hline\end{array}$ |
| W | $\begin{array}{r} -0.043 \\ 0.433 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.515 \\ 0.000 \\ 339 \end{array}$ | $\begin{aligned} & 0.088 \\ & 0.106 \\ & 330 \\ & \hline \end{aligned}$ | $\begin{array}{r\|} \hline 0.114 \\ 0.036 \\ 338 \\ \hline \end{array}$ | $\begin{aligned} & 0.056 \\ & 0.300 \\ & 338 \\ & \hline \end{aligned}$ | $\begin{gathered} 0.001 \\ 0.888 \\ 339 \\ \hline \end{gathered}$ | $\begin{array}{r} -0.098 \\ 0.070 \\ 338 \end{array}$ | $\begin{array}{r} -0.068 \\ 0.204 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.033 \\ 0.548 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.066 \\ 0.224 \\ 338 \end{array}$ | $\begin{array}{r} 0.052 \\ 0.340 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.023 \\ 0.672 \\ 338 \\ \hline \end{array}$ | 339 | $\begin{array}{r} 0.060 \\ 0.287 \\ 336 \end{array}$ | $\begin{array}{r} 0.241 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r}-0.043 \\ 0.428 \\ 338 \\ \hline\end{array}$ |
| Y | $\begin{gathered} 0.277 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{gathered} 0.218 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{array}{r} \hline-0.082 \\ 0.134 \\ 338 \end{array}$ | $\begin{array}{r} \hline 0.174 \\ 0.001 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.206 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} 0.488 \\ 0.000 \\ 339 \end{array}$ | $\begin{gathered} \hline 0.691 \\ 0.000 \\ 339 \end{gathered}$ | $\begin{gathered} \hline 0.863 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{gathered} 0.507 \\ 0.000 \\ 338 \\ \hline \end{gathered}$ | $\begin{aligned} & \hline 0.180 \\ & 0.000 \\ & 338 \end{aligned}$ | $\begin{aligned} & \hline 0.526 \\ & 0.000 \\ & 338 \\ & \hline \end{aligned}$ | $\begin{array}{r} \hline 0.074 \\ 0.175 \\ 339 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.060 \\ 0.267 \\ 339 \\ \hline \end{gathered}$ | 338 | $\begin{array}{r} \hline-0.013 \\ 0,809 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r}-0.12 \\ 0.02 \\ 33 \\ \hline 0 .\end{array}$ |
| Zn | $\begin{array}{r} 0.150 \\ 0.006 \\ 330 \\ \hline \end{array}$ | $\begin{array}{r} 0.505 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r} -0.023 \\ 0.677 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} 0.398 \\ 0.000 \\ 338 \end{gathered}$ | $\begin{array}{r} 0.258 \\ 0.000 \\ 338 \end{array}$ | $\begin{aligned} & 0.010 \\ & 0.858 \\ & 330 \end{aligned}$ | $\begin{array}{r} \hline-0.131 \\ 0.016 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.197 \\ 0.000 \\ 330 \\ \hline \end{array}$ | $\begin{array}{r} -0.063 \\ 0.247 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline 0.242 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{gathered} \hline 0.112 \\ 0.038 \\ 339 \\ \hline \end{gathered}$ | $\begin{array}{r} 0.250 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} 0.241 \\ 0.000 \\ 339 \\ \hline \end{array}$ | $\begin{gathered} -0.013 \\ 0.808 \\ 338 \\ \hline \end{gathered}$ | 339 | $\begin{array}{r}0.275 \\ 0.000 \\ 339 \\ \hline\end{array}$ |
| $\overline{\mathrm{Zr}}$ | 0.296 0.000 339 | -0.023 0.674 339 | $\begin{array}{r} -0.422 \\ 0.000 \\ 339 \end{array}$ | $\begin{array}{r\|} \hline 0.364 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r\|} \hline 0.045 \\ 0.412 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.154 \\ 0.004 \\ 339 \end{array}$ | $\begin{array}{r} \hline-0.174 \\ 0.001 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.276 \\ 0.000 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} -0.044 \\ 0.415 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} 0.231 \\ 0.000 \\ 338 \end{array}$ | $\begin{array}{r} -0.030 \\ 0.579 \\ 339 \end{array}$ | $\begin{array}{r} -0.012 \\ 0.826 \\ 338 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0,043 \\ 0.428 \\ 339 \\ \hline \end{array}$ | $\begin{array}{r} \hline-0.126 \\ 0.022 \\ 336 \\ \hline \end{array}$ | 0.275 0.000 330 | 338 |

- Correla


## CONCLUSIONS

The program completed to date on the Sanca Creek property was intended to continue development an geochemical database on which to build upon in subsequent programs. Detailed 1:20,000 TRIM maps have been utilized to provide an accurate base map on which to compile data. As a result, the base map and subsequent overlays are intended to guide subsequent exploration of the property.

The preliminary deposit type under consideration in this program is that of a low tonnage, high grade vein type deposit. Minfile data reported for the area appear to consist of a number of vein-type occurrences with elevated to potentially ore grade base $\pm$ precious metal values. Furthermore, many of the reported occurrences may be on-strike equivalents of one another, allowing potential to develop one or more seemingly unrelated occurrences into larger, perhaps economically feasible deposits. In the course of the 1997-98 program, a suite of potential pathfinder elements was identified, proposed to be utilized in subsequent soil geochemical surveys. The validity of the potential pathfinders will have to be verified for soils, as they have been identified on the basis of rock samples. However, a comparison of mineralized rock samples relative to preliminary background values strongly suggests that soils may be a powerful tool with which to undertake preliminary evaluation of the large area encompassed by the claims.

Additional work is strongly recommended on the Sanca Creek property to evaluate the possibility of one or more north-south, moderately to steeply east dipping, mineralized vein systems. There may be at least two present, identified on the basis of work completed to date: (1) the Valparaiso Government and its possible on-strike equivalents (including the Lakeview, Iolanthe, Hope and Copper Canyon) and (2) the German Basin - former Vancouver Crown Grant. Localized surface soil geochemical surveys could very rapidly and inexpensively determine the validity of this hypothesis utilizing a number of soil lines oriented perpendicular to the projected surface trace of the vein systems. The strong response of the vein system in $\mathrm{Ag}, \mathrm{As}, \mathrm{Au}, \mathrm{Bi}, \mathrm{Cu}, \mathrm{Fe}, \mathrm{Mn}, \mathrm{Pb}, \mathrm{Sb}, \mathrm{W}$ and/or Zn , may allow delineation of the vein systems along strike, if present.

Other possible commodities identified on, or adjacent to, the property include tungsten and molybdenum, both of which may be associated with granitoid intrusions. Work completed previously to the immediate east of the property identified low grade, but anomalous molybdenum and high grade assays have been returned for tungsten from samples taken on the Sanca property. Molybdenum, based on limited previous work, is associated with the older Mount Skelly Pluton (former JAIM and ELMO claims). Further work is proposed to continue evaluation of molybdenum as a possible commodity of interest on the property.

Several vein-type mineralized occurrences have been identified and/or documented within the granitic host rocks of the Sanca Stock and the Mount Skelly Pluton. These may be polymetallic veins, and therefore having low tonnage - high grade potential. Alternatively, they may be veins consistent with an Intrusion-Related Gold model and part of a high tonnage - low grade system with local high grade to bonanza grade gold veins.

Geochemical data compiled to date may be indicative of potential for an intrusion-related gold deposit, particularly with regard to the association of anomalous arsenic, bismuth, antimony and tungsten with gold, as documented for the property. It is interesting to conjecture on the possible size of the system, given the documented presence of the various MINFILE occurrences, spatially associated with the Sanca Stock (Fig. 3). Mineralized, and apparently sheeted, veins and veinlets at approximate UTM coordinates $525807 \mathrm{E}, 5471353 \mathrm{~N}(1600 \mathrm{~m})$ might be interpreted as having a structural position close to the base of a potentially mineralized system as would the Royal, Sarah and Valparasio - Government MINFILE occurrences (1200-1500 m). The German Basin occurrence would then be located at a structurally higher location ( 2000 m ), close to the erosional upper limits of the current exposure. All of these MINFILE occurrences are located around the periphery of the Sanca Stock. This may be an indication of localization of mineralization in the outer shell of the original intrusive body, in which case the mineralized upper carapace has been eroded away. Alternatively, the MINFILE occurrences may represent several of the higher grade veins and veinlets localized within a much larger, low grade mineralized system. If this is the case, there is up to 900 metres of vertical exposure (from the Valparaiso - Government at 1200 m to the uppermost elevations of the exposed Sanca Stock at 2100 m ) to evaluate, having an approximate areal extent of $20 \mathrm{~km}^{2}$.

The presence of a relatively large number of documented MINFILE occurrences spatially associated with the youngest intrusive phase is interpreted to indicate the intrusion of a volatile-rich magma into a regionally reactive stratigraphy (i.e. the uppermost Purcell Supergroup). Therefore, the author believes there is considerable potential to identify additional mineral occurrences in the adjacent host strata of the uppermost Purcell Supergroup, particularly the Mount Nelson Formation. There are a relatively high proportion of MINFILE occurrences localized within or immediately adjacent to the Mount Nelson Formation along its exposure within the regionally significant Moyie Anticline, particularly proximal to intrusions (i.e. the Cretaceous Horsethief Creek Batholith). Additional work should be undertaken to locate and evaluate the Hope of Discovery and Copper Canyon MINFILE occurrences north of Akokli Creek. In addition, exploration along the mapped trace of the Mount Nelson Formation should be undertaken as well.

## RECOMMENDATIONS

## Regional

1) Complete compilation of all ground data, including soil geochemistry and geophysics on, and immediately adjacent to, the Sanca Creek property to assist in subsequent decisions regarding exploration on the property;
2) Evaluate available air photos for the property in an attempt to identify linear features, particularly any trending essentially north-south ( $\pm 20^{\circ}$ ), which might reflect mineralized veins and/or fractures on the property. In addition, air photo interpretation may assist in qualitatively evaluating the possibility that many of the Minfile occurrences documented on the property are, in fact, separate exposures along one or more vein systems, thereby establishing a larger possible resource if grade is continuous;
3) The existing road system on the claims should be driven and prospected, specifically for mineralized veins and/or fracture systems;
4) Soil samples should be taken along the road system throughout the Mount Skelly Pluton and Sanca Creek Stock so as to: 1) provide background values with which to assess potentially anomalous geochemical values, 2) identify potentially anomalous locations for subsequent detailed follow-up, and 3) provide a cost effective methodology for evaluating the potential for high tonnage mineralization (i.e. molybdenum and/or gold);
5) Silt samples should be taken from all drainages sourced from within both the Mount Skelly Pluton and Sanca Creek Stock to provide a means of potentially anomalous drainages for subsequent follow-up;
6) Continue efforts to locate and examine all MINFILE occurrences within, and immediately adjacent to, the Sanca Creek property to evaluate the possibility they are on-strike equivalents of the vein system(s) currently identified on the property;
7) Additional claims should be considered for acquisition to cover: 1) the entirety of the exposed Sanca Stock, and 2) the MINFILE occurrences immediately north of Akokli Creek (Hope of Discovery and Copper Canyon) as well as the regionally reactive Mount Nelson Formation;

## Detailed

8) The former Vancouver Crown Grant has strong potential for vein type mineralization. Anomalous soil geochemical results on the former Vancouver Crown Grant may represent the on-strike equivalent of the German Basin vein. Any old workings reported should be accessed, evaluated and sampled.

The area within and around the former Vancouver Crown Grant should be prospected and mapped, specifically looking for evidence of the shear proposed by Borovic (1989b), coupled with the VLF geophysical anomalies. Additional testing of ground geophysical methods should be considered, particularly VLF to identify possible mineralized veins, once again oriented perpendicular to, and across, the projected surface trace of the veins;
9) Undertake localized soil geochemical surveys across the on-strike extensions of the Valparaiso-Government and German Basin vein systems, as determined by the surface trace of structure contoured projections. Soils should be analyzed by ICP technique and data subsequently evaluated for some or all of the following elements, anomalous $\mathrm{Ag}, \mathrm{As}, \mathrm{Au}, \mathrm{Bi}$, $\mathrm{Cu}, \mathrm{Fe}, \mathrm{Mn}, \mathrm{Pb}, \mathrm{Sb}, \mathrm{W}$ and/or Zn .
10) Examine the former Hope of Discovery and Copper Canyon MINFILE occurrences need to be located and sampled to evaluate the possibility they represent the on-strike equivalents of the Valparaiso-Government vein system;
11) Acquisition of the Valparaiso - Government Crown Grants should be considered as they represent a potential asset in the form of relatively extensive underground workings on a well documented mineralized vein. Alternatively, they must also be considered a possible liability given the high levels of arsenic documented through sampling successive generations of exploration.

## REFERENCES

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## APPENDIX A

## STATEMENT OF QUALIFICATIONS

## STATEMENT OF QUALIFICATIONS

I, Richard T. Walker, of 656 Brookview Crescent, Cranbrook, B.C., hereby certify that:

1) I am a graduate of the University of Calgary of Calgary, Alberta, having obtained a Bachelors of Science in 1986,
2) I obtained a Masters of Geology at the University of Calgary of Calgary, Alberta in 1989;
3) I am a member in good standing with the Association of Professional Engineers and Geoscientists of the Province of British Columbia;
4) I am a Fellow of the Geological Association of Canada;
5) I am a consulting geologist and Principle of Dynamic Exploration Ltd. with offices at 656 Brookview Crescent, Cranbrook, British Columbia;
6) I am the author of this report which is based on limited preliminary work undertaken on a soil sample survey acquired for the project between August 28 and October 13, 2004;
7) I have a direct interest in Jasper Mining Corporation.
8) I hereby grant my permission to Jasper Mining Corproation to use this report, or any portion of it, for any legal purposes normal to the business of the firm, provided the excerpts used do not materially deviate from the intent of this report as set out in the whole.

Dated at Cranbrook, British Columbia this $1^{\text {st }}$ day of June, 2005.


Richard T. Walker, P.Geo, F.G.A.C.

## APPENDIX B

## SAMPLE ANALYSES



GROUP 1EX - 0.25 GM SAMPLE DIGESTED WITH HCLO4-HNO3-HCL-HF TO 10 ML . ( $>$ ) CONCENTRATION EXCEEDS UPPER LImits. some minerals may be partially attacked. refractory and graphitic samples can limit al solubility. for some minerals \& may volatize some elements, amalysis by icp-ms.

- SAMPLE TYPE: SOil SS8O

Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

Data~ FA $\qquad$




24-0.121
 $\begin{array}{llllllllllllll}1.6 & 22.2 & 25.4 & 115 & <.1 & 17.3 & 9 & 643 & 3.30 & 7 & 5.1 & <.1 & 11.8 & 274\end{array}$
 $\begin{array}{lllllllllllll}1.0 & 19.7 & 19.9 & 89 & <.1 & 14.4 & 8 & 485 & 2.98 & 7 & 4.0 & <.1 & 14.2\end{array} 317$


$$
\begin{array}{llllllllllll}
19.9 & 27.5 & 123 & <.1 & 16.8 & 13 & 333 & 4.43 & 10 & 5.1 & <.1 & 23.9 \\
465
\end{array}
$$

$$
\begin{array}{llllllllllllll}
1.3 & 16.5 & 43.3 & 96 & <.1 & 14.3 & 10 & 560 & 4.27 & 9 & 6.9 & <.1 & 40.9 & 434
\end{array}
$$

$$
\begin{array}{llllllllllll}
04-0-150 \\
04-0.151 & 1.2 & 17.1 & 31.2 & 112 & .1 & 13.9 & 11 & 660 & 3.70 & 7 & 5.7 \\
\hline & <.1 & 26.8 & 391 & .2
\end{array}
$$

 $\begin{array}{llllllllllllllllllllllllllllllllllll}.4 & 93 & 1.15 & .220 & 24.0 & 30.0 & .63 & 647 & .527 & 7.57 & 1.767 & 1.53 & 1.8 & 91.0 & 55 & 2.4 & 11.8 & 17.6 & .9 & 3 & 6 & 74.6 & <.1 & 45.7 & 3.2 & 21.4\end{array}$























 $\begin{array}{lllllllllllllllllllllllllllllllllllllllllll}.2 & .4 & 122 & 1.67 & .206 & 76.3 & 37.0 & .88 & 752 & .511 & 7.63 & 1.943 & 1.95 & 1.6 & 45.6 & 142 & 2.9 & 25.0 & 47.5 & 3.1 & 2 & 10 & 31.9 & <.1 & 65.5 & 1.8 & 17.2\end{array}$ $\begin{array}{llllllllllllllllllllllllllllllllllllll}2 & .2 & .3 & 104 & 1.74 & .201 & 65.3 & 32.5 & .98 & 780 & .515 & 7.30 & 1.776 & 1.88 & 1.4 & 48.9 & 130 & 2.8 & 22.7 & 39.7 & 2.5 & 2 & 10 & 40.8 & <.1 & 83.1 & 2.0 & 17.2\end{array}$
 $\begin{array}{llllllllllllllllllllllllllllllllllllll}3 & .3 & 139 & 1.83 & .178 & 56.8 & 36.5 & 1.43 & 841 & .647 & 7.21 & 1.728 & 2.25 & 1.8 & 32.0 & 108 & 3.3 & 21.0 & 49.7 & 2.6 & 2 & 11 & 47.9 & \times .2 & 73.0 & 1.4 & 20.0\end{array}$


04-0-154 04-0.-155 04.0.156
04 -0.157

04-D-158
04-8-159
04-D-160
$\begin{array}{rrrlrlllllllll}1.2 & 7.9 & 17.3 & 76 & <.1 & 11.5 & 10 & 621 & 4.71 & 12 & 8.7 & <.1 & 38.9 & 479 \\ 1.2 & 10.3 & 18.7 & 90 & <.1113 .9 & 12 & 682 & 5.07 & 12 & 6.0 & <.1 & 34.3 & 46\end{array}$

| $04-0-162$ | 1.4 | 13.1 | 19.7 | 69 | $<.1$ | 11.8 | 10 | 712 | 5.02 | 12 | 7.0 | $<.1$ | 40.6 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 0.177 |  |  |  |  |  |  |  |  |  |  |  |  |  |

04-0-163
$04-0.164$
$04 \cdot 0.165$


24-0-166
$04-0-167$
$04 \cdot 0-168$
04.0-168

$\begin{array}{llllllllllllllll}04-0-169 & 1.2 & 11.5 & 22.1 & 83<1 & 8.5 & 11 & 830 & 3.65 & 11 & 8.0 & <1 & 23.3 & 806\end{array}$
$04-\mathrm{D}-170$
RE $04-\mathrm{D}-170$
$\mathrm{O} 4-\mathrm{D}-171$
$\begin{array}{llllllllllllllll}.5 & 10.0 & 20.9 & 112 & <.1 & 10.1 & 6 & 448 & 2.79 & 8 & 8.1 & <.1 & 21.1 & 379 & .1\end{array}$




04-D.173
$04-0-174$
04-0-175
04-0-176
04-0.178
04-0.-179
$04-0-180$
$04 \cdot 0-181$
04-0-182
04-0-183

| 04 | 1.3 | 16.9 | 21.7 | 369 | .2 | 11.0 | 10 | 1159 | 2.85 | 7 | 2.7 | $<.1$ | 10.9 | 272 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |


$\begin{array}{llllllllllllll}04.0-185 & 7 & 15.7 & 24.5 & 117 & 1 & 13.6 & 7 & 716 & 2.33 & 5 & 2.8 & <.1 & 12.8 \\ 04-0.186 & 5 & 189\end{array}$


Sample_type: 5011 SSSO. Samples beginning -RE' are Reruns and 'RRE are Reject Reruns.


Sample type: Soll Ss80. Samples Degiming 'RE' are Reruns and 'RRE' are Reject Reruns.





$\begin{array}{llllllllllllllll}04-0.224 & 8 & 7.8 & 32.3 & 31 & <.1 & 6.1 & 2 & 415 & 1.29 & 914.2 & <.1 & 9.0 & 498 & <.1 & .2\end{array}$
$714.2 \quad 26.5 \quad 54<113.16$









Sample type: Soll 5580. Sapples Deginning RE; are Reruns and 'RRE are Reject Reruns.

## APPENDIX C

## STATEMENT OF EXPENDITURES

## STATEMENT OF EXPENDITURES

The following expenses were incurred on behalf of the Sanca Creek project between August 28 and October 13, 2004.

## PERSONNEL

R.T. Walker, P.Geo. - 2.0 days at $\$ 500$ / day ..... \$ 1,000.00Assistant - 2.0 day at $\$ 300$ / day

$$
\$ \quad 600.00
$$

$$
\$ \quad 1,600.00
$$

EQUIPMENT RENTAL
4 Wheel Drive Vehicles - Truck - 2.0 days at $\$ 75$ / day ..... \$ 150.00
Mileage-270 km@\$0.50/km ..... 135.00
VHF Radio - 2 days at $\$ 20$ / day ..... $\$ \quad 40.00$$\$ \quad 325.55$
ANALYSIS
144 Soil samples ..... $\$ 2,240.32$\$ 2,240.32
MISCELLANEOUS
Accommodation / Food - 4 man-days at $\$ 100$ / day ..... \$ 400.00
Field Supplies - 4 man-days at $\$ 15$ / day ..... 60.00
Fuel ..... 130.00
Shipping ..... $\$ \quad 50.00$
\$ 640.00
REPORT WRITING / PREPARATION
R. T. Walker, P.Geo.: 2.0 days $\times \$ 500.00 /$ day ..... \$ 1,000.00
Reproduction
\$ 1,050.00

## APPENDIX D

## PROGRAM RELATED DOCUMENTS

## B.C. HOME

## Mineral Titles

## Mineral Claim

 Exploration and Development Work/Expiry Date ChangeSelect Input Method
Petect/Input Tenures
Wata Input Form
Review Form Data
2 Process Pavment

* Confirmation
* Main Menu
* Search Tenures
- View Mineral Tenures
$\rightarrow$ View Placer Tenures



## Mineral Titles Online

Mineral Claim Exploration and Development Work/Expiry Date Change

Submitter: RICHARD THOMAS
Effective: 2005/MAR/01

Event Number: 4020163


Total required work value: $\$ 4427.40$
PAC name:

| Debited PAC amount: | $\$$ | 0.00 |
| :--- | ---: | ---: |
| Credited PAC amount: | $\$$ | 48.60 |
| Total Submission Fees: | $\$$ | 221.37 |
| Total Paid: | $\$$ | 221.37 |

The event was successfully saved.

Please use Back button to go back to event confirmation index.




[^0]:    Correlation is signiticant at the 0.05 level ( 2 -talled).

