

## DRILLING OF EPITHERMAL GOLD-SILVER TARGETS COMMENCES AT THE NEEDLES GOLD PROJECT, NEVADA

Six high-grade targets to be tested as part of the current campaign



### Key Highlights

- **Eight-hole / 1,170m RC drilling campaign underway at the Needles Gold Project in Nevada, USA.**
- **Six priority targets to be drill-tested:**
  - **Eastern Shaft** – Rock-chip samples of up to 33g/t Au and 622g/t Ag proximal to a historical mine shaft.
  - **Tomahawk** – 200m-long trend at the Tomahawk Mine, with assays up to 5.54g/t Au and 406g/t Ag.
  - **Arrowhead Mine** – 107m-deep, 4-level mine with along-strike intersections including 3.42m @ 2.92g/t Au and 905g/t Ag.
  - **Arrowhead East** – Two drill targets with strong arsenic pathfinder grades ranging from 1,860ppm to 6,640ppm, gold grades of up to 1.1g/t Au and silver of up to 5.5g/t Ag.
  - **Whopper Junior** – Strong pathfinder anomalism in antimony, arsenic and mercury.
- **Company expects to complete drilling within two weeks and mobilise the rig to commence drilling at its 100%-owned Red Mountain Lithium Project.**

Astute Metals NL (ASX: ASE) (“ASE”, “Astute” or “the Company”) is pleased to advise that Reverse Circulation (RC) drilling has now commenced at its Needles Gold-Silver Project in Nevada, USA. A series of six high-priority vein-style gold-silver targets will be tested as part of the eight-hole campaign.

The Company has engaged experienced international drill contractor, Major Drilling Group International Inc. (“Major”), to undertake the drilling program.

Despite having significant sampling and drilling, the Needles Gold Project remains largely under-explored, with most holes only drilled to shallow depths and a number of high-grade previously un-drilled prospects identified that will be tested as part of the current campaign.

Drilling is expected to be completed within two weeks, after which the rig will be mobilised to the Red Mountain Lithium Project to complete further drilling in the lead up to a maiden Mineral Resource Estimate planned for the end of the calendar year.

### **Astute Chairman, Tony Leibowitz, said:**

*“The start of drilling at Needles marks the beginning of a very active phase of activity for the Company, coinciding with our imminent name change. The current drill program will test six initial high-priority prospects identified from a recent exploration review. This work has uncovered what we believe to be highly prospective discovery opportunities in gold in a richly endowed historical mining area at a very favourable time for the gold sector.”*

*“Each of the targets has demonstrated either high-grade historical gold-silver assays or compelling anomalism for pathfinder elements, with the potential to deliver new discoveries for Astute in one*

of the world's premier gold and silver mining districts.

*"Once the drilling at Needles wraps up, the rig will immediately move on to the Red Mountain Lithium Project, where a major program is planned to lay the foundations for our maiden Mineral Resource Estimate by the end of the year."*



**Figure 1.** Major RC drill rig and support vehicles mobilising to the first drill site at Needles

### Background

The Needles Project comprises 216 unpatented lode mining claims covering an area of 18km<sup>2</sup> and lies 92km east of the mining town of Tonopah in Nye County, Nevada, USA (Figure 6). The project was acquired due to its geological similarities with bulk-tonnage gold operations in Nevada such as the 20Moz+ Round Mountain mine<sup>8</sup>.

Previously known as the Arrowhead district, the project includes numerous historical gold-silver workings dating from the early 1900's to 1920's, with some of notable scale. While historical records are sparse, the Arrowhead Mine is recorded as an incline shaft to 350ft (106.7m) with drifting on four levels, and the Arrowhead Extension Mine was a 150ft (45.7m) two-compartment shaft with two working levels. These operations mined bonanza-style epithermal vein gold and silver mineralisation.

The current project area has seen a number of previous explorers including Newcrest (2002-04), Taranis Resources (2002-07), Excalibur Resources (2007-09) and Greenock Resources, amongst others. The Needles Project is hosts a large, under-explored epithermal system fertile for gold and silver, with rock chip results of up to 33g/t Au and 1,115g/t Ag<sup>3</sup>. Existing drilling is mostly shallow, and alteration mineralogy and pathfinder geochemistry suggests that the most prospective exploration space is yet to be tested.

### Planned Drilling

A total of six targets will be tested as part of the upcoming RC drilling at Needles.

#### *Eastern Shaft*

Planned drilling at Eastern Shaft will target high-grade rock chip results in proximity to the historical unnamed shaft located in the east of the project (Figure 2). Previous RC drilling, which intersected no material gold-silver mineralisation, has not effectively tested the interpreted east-southeast trend of the rock chips, and was drilled away from the historical shaft. A cluster of 10 high-grade rock chips have been taken from outcrop and mineralised dumps proximal to the shaft. These samples, which were collected in two separate campaigns, range in grade from 1.4 – 33.0g/t Au and 12.2 – 622g/t Ag. Two holes have been planned for the prospect.

### Tomahawk

Planned drilling at Tomahawk will test an un-drilled ~200m east-west trend of high-grade rock chip samples which includes the historical Tomahawk Shaft and another <15m deep historical mine shaft (Figure 3). Rock chips here were taken in two campaigns and include dump samples from the Tomahawk Mine itself. Apart from a single low-grade sample of 17ppb Au and 0.4g/t Ag, the remaining five samples range from 0.31 – 5.54g/t Au and 10.6g/t – 406g/t Ag. Two holes are being permitted for Tomahawk of which one is contingent on initial drilling success.

### Arrowhead

A single drill-hole will aim to test for mineralisation down-dip below the historical mine (Figure 4). Previous drilling tested for mineralisation in the shallows along strike from the Arrowhead shaft, however this drilling did not test down-dip of the known mineralisation. Intersections to the north and south of the mine include:

- Needles-63 intersected 3.42m @ 2.92g/t Au and 905g/t Ag from 25.54m
- Needles-28 intersected 6.5m @ 0.95g/t Au and 235g/t Ag from 26.2m
- Needles-27 intersected 1.4m @ 1.7g/t Au and 528g/t Ag from 31.2m
- Needles-11 intersected 1.6m @ 3.8g/t Au and 546g/t Ag from 17.6m
- Needles-7 intersected 6.1m @ 1.46g/t Au and 424g/t Ag from 26m

Further drilling at Arrowhead will be subject to the results of the single planned drill-hole.

### Arrowhead East Targets

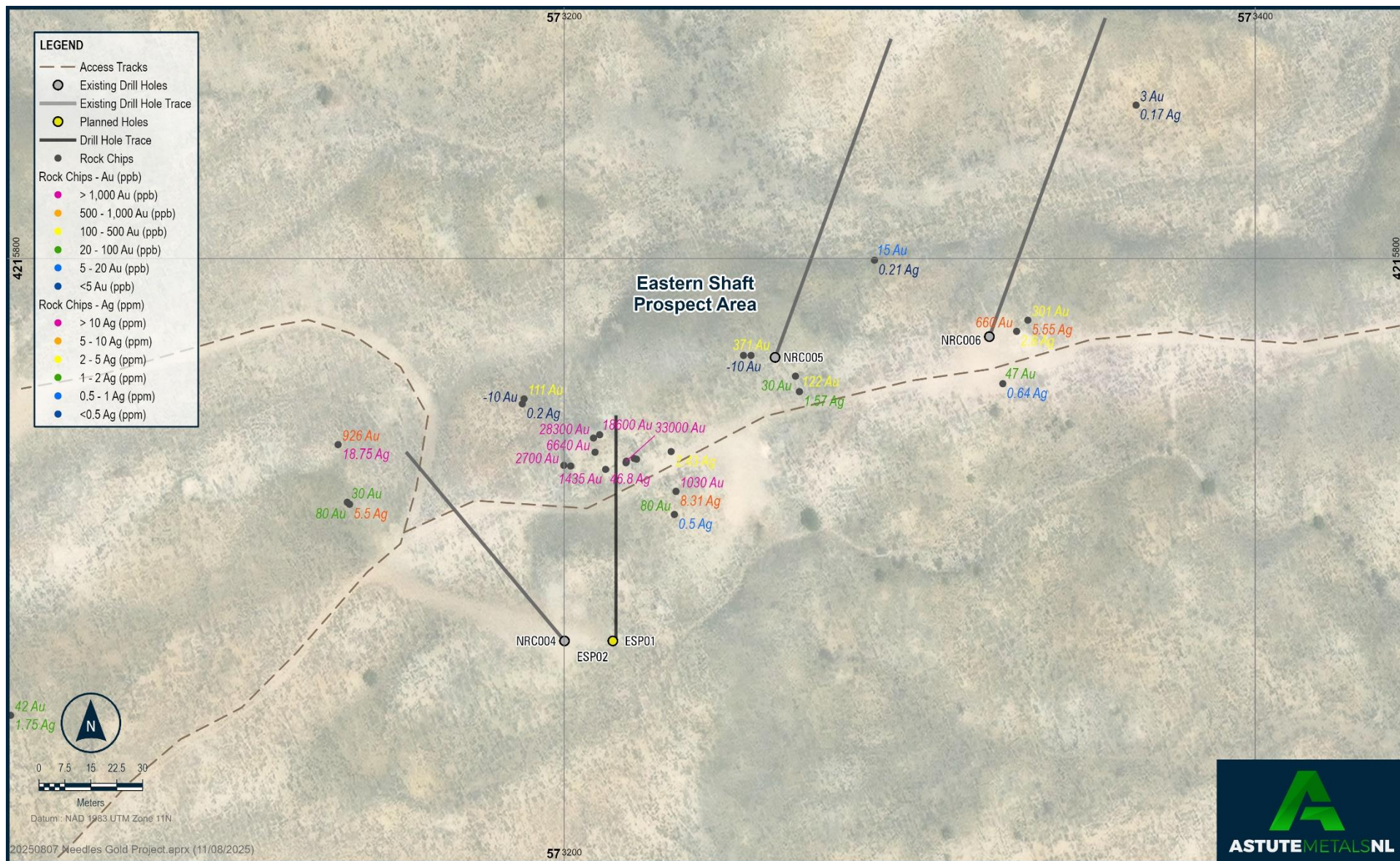
Two separate targets have been identified for drill testing at Arrowhead East. Both targets sit on a north-west trend characterised by high gold-silver ratio rock chips with no previous drilling (Figure 4). The northernmost of the two targets returned rock chip results of 1.11g/t Au and 5.4g/t Ag with strong arsenic of 6,640ppm. The southern target hole will be drilled beneath a cluster of rock chips grading up to 0.59g/t Au and up to 3.3g/t Ag, and strong arsenic of 1,860ppm to 5,500ppm As. The strength of pathfinder geochemistry at this prospect is interpreted to reflect proximity to better developed mineralisation. One hole will be drilled at each of the two Arrowhead East targets.

### Whopper Junior

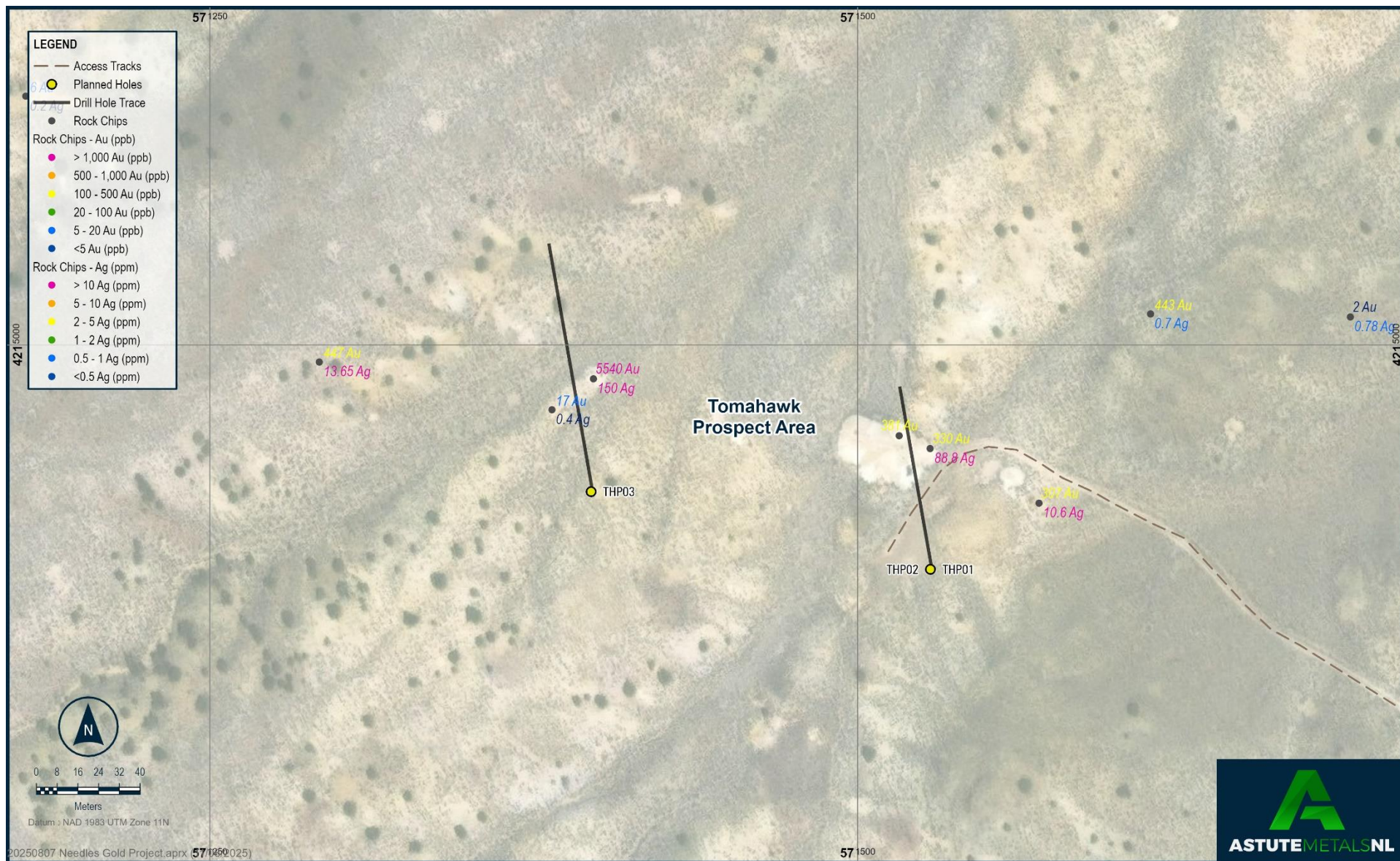
The Whopper Junior prospect exhibits anomalous gold (up to 0.39g/t Au) and silver (up to 72g/t Ag) in rock chip samples, as well as elevated pathfinder elements such as arsenic (up to 4,800ppm As), antimony (up to 87ppm Sb) and mercury (up to 4ppm Hg). A small number of holes have been drilled at the prospect, including Needles-5, which intersected a broad zone of anomalism – 23.5m @ 3875ppm As, 36.7ppm Sb and 1.48ppm Hg (Figure 5). Arsenic and antimony are well-established pathfinder elements in epithermal gold-silver systems, and mercury is typically found above the gold-bearing zone, as its volatility causes its upward migration to the near surface where it is deposited. Three holes are being permitted at Whopper Junior, two of which are contingent on initial success. Drill holes have been generally designed to test at deeper levels than the previous drilling, where the potential for gold-silver mineralisation is interpreted to be heightened.

| Plan ID | Status     | East (WGS84) | North (WGS84) | Azimuth (°) | Dip (°) | Planned Depth (m) |
|---------|------------|--------------|---------------|-------------|---------|-------------------|
| AHP01   | Drill      | 572392       | 4215540       | 60          | -50     | 150               |
| AEP01   | Drill      | 572781       | 4215859       | 40          | -60     | 120               |
| AEP02   | Drill      | 572891       | 4215767       | 40          | -50     | 120               |
| ESP01   | Drill      | 573213       | 4215690       | 360         | -50     | 100               |
| ESP02   | Drill      | 573213       | 4215690       | 360         | -80     | 150               |
| THP01   | Drill      | 571527       | 4214914       | 350         | -50     | 110               |
| THP02   | Drill      | 571527       | 4214914       | 350         | -70     | 170               |
| THP03   | Contingent | 571396       | 4214944       | 350         | -50     | 150               |
| WJP01   | Drill      | 571519       | 4216971       | 55          | -60     | 250               |
| WJP02   | Contingent | 571624       | 4217046       | 55          | -60     | 120               |
| WJP03   | Contingent | 571581       | 4216925       | 55          | -70     | 200               |

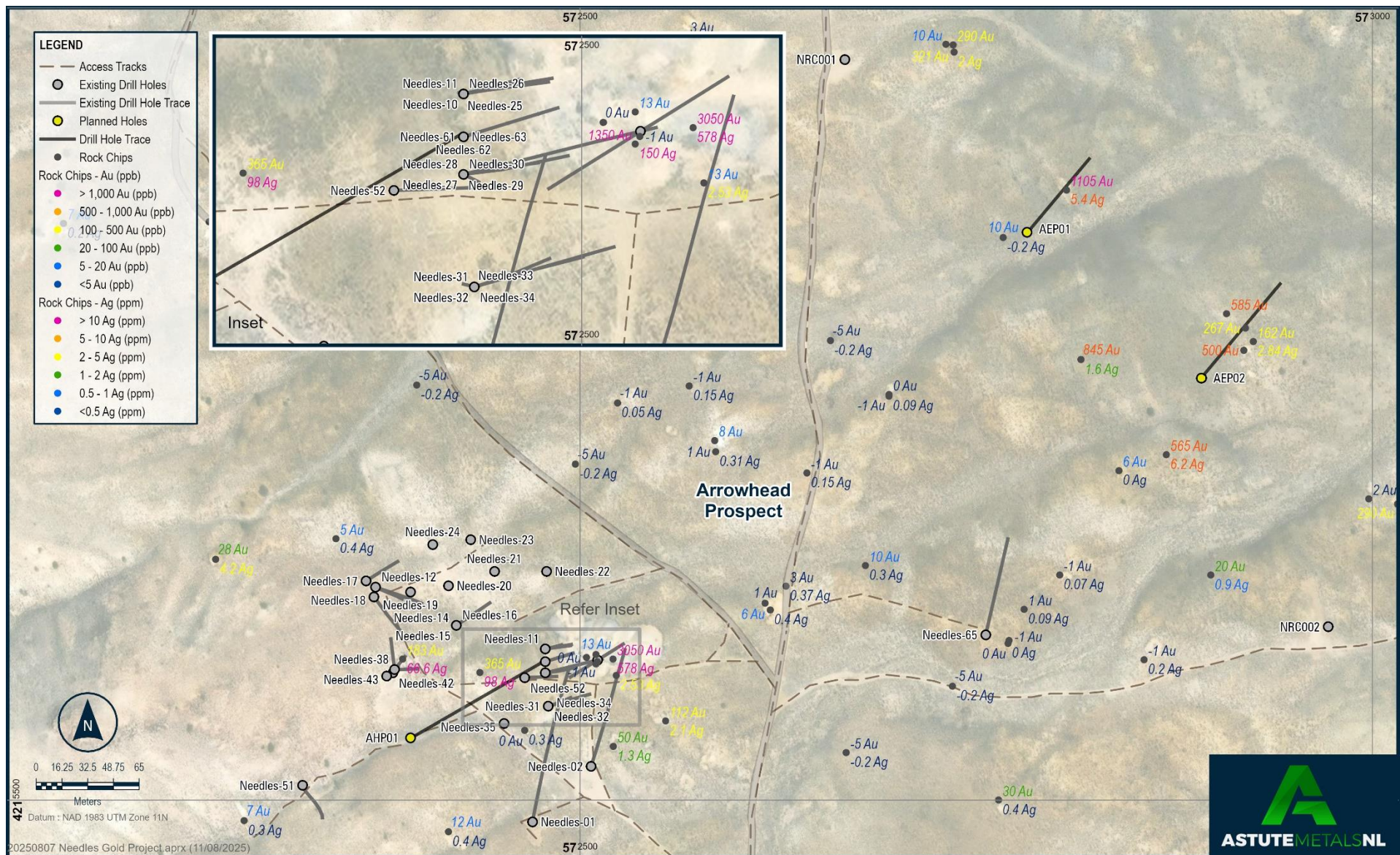
**Table 1.** Planned hole details submitted for permitting



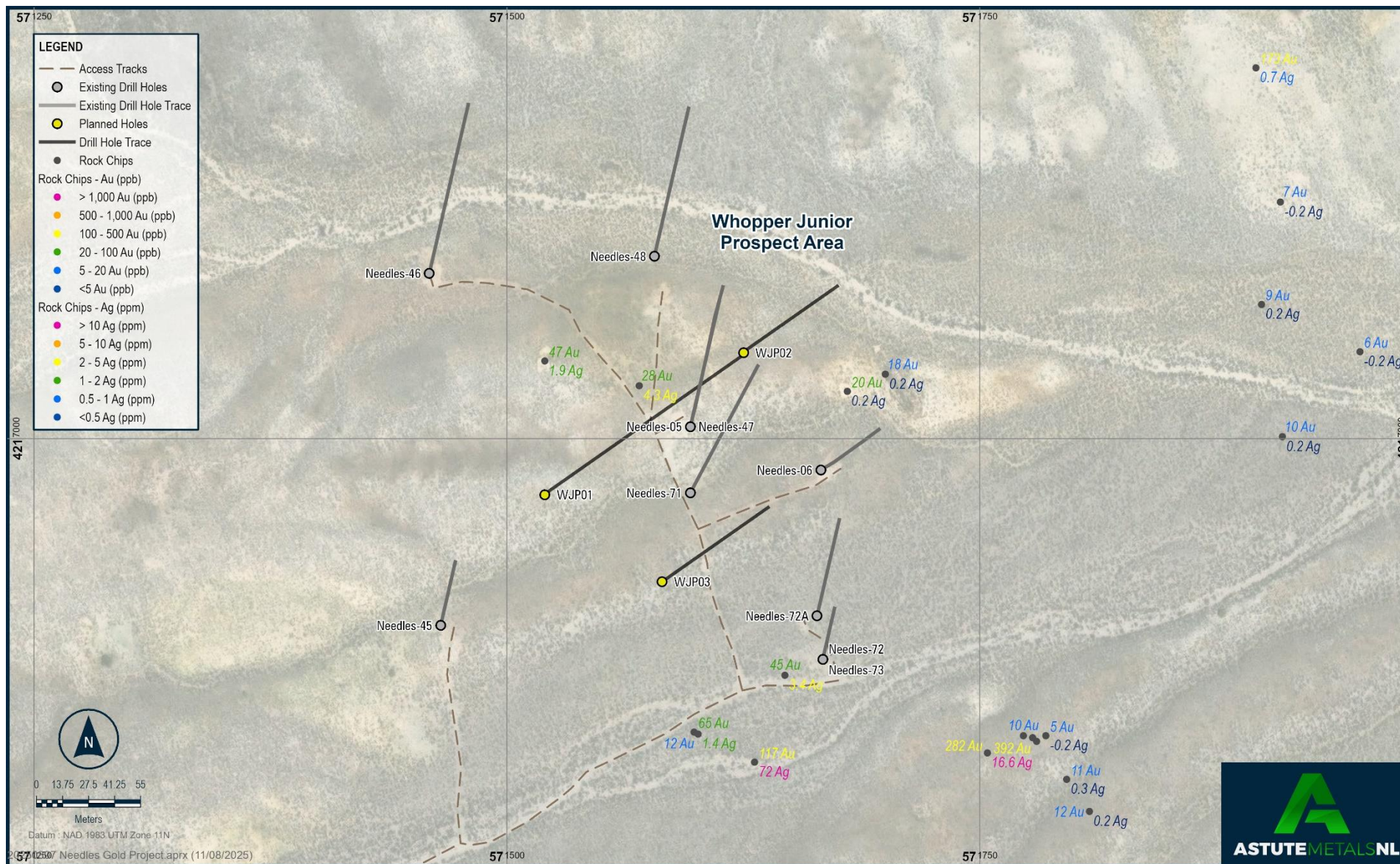
**Figure 2.** Eastern Shaft Prospect, planned and existing drill-holes and rock chip sample geochemistry over aerial imagery.



**Figure 3.** Tomahawk Prospect, planned and existing drill-holes and rock chip sample geochemistry over aerial imagery.



**Figure 4.** Arrowhead area (including Arrowhead East), planned and existing drill-holes and rock chip sample geochemistry over aerial imagery.



**Figure 5.** Whopper Junior Prospect, planned and existing drill-holes and rock chip sample geochemistry over aerial imagery.

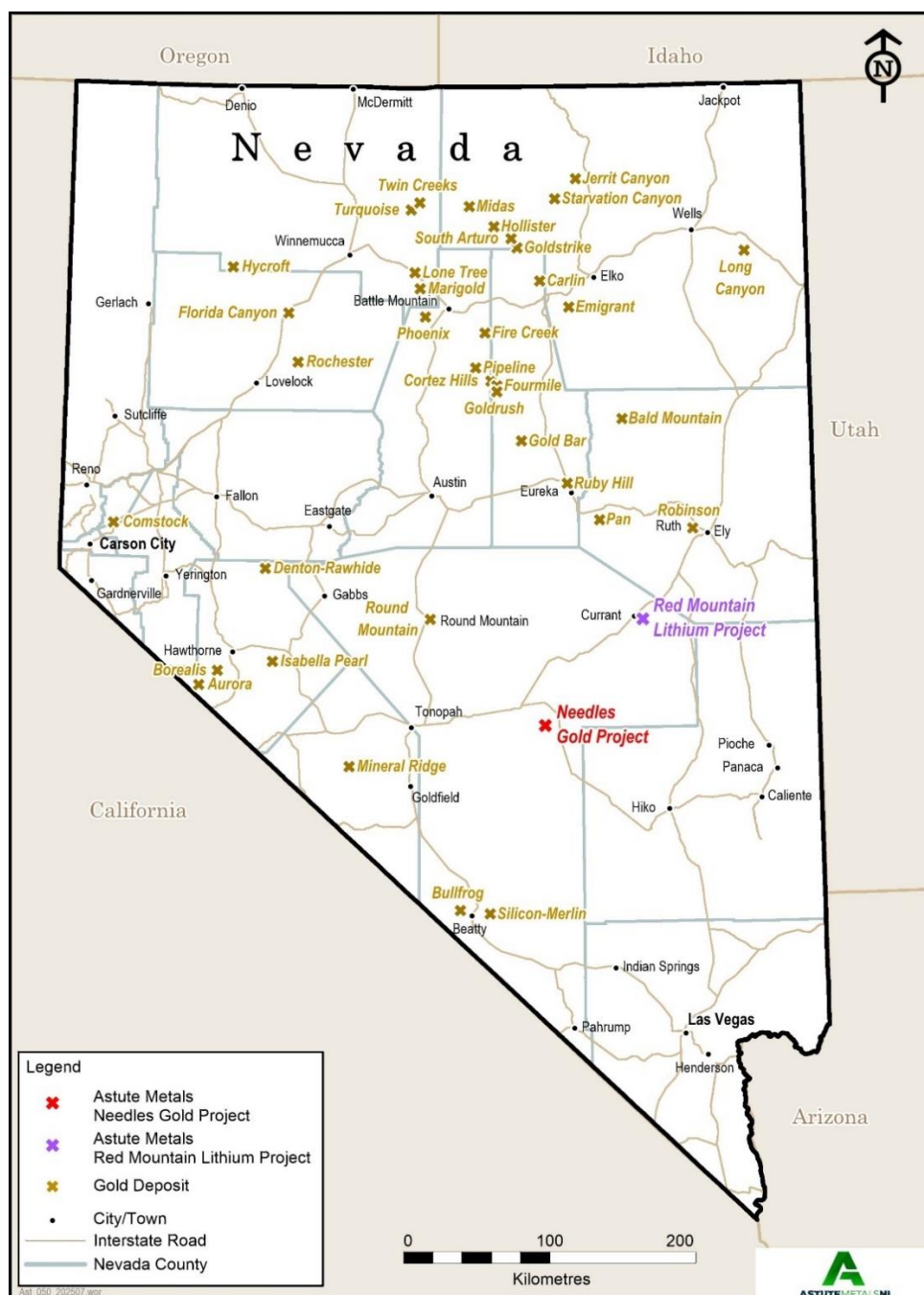
## Commentary on Historical Exploration Data

A comprehensive review of historical exploration data for the Needles Project was undertaken and announced by the Company in the ASX release dated 30 June 2025<sup>3</sup>. Historical drilling and rock chip sampling data referenced in this release attracts the following commentary:

### Rock Chip Sampling

Original assay files have been located for all but 10 of the Taranis samples. The Barrick surface sample dataset appears to be an extract from a surface sample database, containing method information for many elements, however not for gold or silver. No QAQC data is available for the Taranis or Barrick rock chip data. Rock chip sampling was also undertaken by the Company under its previous name, Astro Resources NL, with results announced to market in 2017<sup>1</sup> and 2020<sup>2</sup>. A tabulated summary of all rock chip sample results is provided in Appendix 4, including the company that undertook the sampling.

Point locations from the various sampling campaigns commonly sample the same veins in close proximity, due to different parties targeting the same outcropping zones of alteration and veining. Generally, the historical results have been corroborated with comparable results from rock chip sampling campaigns undertaken and announced previously by the Company<sup>1,2</sup>, providing confidence in historical data despite some shortcomings in historical record keeping. Rock chip geochemistry in gold and silver is typically elevated in trends of north-east oriented sampled veins and around historical workings.



**Figure 6.** Location of Needles Gold Project, and significant Nevada gold deposits.

### Exploration Drilling

Drill collar locations for historical campaigns have been validated with aerial imagery. Drillhole orientation data has been located for all holes, including setup orientations and downhole surveys. Summary geological logging data is complete, however copies of original drill logs are missing for the Taranis and Excalibur drill campaigns. Only drill hole intersections for which an original lab file has been sourced have been quoted in this announcement. Drill collar and assay data is tabulated in Appendices 3 and 2 respectively.

### Next Steps

Drilling has commenced at the Project and is expected to be completed in the next two weeks, after which the rig will mobilise to the Company's 100%-owned Red Mountain Lithium Project to complete a Mineral Resource drilling campaign.

Assay results for the Needles drilling are expected to be returned in approximately 5–7 weeks. Separately, the Company has undertaken a systematic soil sampling campaign at the Project, and a helicopter-borne magnetic-radiometric survey is scheduled for completion in October. The results from these exploration work programs will aid in the identification of new targets and the planning of subsequent drill-holes at the Project.

- 
- 1 ASX: ARO 18 Dec 2017 'Update on Needles Exploration Project'
  - 2 ASX: ARO 1 Dec 2020 'Mapping results confirm Needles as a viable exploration gold Project'
  - 3 ASX: ASE 30 June 2025 'Needles Gold-Silver Project: Data review identifies priority drill targets'
  - 4 ASX: ARO 25 Feb 2022 'Drilling update assays for holes 2IND\_001 and 2IND\_002'
  - 5 ASX: ARO 26 May 2022 'Drilling update assays for holes 2IND\_003'
  - 6 ASX: ARO 25 July 2022 'Drilling update assays for holes 2IND\_004'
  - 7 ASX: ARO 19 Dec 2019 'Needles RC drilling results'
  - 8 2016, Howell, S., Formation of disseminated epithermal gold ore at Round Mountain, GSA Annual Meeting in Denver, CO, USA - 2016

### Authorisation

This announcement has been authorised for release by the Board of Astute.



#### **Astute Metals NL Interactive Investor Hub**

Engage with Astute Metals through accessing reports, presentations, interviews and other Company content.

Ask questions and browse responses to other investors' questions

Click on <https://astutemetals.com/auth/signup> and follow the prompts to sign up

### More Information

Matt Healy  
Executive Director & CEO  
[mhealy@astutemetals.com](mailto:mhealy@astutemetals.com)  
+61 (0) 431 683 952

Nicholas Read  
Media & Investor Relations  
[nicholas@readcorporate.com.au](mailto:nicholas@readcorporate.com.au)  
+61 (0) 419 929 046

### Competent Persons

The information in this report is based on information compiled by Mr. Matthew Healy, a Competent Person who is a Member of The Australasian Institute of Mining and Metallurgy (AusIMM Member number 303597). Mr. Healy is a full-time employee of Astute Metals NL and is eligible to participate in a Loan Funded Share incentive plan of the Company. Mr. Healy has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr. Healy consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

## Section 1 – Sampling Techniques and Data

| Criteria              | JORC Code explanation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Commentary                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sampling techniques   | <p>Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling.</p> <p>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</p> <p>Aspects of the determination of mineralisation that are Material to the Public Report.</p> <p>In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases, more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.</p> | <p>Taranis rock chips were collected on a 2–5kg basis using a hammer and chisel. Rock exposures and (mine) dump samples were collected as part of the campaigns. See Appendices for details.</p> <p>No details on sampling methods for the Barrick campaign of rock chips.</p> <p>Astro Resources rock chips and drilling previously announced incl. JORC Table 1 (see footnotes 1 and 2)</p> <p>Taranis &amp; Excalibur drilling using NQ diamond methods and half-core sampling.</p> |
| Drilling techniques   | <p>Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc.).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>NQ drilling methods employed by Taranis and Excalibur. HQ and RC methods employed by Astro, which were previously announced incl. JORC Table 1 (see footnotes 4, 5, 6 and 7)</p>                                                                                                                                                                                                                                                                                                    |
| Drill sample recovery | <p>Method of recording and assessing core and chip sample recoveries and results assessed.</p> <p>Measures taken to maximise sample recovery and ensure representative nature of the samples.</p> <p>Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p>No formal recovery records are available for the Taranis or Excalibur drilling.</p> <p>Poor drill core recovery is to be expected near surface as a function of rock weathering.</p> <p>Recovery for Astro Resources diamond drilling previously announced incl. JORC Table 1 (see footnotes 4, 5, 6 and 7)</p>                                                                                                                                                                     |
| Logging               | <p>Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</p> <p>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.</p> <p>The total length and percentage of the relevant intersections logged.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>Drill core/percussion chips for the entire hole was logged for lithology by contract/staff geologists for the Taranis, Excalibur and Astro drilling campaigns</p> <p>Logging is mostly qualitative with some numerical estimates of notable minerals</p> <p>Photography of drill core was undertaken systematically for the Astro diamond holes</p>                                                                                                                                 |

# APPENDIX 1 - JORC Code, 2012 Edition – Table 1

| Criteria                                       | JORC Code explanation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Commentary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sub-sampling techniques and sample preparation | <p>If core, whether cut or sawn and whether quarter, half or all core taken.</p> <p>If non-core, whether riffled, tube sampled, rotarysplit, etc. and whether sampled wet or dry.</p> <p>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</p> <p>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</p> <p>Measures taken to ensure that the sampling is representative of the in-situ material collected, including for instance results for field duplicate/second-half sampling.</p>                                                                                                                          | <p>Taranis and Excalibur drill core was sampled to a maximum of 1.5m length or to geological boundaries. Drill core was marked up on site, and appears to have been half-cored off site.</p> <p>Astro Resources Drilling announced previously incl. JORC Table 1 (see footnotes 4, 5, 6 and 7)</p>                                                                                                                                                                                                                                                                |
| Quality of assay data and laboratory tests     | <p>Whether sample sizes are appropriate to the grain size of the material being sampled.</p> <p>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</p> <p>For geophysical tools, spectrometers, handheld XRF instruments, etc., the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.</p> <p>Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.</p> | <p>Assay method for gold for Barrick rock chips unknown, but ICP-MS for multielement</p> <p>Taranis and Astro Resources rock chips were fire assay for gold, and four-acid and ICP-MS or ICP-OES finish. Some samples employed a 2-acid digest and ICP finish.</p> <p>Assay methods employed for historical work are appropriate (where known), particularly for the main metals of interest – gold and silver.</p> <p>Some digests employed (esp. 2-acid) are partial in nature and therefore concentrations of some elements may be underestimated e.g. Zr.</p> |
| Verification of sampling and assaying          | <p>The verification of significant intersections by either independent or alternative company personnel.</p> <p>The use of twinned holes.</p> <p>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</p> <p>Discuss any adjustment to assay data.</p>                                                                                                                                                                                                                                                                                                                                                                                          | <p>Sample intervals were assigned a unique sample identification number prior to sample despatch. No duplicate sample IDs exist across historical explorers.</p> <p>Most historical exploration does not appear to have used CRMs and/or blanks for QAQC. While there are some apparent CRM results in historical assays, there is no record of QAQC details and/or assessment. See Footnotes 1, 2, 4, 5, 6 and 7 for Astro Resources QAQC details.</p>                                                                                                           |
| Location of data points                        | <p>Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.</p> <p>Specification of the grid system used.</p> <p>Quality and adequacy of topographic control.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p>Drill collar and sample locations determined using hand-held GPS with location reported in either WGS84, NAD27 or NAD83 UTM Zone 11. Expected hole location accuracy of +/- 10m.</p> <p>Drill hole locations were validated by using aerial imagery, which indicated no issues.</p> <p>Downhole survey data collected for all holes with the exception of some vertical drill holes.</p>                                                                                                                                                                       |

| Criteria                                                | JORC Code explanation                                                                                                                                                                                                                                                                                                                                                               | Commentary                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data spacing and distribution                           | <p>Data spacing for reporting of Exploration Results.</p> <p>Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</p> <p>Whether sample compositing has been applied.</p>                                   | <p>Drill spacing is appropriate for early exploration purposes. Rock chip sampling is appropriate for exploration purposes.</p> <p>1.5m sample intervals, or to geological boundaries where appropriate, widely adopted as standard practice in drilling in the USA.</p>             |
| Orientation of data in relation to geological structure | <p>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</p> <p>If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</p> | <p>Typical mineralised structure orientations at Needles are east-northeast or north-northwest. There is some evidence of other orientations, which would not be unusual in an epithermal environment. Drill holes appear to have attempted to target structures at right angles</p> |
| Sample security                                         | The measures taken to ensure sample security.                                                                                                                                                                                                                                                                                                                                       | No details for historical work programmes. See footnotes 1, 2, 4, 5, 6 and 7 for Astro Resources work programme details                                                                                                                                                              |
| Audits or reviews                                       | The results of any audits or reviews of sampling techniques and data.                                                                                                                                                                                                                                                                                                               | Not applicable                                                                                                                                                                                                                                                                       |

## Section 2 – Reporting of Exploration Results

| Criteria                                | JORC Code explanation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Commentary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mineral tenement and land tenure status | <p>Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.</p> <p>The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.</p>                                                                                                                                                                                                                                                                                                                                 | <p>Needles Mining Claims held in 100% Astute subsidiary Needles Holdings Inc.</p> <p>Claims located on Federal (BLM) Land</p> <p>Drilling conducted on claims certified by the Bureau of Land Management (BLM)</p>                                                                                                                                                                                                                                                                                                                                     |
| Exploration done by other parties       | Acknowledgment and appraisal of exploration by other parties.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Previous exploration discussed in body text and summarised in ASX release of 30 June 2025 – See footnote 3                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Geology                                 | Deposit type, geological setting and style of mineralisation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p>The principal target deposit style is low-sulfidation epithermal gold and silver mineralisation. The Project comprises mainly oligocene to Miocene volcanic rocks, with minor igneous intrusives. A large alteration system is evident from ASTER imagery and geological mapping/logging and petrography.</p> <p>Some tuffs at the project are porous and thus considered prospective for dissemination style mineralisation. Vein style mineralisation evident at surface, which has been exploited by historical mining efforts (Footnote 3).</p> |
| Drill hole information                  | <p>A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:</p> <ul style="list-style-type: none"> <li>◦ easting and northing of the drill hole collar</li> <li>◦ elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> <li>◦ dip and azimuth of the hole</li> <li>◦ down hole length and interception depth</li> <li>◦ hole length.</li> </ul> <p>If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.</p> | Planned drillhole locations, orientations and drilled depths are tabulated in body report, with historical drillhole details in appendix 3.                                                                                                                                                                                                                                                                                                                                                                                                            |
| Data aggregation methods                | <p>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.</p> <p>Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</p> <p>The assumptions used for any reporting of metal equivalent values should be clearly stated.</p>                                                                                                                                                                                      | Intersections, where quoted are weighted by length.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## Section 2 Reporting of Exploration Results

| Criteria                                                         | JORC Code explanation                                                                                                                                                                                                                                                                                                                                                                             | Commentary                                                          |
|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| Relationship between mineralisation widths and intercept lengths | <p>These relationships are particularly important in the reporting of Exploration Results.</p> <p>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</p> <p>If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width notknown').</p> | Insufficient information available due to early exploration status. |
| Diagrams                                                         | <p>Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported. These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.</p>                                                                                                                         | Included in ASX announcement                                        |
| Balanced reporting                                               | <p>Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.</p>                                                                                                                                                                  | This release describes all relevant information                     |
| Other substantive exploration data                               | <p>Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.</p>      | This release describes all relevant information                     |
| Further work                                                     | <p>The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).</p> <p>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</p>                                            | Exploration results to date at Needles justify further exploration. |

## APPENDIX 2 – Needles Drilling Sample Assay Table

[illegible]

| Hole ID   | From (m) | To (m) | As (ppm) | Sb (ppm) | Hg (ppm) |
|-----------|----------|--------|----------|----------|----------|
| Needles-5 | 44.1     | 44.4   | 82       | 0.90     | 0.28     |
| Needles-5 | 44.4     | 45     | 104      | 1.00     | 0.34     |
| Needles-5 | 45       | 45.5   | 73       | 1.00     | 0.21     |
| Needles-5 | 45.5     | 45.6   | 241      | 3.40     | 0.16     |
| Needles-5 | 45.6     | 46.5   | 308      | 2.70     | 0.77     |
| Needles-5 | 46.5     | 47.4   | 131      | 2.10     | 0.39     |
| Needles-5 | 47.4     | 47.9   | 196      | 1.90     | 0.67     |
| Needles-5 | 47.9     | 48.4   | 148      | 1.90     | 0.55     |
| Needles-5 | 48.4     | 48.8   | 28       | 0.60     | 0.10     |
| Needles-5 | 48.8     | 49.3   | 264      | 2.20     | 0.87     |
| Needles-5 | 49.3     | 50.1   | 376      | 3.20     | 1.18     |
| Needles-5 | 50.1     | 50.3   | 2039     | 12.80    | 8.20     |
| Needles-5 | 50.3     | 51.1   | 511      | 3.90     | 2.01     |
| Needles-5 | 51.1     | 51.6   | 162      | 1.80     | 0.61     |
| Needles-5 | 51.6     | 52.2   | 194      | 1.60     | 0.57     |
| Needles-5 | 52.2     | 52.6   | 201      | 1.80     | 0.80     |
| Needles-5 | 52.6     | 53.2   | 435      | 3.90     | 1.48     |
| Needles-5 | 53.2     | 53.9   | 232      | 2.50     | 0.87     |
| Needles-5 | 53.9     | 54.2   | 388      | 3.40     | 1.23     |
| Needles-5 | 54.2     | 55.2   | 333      | 5.60     | 1.01     |
| Needles-5 | 55.2     | 55.9   | 200      | 2.40     | 0.87     |
| Needles-5 | 55.9     | 56.4   | 284      | 3.70     | 0.99     |
| Needles-5 | 56.4     | 56.9   | 265      | 2.70     | 1.00     |
| Needles-5 | 56.9     | 57.4   | 390      | 3.40     | 1.33     |
| Needles-5 | 57.4     | 58     | 471      | 3.90     | 1.66     |
| Needles-5 | 58       | 59     | 247      | 2.70     | 0.86     |
| Needles-5 | 59       | 59.7   | 529      | 4.10     | 1.52     |
| Needles-5 | 59.7     | 60.4   | 320      | 3.10     | 1.23     |
| Needles-5 | 60.4     | 61.3   | 256      | 2.40     | 0.77     |
| Needles-5 | 61.3     | 62.5   | 142      | 2.40     | 0.55     |
| Needles-5 | 62.5     | 62.5   | 145      | 2.00     | 0.53     |
| Needles-5 | 62.5     | 63.5   | 134      | 1.90     | 0.53     |
| Needles-5 | 63.5     | 64     | 206      | 2.60     | 0.64     |
| Needles-5 | 64       | 64.6   | 156      | 2.10     | 0.55     |
| Needles-5 | 64.6     | 65.1   | 226      | 3.40     | 0.92     |
| Needles-5 | 65.1     | 65.7   | 182      | 2.70     | 0.87     |
| Needles-5 | 65.7     | 66.3   | 175      | 2.50     | 0.63     |
| Needles-5 | 66.3     | 66.8   | 203      | 3.10     | 0.90     |
| Needles-5 | 66.8     | 67.4   | 83       | 1.40     | 0.40     |
| Needles-5 | 67.4     | 68.6   | 181      | 2.20     | 0.77     |
| Needles-5 | 68.6     | 69     | 175      | 2.50     | 0.64     |
| Needles-5 | 69       | 70     | 153      | 2.40     | 0.54     |
| Needles-5 | 70       | 71     | 207      | 2.40     | 0.68     |
| Needles-5 | 71       | 71.7   | 279      | 2.80     | 0.94     |
| Needles-5 | 71.7     | 72.9   | 262      | 3.20     | 1.00     |

## APPENDIX 2 – Needles Drilling Sample Assay Table

[illegible]

## APPENDIX 3 – Needles Drilling Collar Details Table

| Hole ID    | East_WGS84 | North_WGS85 | Elevation (m asl) | Depth (m) | Azi (°) | Dip (°) |
|------------|------------|-------------|-------------------|-----------|---------|---------|
| Needles-1  | 572468.9   | 4215486.9   | 1921              | 197.1     | 11.0    | -59.5   |
| Needles-2  | 572505.9   | 4215521.9   | 1915              | 99.8      | 17.4    | -39.8   |
| Needles-3  | 571628.9   | 4216116.0   | 1911              | 32.8      | 133.5   | -43.0   |
| Needles-4  | 571628.9   | 4216116.0   | 1911              | 37.3      | 136.3   | -66.0   |
| Needles-5  | 571595.9   | 4217007.0   | 1878              | 106.6     | 14.0    | -45.0   |
| Needles-6  | 571664.9   | 4216984.0   | 1876              | 64.7      | 58.3    | -55.0   |
| Needles-7  | 572509.9   | 4215588.9   | 1915              | 35.1      | 238.0   | -55.0   |
| Needles-8  | 571802.9   | 4215190.9   | 1943              | 112.1     | 136.0   | -45.9   |
| Needles-9  | 571901.9   | 4215126.9   | 1946              | 81.7      | 136.0   | -44.7   |
| Needles-10 | 572476.9   | 4215595.9   | 1917              | 22.5      | 79.4    | -42.3   |
| Needles-11 | 572476.9   | 4215595.9   | 1917              | 32.8      | 81.1    | -61.5   |
| Needles-12 | 572369.9   | 4215634.9   | 1930              | 48.1      | 108.0   | -49.9   |
| Needles-13 | 572369.9   | 4215634.9   | 1930              | 55.4      | 114.0   | -70.7   |
| Needles-14 | 572420.9   | 4215610.9   | 1923              | 36.1      | 56.7    | -45.1   |
| Needles-15 | 572420.9   | 4215610.9   | 1923              | 37.3      | 56.5    | -71.0   |
| Needles-16 | 572420.9   | 4215610.9   | 1923              | 38.9      | 136.2   | -88.4   |
| Needles-17 | 572363.9   | 4215638.9   | 1931              | 35.9      | 57.8    | -49.4   |
| Needles-18 | 572368.9   | 4215628.9   | 1930              | 43.4      | 143.7   | -49.4   |
| Needles-19 | 572391.9   | 4215631.9   | 1926              | 28.0      | 206.4   | -87.9   |
| Needles-20 | 572415.9   | 4215635.9   | 1923              | 28.2      | 175.4   | -89.2   |
| Needles-21 | 572444.9   | 4215644.9   | 1918              | 28.2      | 266.3   | -88.6   |
| Needles-22 | 572477.9   | 4215644.9   | 1914              | 28.2      | 291.1   | -86.8   |
| Needles-23 | 572429.9   | 4215664.9   | 1920              | 22.1      | 138.0   | -87.7   |
| Needles-24 | 572405.9   | 4215661.9   | 1923              | 37.3      | 239.2   | -88.3   |
| Needles-25 | 572476.9   | 4215595.9   | 1917              | 32.8      | 76.8    | -70.3   |
| Needles-26 | 572476.9   | 4215595.9   | 1917              | 52.7      | 278.6   | -89.2   |
| Needles-27 | 572476.9   | 4215580.9   | 1917              | 52.6      | 76.7    | -44.6   |
| Needles-28 | 572476.9   | 4215580.9   | 1917              | 40.3      | 83.0    | -60.0   |
| Needles-29 | 572476.9   | 4215580.9   | 1917              | 45.1      | 80.5    | -71.5   |
| Needles-30 | 572476.9   | 4215580.9   | 1917              | 47.0      | 116.7   | -85.4   |
| Needles-31 | 572478.9   | 4215559.9   | 1916              | 39.0      | 73.8    | -45.5   |
| Needles-32 | 572478.9   | 4215559.9   | 1916              | 42.0      | 73.6    | -59.7   |
| Needles-33 | 572478.9   | 4215559.9   | 1916              | 48.1      | 71.8    | -71.7   |
| Needles-34 | 572478.9   | 4215559.9   | 1916              | 64.0      | 287.6   | -88.1   |
| Needles-35 | 572450.9   | 4215548.9   | 1920              | 96.3      | 262.3   | -89.1   |
| Needles-36 | 572509.9   | 4215588.9   | 1915              | 35.6      | 13.0    | -90.0   |
| Needles-37 | 572509.9   | 4215588.9   | 1915              | 33.4      | 58.0    | -55.0   |
| Needles-38 | 572381.9   | 4215582.9   | 1930              | 18.4      | 38.0    | -55.0   |
| Needles-39 | 572381.9   | 4215582.9   | 1930              | 19.8      | 38.0    | -65.0   |
| Needles-40 | 572381.9   | 4215582.9   | 1930              | 25.1      | 38.0    | -85.0   |
| Needles-41 | 572381.9   | 4215582.9   | 1930              | 27.6      | 353.0   | -45.0   |
| Needles-42 | 572380.9   | 4215580.9   | 1930              | 29.8      | 38.0    | -80.0   |
| Needles-43 | 572376.9   | 4215578.9   | 1931              | 33.5      | 38.0    | -80.0   |
| Needles-44 | 572381.9   | 4215582.9   | 1930              | 20.6      | 88.0    | -45.0   |

## APPENDIX 3 – Needles Drilling Collar Details Table

| Hole ID     | East_WGS84 | North_WGS85 | Elevation (m asl) | Depth (m) | Azi (°) | Dip (°) |
|-------------|------------|-------------|-------------------|-----------|---------|---------|
| Needles-45  | 571463.9   | 4216902.0   | 1884              | 100.5     | 13.0    | -70.0   |
| Needles-46  | 571457.9   | 4217088.0   | 1881              | 159.4     | 13.0    | -55.0   |
| Needles-47  | 571595.9   | 4217007.0   | 1878              | 135.0     | 13.0    | -60.0   |
| Needles-48  | 571576.9   | 4217097.0   | 1877              | 139.9     | 13.0    | -55.0   |
| Needles-49  | 571802.9   | 4215190.9   | 1943              | 30.8      | 133.0   | -65.0   |
| Needles-50  | 571802.9   | 4215190.9   | 1943              | 30.3      | 133.0   | -85.0   |
| Needles-51  | 572323.9   | 4215509.9   | 1945              | 327.4     | 157.0   | -85.0   |
| Needles-52  | 572463.9   | 4215577.9   | 1918              | 40.5      | 88.0    | -60.0   |
| Needles-53  | 571821.9   | 4215163.9   | 1943              | 35.5      | 316.0   | -45.0   |
| Needles-54  | 572841.9   | 4214970.9   | 1911              | 58.5      | 58.0    | -80.0   |
| Needles-55  | 572777.9   | 4215004.9   | 1914              | 55.8      | 58.0    | -80.0   |
| Needles-56  | 572538.9   | 4215270.9   | 1922              | 64.0      | 58.0    | -70.0   |
| Needles-57  | 572697.9   | 4215041.9   | 1924              | 61.9      | 58.0    | -80.0   |
| Needles-58  | 572828.9   | 4214988.9   | 1912              | 57.2      | 13.0    | -90.0   |
| Needles-59  | 572858.9   | 4214942.9   | 1908              | 56.0      | 58.0    | -80.0   |
| Needles-60  | 572196.9   | 4215244.9   | 1946              | 100.7     | 58.0    | -80.0   |
| Needles-61  | 572476.9   | 4215587.9   | 1917              | 26.0      | 73.0    | -45.0   |
| Needles-62  | 572476.9   | 4215587.9   | 1917              | 29.1      | 73.0    | -60.0   |
| Needles-63  | 572476.9   | 4215587.9   | 1917              | 33.3      | 73.0    | -75.0   |
| Needles-64  | 572476.9   | 4215587.9   | 1917              | 54.3      | 360.0   | -90.0   |
| Needles-65  | 572754.9   | 4215604.9   | 1895              | 87.8      | 13.0    | -45.0   |
| Needles-66  | 572539.9   | 4215270.9   | 1922              | 81.6      | 13.0    | -45.0   |
| Needles-67  | 572537.9   | 4215270.9   | 1922              | 61.3      | 13.0    | -90.0   |
| Needles-68  | 572506.9   | 4215423.9   | 1923              | 61.3      | 238.0   | -70.0   |
| Needles-69  | 572187.9   | 4216306.0   | 1897              | 51.2      | 28.0    | -70.0   |
| Needles-70  | 572506.9   | 4215423.9   | 1923              | 60.6      | 28.0    | -75.0   |
| Needles-71  | 571595.9   | 4216972.0   | 1879              | 151.8     | 28.0    | -60.0   |
| Needles-72  | 571665.9   | 4216884.0   | 1876              | 55.4      | 13.0    | -60.0   |
| Needles-72A | 571662.9   | 4216907.0   | 1876              | 152.4     | 13.0    | -70.0   |
| Needles-73  | 571665.9   | 4216884.0   | 1876              | 153.3     | 360.0   | -90.0   |
| NRC001      | 572666.0   | 4215968.0   | 1902              | 140.2     | 360.0   | -90.0   |
| NRC002      | 572971.0   | 4215610.0   | 1892              | 182.9     | 360.0   | -90.0   |
| NRC003      | 573031.0   | 4215765.0   | 1889              | 198.1     | 180.0   | -60.0   |
| NRC004      | 573199.0   | 4215690.0   | 1880              | 141.7     | 320.0   | -60.0   |
| NRC005      | 573260.0   | 4215772.0   | 1886              | 195.1     | 20.0    | -60.0   |
| NRC006      | 573322.0   | 4215778.0   | 1883              | 195.1     | 20.0    | -60.0   |
| NRC007      | 573477.0   | 4215909.0   | 1852              | 195.1     | 195.0   | -60.0   |
| NRC008      | 573564.0   | 4215896.0   | 1858              | 189.0     | 340.0   | -60.0   |
| NRC009      | 573688.0   | 4215727.0   | 1859              | 176.8     | 0.0     | -60.0   |
| NRC010      | 573353.0   | 4215429.0   | 1872              | 182.9     | 0.0     | -90.0   |
| NRC011      | 573302.0   | 4215070.0   | 1882              | 135.6     | 0.0     | -90.0   |
| 2IND_001    | 571805.0   | 4215077.0   | 1955              | 383.7     | 33.5    | -59.4   |
| 2IND_002    | 571809.0   | 4215420.0   | 1943              | 464.8     | 205.4   | -65.6   |
| 2IND_003    | 572128.0   | 4214732.0   | 1971              | 500.0     | 28.0    | -58.7   |
| 2IND_004A   | 571670.0   | 4214606.0   | 1974              | 407.2     | 269.9   | -61.0   |

# APPENDIX 4 – Needles Rock Chip Sample Table



ASTUTE METALS

| Sample ID | Campaign   | Easting (NAD83) | Northing (NAD83) | Au (g/t) | Ag (g/t) | Comments                                                                                                            |
|-----------|------------|-----------------|------------------|----------|----------|---------------------------------------------------------------------------------------------------------------------|
| 5201      | Astro 2020 | 572403          | 4216527          | 0.007    | < 0.2    | silic s comp-weld tuff, no qz phenos, wispy lt gray silica flooding, tr py, tr qz vnls to 2mm                       |
| 5202      | Astro 2020 | 572496          | 4216602          | 0.007    | < 0.2    | st welded and compacted tuff, no qtz phenos, 1% dis py and py pseudos, 1mm qtz vnls                                 |
| 5203      | Astro 2020 | 572460          | 4216521          | 0.008    | 0.20     | st welded tuff, crusts of goethite 1cm thick in clay alt rk, minor silicification                                   |
| 5204      | Astro 2020 | 572456          | 4216479          | 0.015    | 0.60     | mod comp-weld rhy tuff; select sample from 2 cm wide goethite coated joint                                          |
| 5205      | Astro 2020 | 572338          | 4216550          | 0.01     | 0.60     | wkly silic bleached (sericite and clay) qtz pheno bearing tuff, select goethite frac coatings                       |
| 5206      | Astro 2020 | 572278          | 4216636          | 0.022    | 1.20     | select comb quartz and clear masses of crystalline qtz matrix breccia, minor py, scoradite?                         |
| 5207      | Astro 2020 | 572355          | 4216694          | 0.009    | 0.20     | st silicified tuff, white and clear qtz vnls                                                                        |
| 5208      | Astro 2020 | 572251          | 4216560          | 0.015    | 3.30     | crudely banded gray and white qtz vn, gray qtz vnls cut white qtz, st goethite + jarosite                           |
| 5209      | Astro 2020 | 572423          | 4216395          | 0.13     | 9.00     | st silic tuff w/ 15-20% gray qz vnls and fillings, qtz supported fault breccia                                      |
| 5210      | Astro 2020 | 572354          | 4216370          | 0.314    | 2.40     | mod silic st weld tuff, st goethite, select breccia pieces cemented by 5% qtz                                       |
| 5211      | Astro 2020 | 572256          | 4216364          | 0.045    | 2.00     | strongly broken brecciated qtz matrix breccia, cemented w/ white late stage qtz, 2 events                           |
| 5212      | Astro 2020 | 572188          | 4216323          | 0.02     | 0.40     | select silic goethite stained tuff w/ minor qtz fillings and massive gray qtz, tr scoradite?                        |
| 5213      | Astro 2020 | 572085          | 4216204          | 0.045    | 1.60     | silicified rhyolite rib, tr py, mod goethite, tr apple grn stain Ag?                                                |
| 5214      | Astro 2020 | 572314          | 4215944          | 0.057    | 0.60     | select goethite stained sheeted pieces from unexposed structures                                                    |
| 5215      | Astro 2020 | 572174          | 4215864          | 0.007    | 0.20     | strongly alt rhyolite (sericite?) silica flooded w/ 2% py pseudos                                                   |
| 5216      | Astro 2020 | 572266          | 4215865          | 0.011    | < 0.2    | strongly alt rhyolite, opaline silica vnls                                                                          |
| 5217      | Astro 2020 | 572414          | 4215919          | 0.012    | 0.40     | wkly altered rhyolite, minor opaline silica fillings in voids                                                       |
| 5218      | Astro 2020 | 572585          | 4215727          | 0.008    | < 0.2    | 5m wide zone, select goethite stained pieces, white al rhyolite, opaline silica and gray qtz                        |
| 5219      | Astro 2020 | 572620          | 4215620          | 0.006    | 0.40     | Rusty rhyolite tuff and minor qtz vn, select from less mineralized dump,                                            |
| 5220      | Astro 2020 | 572521          | 4215534          | 0.05     | 1.30     | 40cm zone of MnOx stained fracture zone w/ clear qtz vnls cut by micro comb qtz fillings                            |
| 5221      | Astro 2020 | 572554          | 4215550          | 0.112    | 2.10     | strongly altered mod goethite stained rhyolite, minor opaline silica, 60cm wide zone                                |
| 5222      | Astro 2020 | 572465          | 4215544          | 0        | 0.30     | fract 1m wide w 20 cm vein, rusty st goethite stained tuff frags cemented by micro xtaline qtz, tr grn Ag stain?    |
| 5223      | Astro 2020 | 572417          | 4215480          | 0.012    | 0.40     | 10 or 12 rusty sructues in silic outcrop of rhyolite, silicified goethite zones 1-10cm, minor grn dendritic mineral |
| 5224      | Astro 2020 | 572330          | 4215370          | < 0.005  | < 0.2    | select MnOx stained fractures across 10m zone, rib of silic rhyolite                                                |
| 5225      | Astro 2020 | 572209          | 4215442          | < 0.005  | < 0.2    | mod welded non qz pheno bearing tuff, st goethite, 10m shaft                                                        |
| 5226      | Astro 2020 | 572288          | 4215487          | 0.007    | 0.30     | Rusty boulders of fault breccia cemented by opaline silica and mior gray fg qtz, unseen in outcrop or float         |
| 5227      | Astro 2020 | 572388          | 4215589          | 0.183    | 66.60    | 30cm zone of breccia, rholite frags cemented by 30% quartz, vnls and fillings, abundant micro-comb qtz              |
| 5228      | Astro 2020 | 572510          | 4215586          | 1.35     | 405.00   | hi-grade portion of dump? Quartz vn, alterd wall rk breccia, 5% py, minor vnls of late gray qtz w/ py, scoradite?   |
| 5229      | Astro 2020 | 572510          | 4215592          | 0.013    | 0.60     | best looking core on dump; strongly altered white welded tuff w/ 5% py, Nearby box lids N58 and N59                 |
| 5230      | Astro 2020 | 572270          | 4215652          | 0.028    | 4.20     | 20' decline, rhyolite tuff, select qtz suported breccia, late qtz vnls to 1cm, MnOx stains,                         |

# APPENDIX 4 – Needles Rock Chip Sample Table

| Sample ID | Campaign   | Easting (NAD83) | Northing (NAD83) | Au (g/t) | Ag (g/t) | Comments                                                                                                           |
|-----------|------------|-----------------|------------------|----------|----------|--------------------------------------------------------------------------------------------------------------------|
| 5231      | Astro 2020 | 572504          | 4215590          | <0.005   | 0.70     | 67' core block nearby, Nearby box lids N58 and N59, friable ground up breccia of qtz and alt wall rk               |
| 5232      | Astro 2020 | 572770          | 4215599          | <0.005   | <0.2     | strongly altered rhyolite, contact of darkcolored less altered intrusive w/ qtz phenos                             |
| 5233      | Astro 2020 | 572695          | 4215756          | <0.005   | <0.2     | rhyolite, liesingang banded, goethite stained                                                                      |
| 5234      | Astro 2020 | 572764          | 4215500          | 0.03     | 0.40     | ground up rhyolite, gopssanous fault breccia, tr qz fragments                                                      |
| 5235      | Astro 2020 | 572307          | 4216217          | <0.005   | <0.2     | goethite stained clay algted quartz bearinhg tuff, wispy siulica vnlt and replacements, st comp-weld               |
| 5236      | Astro 2020 | 571764          | 4215018          | 0.032    | 0.50     | st alt rhyolite, small pieces of st goethite stained tuff coated and veined by opaline silica and 1.5 cm qtz xtals |
| 5237      | Astro 2020 | 571570          | 4214939          | 0.307    | 10.60    | rusty small pieces of silic tuff, dark gray silica groundmass w/ dis py, minor apple grn stains Ag?                |
| 5238      | Astro 2020 | 571528          | 4214960          | 0.33     | 88.80    | Lobe of dump with unox gray fg qtz chunks to 20cm, tr py, lt jarosite                                              |
| 5239      | Astro 2020 | 571516          | 4214965          | 0.381    | 66.20    | Another lobe of dump similar to 5238, less weakly developed though                                                 |
| 5240      | Astro 2020 | 571305          | 4214744          | 0.006    | <0.2     | rhyolite tuff, minor gray qyz vnlt and mod to strong goethite                                                      |
| 5241      | Astro 2020 | 571196          | 4214769          | 0.005    | 0.30     | goethite stained float, st welded tuff, wkly silicified, lt gray silica flooding wkly developed                    |
| 5242      | Astro 2020 | 571083          | 4214709          | <0.005   | <0.2     | rusty float chips in train N80E, minor gray silica vnlt                                                            |
| 5243      | Astro 2020 | 571067          | 4215043          | <0.005   | <0.2     | same as 5242 but N20E                                                                                              |
| 5244      | Astro 2020 | 571179          | 4215096          | 0.006    | 0.20     | st argilized felsite, either dike or non qtz pheno bearing tuff, laced with goethite stained high angle fracs      |
| 5245      | Astro 2020 | 571921          | 4215046          | 0.008    | 1.70     | Altered tuff with crusts of goethite coated fractures with silicified selvage                                      |
| 5246      | Astro 2020 | 571382          | 4214975          | 0.017    | 0.40     | silicified breccia cemented w/ goethite and drusy qtz, conspicuous brn-grn stain, scoradite?                       |
| 5247      | Astro 2020 | 571398          | 4214987          | 5.54     | 406.00   | same as 5246, continuation of shaft structue                                                                       |
| 5248      | Astro 2020 | 572850          | 4214969          | 0.022    | 0.40     | Black MnOx breccia, multi stage qtz and opaline fillings, light gray silica-py zones along compaction planes       |
| 5249      | Astro 2020 | 572854          | 4214973          | 0.007    | 0.30     | Intensely altered rhyolite with total texture destruction, light gray zones of silica flooding and micro st wks    |
| 5250      | Astro 2020 | 572857          | 4214937          | 0.016    | 1.00     | silicified rhyolite in rib; lt gray silica flooded zones                                                           |
| 5251      | Astro 2020 | 572782          | 4214946          | 0.006    | 0.20     | rhyolite, st goethite, laced with silica and quartz coatings on fracs                                              |
| 5252      | Astro 2020 | 572946          | 4214731          | 0.019    | 0.20     | fine grained tuff, no qtz phenos, hazy silica flooded zones, silica vnlt, mod goethite                             |
| 5253      | Astro 2020 | 572764          | 4214445          | <0.005   | <0.2     | goethite stained rhyolite, wkly altered, argillic                                                                  |
| 5254      | Astro 2020 | 572906          | 4215087          | <0.005   | <0.2     | non quartz bearing tuff, laced w/ minor fg, lt gray silica-py vnlt                                                 |
| 5255      | Astro 2020 | 572774          | 4215040          | 0.005    | <0.2     | strongly welded tuff, st argillic, silica vnlt follow compaction planes                                            |
| 5256      | Astro 2020 | 572697          | 4215055          | 0.039    | 1.20     | select lt gray and clear qtz vn, silicified wall rk frags, st goethite, vuggy                                      |
| 5257      | Astro 2020 | 572567          | 4215083          | 0.106    | 1.30     | 10cm lenses of qtz-breccia in joints in rhyolite tuff                                                              |
| 5258      | Astro 2020 | 572203          | 4215237          | <0.005   | <0.2     | mod goethite stained wkly altered rhyolite, Not much mineralization on dump                                        |
| 5259      | Astro 2020 | 572210          | 4215266          | 0.005    | 0.20     | 10 cm qtz vn in silic rhyolite with v strong goethite                                                              |
| 5260      | Astro 2020 | 572422          | 4215112          | <0.005   | <0.2     | 2-5cm FeOx stained joints w/ strong goethite and silica selvages in alt rhyolite                                   |

# APPENDIX 4 – Needles Rock Chip Sample Table

| Sample ID | Campaign   | Easting (NAD83) | Northing (NAD83) | Au (g/t) | Ag (g/t) | Comments                                                                                          |
|-----------|------------|-----------------|------------------|----------|----------|---------------------------------------------------------------------------------------------------|
| 5261      | Astro 2020 | 572689          | 4215109          | 0.117    | 2.00     | 10cm joints filled w/ broken silic wall rk fragments + 5% fg silica vnlt and fillings             |
| 5262      | Astro 2020 | 572083          | 4217197          | 0.063    | 2.70     | silicified rhyolite ash flow tuff, 2% dis py, lt gray quartz vnlt and fillings,                   |
| 5263      | Astro 2020 | 572068          | 4217266          | 0.006    | 0.40     | silicified olive gray sugary quartz breccia w/ silic wall rk fragments, scoradite?                |
| 5264      | Astro 2020 | 571812          | 4217393          | 0.011    | 0.30     | strongly clay altered (kaolinite?) rhyolite tuff, st goethite, fractures filled w/ chalcedony     |
| 5265      | Astro 2020 | 571837          | 4217320          | 0.007    | <0.2     | silicified tuff, white opaline-chalcedony replaced phenocryst cavities and fractures              |
| 5266      | Astro 2020 | 571520          | 4217041          | 0.047    | 1.90     | gossanous quartz vn, alt wall rk fragments, white crystalline qtz, broken and rehealed            |
| 5267      | Astro 2020 | 571570          | 4217028          | 0.028    | 4.30     | local boulders, massive white and lt gray qtz, gray qtz w/ fg py                                  |
| 5268      | Astro 2020 | 571680          | 4217025          | 0.02     | 0.20     | lightly welded, lightly compacted rhyolite tuff, wkly silicified, clay altered, near qtz vn       |
| 5269      | Astro 2020 | 571700          | 4217034          | 0.018    | 0.20     | from prominent qz vn, grossly banded white and gray, qtz after calcite, brecciated in places      |
| 5270      | Astro 2020 | 572132          | 4216662          | 0.025    | 2.10     | silicified rhyolite rib, fractured and stained w/ mod goethite and minor silica vnlt              |
| 5271      | Astro 2020 | 571052          | 4216228          | <0.005   | <0.2     | Goethite stained lightly compacted, wkly welded rhyolite tuff                                     |
| 5272      | Astro 2020 | 571132          | 4216742          | 0.03     | 0.90     | wkly compacted mod welded tuff, st hematite and goethite in breccia zones                         |
| 5273      | Astro 2020 | 571349          | 4216770          | 0.008    | <0.2     | wkly compacted tuff, strong clay alteration, altered zone > 15m wide,                             |
| 5274      | Astro 2020 | 572626          | 4216436          | 0.015    | 0.40     | select zone of crusty goethite coatings abnd silica flooded vnlt, minor gray qtz, tr py           |
| 5275      | Astro 2020 | 572687          | 4216397          | 0.066    | 0.50     | 25 cm boulder quartz in prospect, vuggy white crystalline, possible pink k-spar, wk goethite      |
| 5276      | Astro 2020 | 571599          | 4215677          | 0.103    | 8.60     | select small pieces of lt welded tuff, minor vnlt of chalcedony                                   |
| 5277      | Astro 2020 | 571640          | 4216111          | 0.137    | 4.90     | lightly compact, wk welded tuff, white, clay altered, breccia supported by lt gray silica-py vnlt |
| 5278      | Astro 2020 | 571655          | 4216031          | 0.02     | 0.90     | wk compact-weld tuff; silica flooded, lt gray vitreous zones in white alt wall rk                 |
| 5279      | Astro 2020 | 571801          | 4215949          | 0.053    | 0.70     | rusty siliceous zone in wk compact-weld tuff; nearby collapse block of non qz bearing tuff        |
| 5280      | Astro 2020 | 571764          | 4215530          | 0.006    | <0.2     | mod compact-weld tuff, mod goethite stain, adjacent to 30cm calcite vn                            |
| 5281      | Astro 2020 | 571533          | 4215178          | <0.005   | <0.2     | mod compact-weld tuff, abund white opaque and clear qtz fillings                                  |
| 5282      | Astro 2020 | 571533          | 4215212          | 0.08     | 0.20     | strongly altered, silicified and bleached, st compacted, mod welded, 20cm zone st shearing        |
| 5283      | Astro 2020 | 571497          | 4215330          | 0.012    | 0.40     | 50 cm zone in mod compact-weld tuff, mod silicified, mod strong goethite                          |
| 5284      | Astro 2020 | 571463          | 4215349          | 0.005    | <0.2     | silic rhyolite tuff, dark, strong goethite, no qtz vn, minor pieces of gossan included            |
| 5285      | Astro 2020 | 571606          | 4215365          | 0.022    | 0.60     | White strongly clay altered rhy w/ strong goethite, fracs coated w/ drusy qtz coated w/ goethite  |
| 5286      | Astro 2020 | 571703          | 4214310          | 0.126    | 0.80     | Rusty roadbed, mod goethite-hematite stined st weld tuff w/ minor qtz xtals on fracs              |
| 5287      | Astro 2020 | 572401          | 4214246          | 0.062    | 0.80     | lightly bleached crowded porphyry, intrusive?, silicified, sgrongly altered, minor gry qtz vnlt,  |
| 5288      | Astro 2020 | 572840          | 4215708          | 0.006    | <0.2     | strongly welded tuff, goethite stained joints w/ drusy qtz coatings                               |
| 5289      | Astro 2020 | 572920          | 4215798          | 0.267    | 1.90     | tuff, minor silica selvages, scoradite stains (grn-brn)?                                          |
| 5290      | Astro 2020 | 572807          | 4215885          | 1.105    | 5.40     | mod comp-weld rhyolite tuff, silica flooded, sample is mostly gossan w/ some alt wall rk          |

# APPENDIX 4 – Needles Rock Chip Sample Table

| Sample ID | Campaign     | Easting (NAD83) | Northing (NAD83) | Au (g/t) | Ag (g/t) | Comments                                                                                                                                                                                               |
|-----------|--------------|-----------------|------------------|----------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5291      | Astro 2020   | 572944          | 4216007          | 0.014    | 1.30     | isolated 35X25cm chunk of gray sugary qtz vn, minor breccia class of gray translucent qtz                                                                                                              |
| 5292      | Astro 2020   | 573212          | 4215739          | 1.435    | 46.80    | typical dump, small FeOx stained pieces if st silicified tuff                                                                                                                                          |
| 5293      | Astro 2020   | 573029          | 4215667          | 0.048    | 1.20     | 30cm zone of st altered tuff w/ strong goethite                                                                                                                                                        |
| 5294      | Astro 2020   | 572736          | 4215972          | 0.321    | 2.00     | Intersection of 2 structures, silic tuff w/ gossan @ intersection                                                                                                                                      |
| 5295      | Astro 2020   | 573228          | 4216140          | 0.064    | 0.60     | Qtz outcrop and boulders of white qtz cut by gray py bearing qtz vnls, brecciated                                                                                                                      |
| 5296      | Astro 2020   | 573395          | 4216352          | 1.16     | 6.00     | st altered tuff in pit, select silic tuff W 20% white qtz cut by gray qtz vnls                                                                                                                         |
| 5297      | Astro 2020   | 573388          | 4216388          | 0.009    | 0.40     | 1m wide outcrop of massive white and light gray crudely banded qz vn                                                                                                                                   |
| AR-1      | Taranis 2002 | 572585          | 4215396          | 5.98     | 681.00   | Vuggy qtz. Vein material from main Arrowhead dump, pyrite + aspyrite? In aggregates with associated abundant green \ yellow feox.                                                                      |
| AR-2      | Taranis 2002 | 572574          | 4215407          | 2.09     | 371.00   | Same as AR-1                                                                                                                                                                                           |
| ARW-1     | Taranis 2002 | 571600          | 4214763          | 0.435    | 30.60    | Silicified volcanics, with cross-cutting qtz veinlets. Fg., dark grey sulfides? in matrix. From Tomahawk shaft.                                                                                        |
| ARW-2     | Taranis 2002 | 571548          | 4215153          | <0.005   | <0.2     | Andesite, grey \ green, weakly silicified (?), with cross-cutting feox veinlets. From shaft.                                                                                                           |
| ARW-3     | Taranis 2002 | 571582          | 4215135          | 0.01     | 1.00     | Volcanics, bleached, with strong brown feox veinlets cross-cutting rock matrix. Weakly brecciated. From prospect pit.                                                                                  |
| ARW-4     | Taranis 2002 | 572053          | 4214680          | 0.025    | 8.00     | Bleached volcanics, sample from iron oxide veins striking 315 AZ, dipping 60 degrees northeast, in outcrop.                                                                                            |
| AW-01     | Taranis 2002 | 572805          | 4215400          | <0.005   | <0.2     | Volcanic, intense FeOx alteration, coarse phenocrysts, NE of old Arrow Mine                                                                                                                            |
| AW-02     | Taranis 2002 | 572850          | 4215404          | <0.005   | 0.20     | Very distinctive grey colored marble? - epithermal calcite vein. Old pit with intense FeOx in volcanics (calcite/barite?) - vein crosscut by small volcanic str's and dykes 1 cm wide.                 |
| AW-03     | Taranis 2002 | 572887          | 4215418          | <0.005   | <0.2     | Volcanic outcrop w intense FeOx fractures, Generally N-S trend, but very erratic. Leisengangue textures                                                                                                |
| AW-04     | Taranis 2002 | 573288          | 4215548          | 6.42     | 101.00   | Old vertical 80 degree inclined inclined shaft w dump, silicified volcanic, FeOx grey color, ~1,000 ton dump, lots of grey qtz stringers, 75, 55SW strike of veins in shaft                            |
| AW-05     | Taranis 2002 | 573030          | 4215807          | 0.025    | 0.60     | Old vertical shaft, felsic cg. Fragmental volcanic unit w bdt FeOx. Also banded calcite vein striking generally E-W. Local coarse calcite/ankerite and also chalcedonic grey qtz veins (Bx)            |
| AW-06     | Taranis 2002 | 573032          | 4215856          | 0.05     | 1.00     | Small blasted pit 5' deep, white cg. Lithic volcanic w abd't FeOx, not very exciting                                                                                                                   |
| AW-07     | Taranis 2002 | 572908          | 4215807          | 0.585    | 1.80     | FeOx altered volcanics, bleached white with intense clay altered matrix, FeOx in fractures generally N-S                                                                                               |
| AW-08     | Taranis 2002 | 572816          | 4215778          | 0.845    | 1.60     | Old pit 12' deep, previously sampled with tags "6806" and A-57842" - banded ankerite vein - calcite in volcanics, vein almost 1' wide - 50% FeOx calcite/50% barren vein - vein vertical, striking NW? |
| AW-09     | Taranis 2002 | 572767          | 4215855          | 0.01     | <0.2     | Old pit, 5' deep in bleached white volcanic. FeOx in fractures trending NNW, dipping 80 degrees to the East approx.                                                                                    |

# APPENDIX 4 – Needles Rock Chip Sample Table

| Sample ID | Campaign     | Easting (NAD83) | Northing (NAD83) | Au (g/t) | Ag (g/t) | Comments                                                                                                                                                                                                         |
|-----------|--------------|-----------------|------------------|----------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AW-10     | Taranis 2002 | 572706          | 4215433          | <0.005   | <0.2     | Old shaft, ~ 50 deep w ~ 300 tons of rock around it. Cg. White, lithic tuff w abd't FeOx, 2% f.g. pyrite, silicified. Sample is FeOx fines in the dump.                                                          |
| AW-11     | Taranis 2002 | 572668          | 4215530          | <0.005   | <0.2     | Shaft ~ 50' deep, in white altered volcanics, bleached with abd't FeOx - green tinge                                                                                                                             |
| AW-12     | Taranis 2002 | 572735          | 4215572          | <0.005   | <0.2     | Pronounced FeOx weathering outcrop, NE-striking fracture w abd't FeOx, vertical dip - extends SW to Arrow Mine                                                                                                   |
| AW-13     | Taranis 2002 | 572658          | 4215790          | <0.005   | <0.2     | Old trench, 30' long, 5' deep, FeOx volcanics - abd't clay alteration - nothing spectacular                                                                                                                      |
| AW-14     | Taranis 2002 | 572497          | 4215712          | <0.005   | <0.2     | White-grey volcanic with FeOx alteration - Pit 12' long, 5' deep, silicified along joint surfaces, crystalline, minor yellow color                                                                               |
| AW-15     | Taranis 2002 | 572397          | 4215762          | <0.005   | <0.2     | Trench 10' long, 5' deep, white, clay altered volcanic w abd't FeOx and yellow color. Groundmass silicified, qtz eyes                                                                                            |
| AW-16     | Taranis 2002 | 572346          | 4215665          | 0.005    | 0.40     | Old pit trending NE, white bleached volcanic w abd't FeOx - weak yellow tinge, silicified groundmass                                                                                                             |
| AW-17     | Taranis 2002 | 572417          | 4215833          | <0.005   | <0.2     | Trench along side of hill trending NNE, 90' long, barren? - white volcanic, fg, mn FeOx, weakly silicified, backhoe trench                                                                                       |
| AW-18     | Taranis 2002 | 572425          | 4215907          | <0.005   | <0.2     | Pit 5' deep, grey-white volcanic/FeOx. Silicified, mn yellow color, scree from hillside.                                                                                                                         |
| AW-19     | Taranis 2002 | 572506          | 4216333          | <0.005   | <0.2     | White, grey volcanic - FeOx. Pit 50' deep, now caved - lots of slumped scree material, dead looking. Small road leading in, very old.                                                                            |
| AW-20     | Taranis 2002 | 572498          | 4216283          | <0.005   | <0.2     | Small pit, abd't chocolate brown FeOx along fracture surfaces. White, alt'd volcanic protolith, pit caved                                                                                                        |
| AW-21     | Taranis 2002 | 572533          | 4216276          | <0.005   | 0.20     | Small pit, white volcanic-argillized with FeOx and yellow tinge. Old, caved, lots of FeOx concentrated along fractures trending NE                                                                               |
| AW-22     | Taranis 2002 | 572327          | 4216162          | 0.025    | 0.80     | Old Shaft, ~80 deep. Abd't FeOx coated volcanic, silicified? Minor yellow color tinge, minor grey qtz. Stringers. Structure trending NNW, dipping 70 degrees West in shaft.                                      |
| AW-23     | Taranis 2002 | 572335          | 4216145          | 0.015    | 0.60     | Slightly south of AW-22, intense bleached white-grey volcanics, abd't FeOx, minor yellow tinge, old pit 5' deep, caved                                                                                           |
| AW-24     | Taranis 2002 | 572271          | 4216130          | 0.025    | 0.40     | Old wooden shaft, vertical, depth ~100'. Dump mostly grey, FG. Volcanic. Numerous silica veins w abd't yellow oxide material, 6" wide biggest piece. Highly mineralized, yellow Bx - volcanic fresh, minor FeOx. |
| AR-03     | Taranis 2002 | 572870          | 4215718          | 0.565    | 6.20     | Float sample, qtz vein \gossan with strong black and red feox.                                                                                                                                                   |
| AR-04     | Taranis 2002 | 572796          | 4214865          | 0.055    | 1.40     | Quartz vein stockwork material from Arrowhead Ext.? dump, grey \green oxide moderate with diss. black Ag? oxide and very minor pyrite. .                                                                         |
| AR-05     | Taranis 2002 | 572918          | 4214776          | 0.025    | 1.00     | Qtz vein stockwork with some silica replacement of volcnics, vfg diss. pyrite approximately 2-3%.                                                                                                                |
| AR-06     | Taranis 2002 | 572650          | 4214881          | 0.09     | 1.20     | From trench. 40' long, qtz. stockwork veins strike AZ 30?. Well oxidized stockwork with strong feox.                                                                                                             |

# APPENDIX 4 – Needles Rock Chip Sample Table

| Sample ID | Campaign     | Easting (NAD83) | Northing (NAD83) | Au (g/t) | Ag (g/t) | Comments                                                                                                                                                      |
|-----------|--------------|-----------------|------------------|----------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AR-07     | Taranis 2002 | 572281          | 4215051          | <0.005   | <0.2     | Shaft collared in volcanics, from dump, massive vein \ breccia, low-temp looking, weak feox.                                                                  |
| AR-08     | Taranis 2002 | 572278          | 4215243          | <0.005   | 0.20     | Silicified and brecciated volcanics, strong feox.                                                                                                             |
| AR-09     | Taranis 2002 | 572361          | 4215289          | <0.005   | 0.60     | Brecciated volcanics, strongly oxidized with minor stockwork veins, vfg sulfide visible, minor.                                                               |
| AR-10     | Taranis 2002 | 572394          | 4215309          | 0.17     | 9.00     | Qtz. Vein stockwork with sub parallel crustiform veins, strong feox on vein margins + disseminated sulfide casts.                                             |
| AR-12     | Taranis 2002 | 572438          | 4216175          | 0.12     | 2.00     | From shaft dump, shear AZ 50, dip 80 NW, crustiform qtz veins with strong brown \ black feox.                                                                 |
| AR-13     | Taranis 2002 | 572486          | 4216202          | 0.045    | 3.60     | From pit exposing AZ N65E, dip vertical shear. Qtz vein and stockwork vein material with very strong black Ag? Oxide, nice stuff.                             |
| AR-14     | Taranis 2002 | 572337          | 4216362          | 0.01     | 4.20     | From shaft exposing shear AZ 353, dip 82 W. Qtz vein material with strong red and black feox, slickensides noted on qtz vein piece.                           |
| AR-15     | Taranis 2002 | 572350          | 4216432          | 0.01     | 1.40     | Silicified breccia with multi-phase quartz veining, and internal crustiform texture, mod. Feox.                                                               |
| AR-16     | Taranis 2002 | 572483          | 4216560          | <0.005   | <0.2     | Brecciated and silicified volcanics with crustiform quartz vein stockwork, strong black Ag? oxide locally, weak- moderate distinctive maroon oxide in matrix. |
| AR-17     | Taranis 2002 | 572557          | 4215396          | <0.005   | 0.60     | Altered volcanics from prospect pit near main Arrowhead shaft. Very strong Feox \ MnOx (?), in stockwork veinlets.                                            |
| AR-18     | Taranis 2002 | 572585          | 4215396          | 0.075    | 0.60     | Altered volcanics from surface near main Arrowhead shaft. Very strong feox veins with gossan texture.                                                         |
| ND-1      | Taranis      | 572572          | 4215392          | 0.126    | 26.10    | Arrowhead Shaft, Quartz vein material w/ fg diss. py < 3%; minor FeO-staining.                                                                                |
| ND-2      | Taranis      | 572572          | 4215392          | 1.055    | 293.00   | Arrowhead Shaft, Stockwork qtz veinlets in silicified volcanic tuff; strong FeO-staining.                                                                     |
| ND-3      | Taranis      | 572572          | 4215392          | 0.653    | 76.30    | Arrowhead Shaft, Silicified tuff w/ X-cutting, vuggy white qtz and amethyst veinlets.                                                                         |
| ND-4      | Taranis      | 572572          | 4215392          | 2.57     | 1115.00  | Arrowhead Shaft, FeO-stained, silicified tuff w/ fine X-cutting qtz veinlets & diss. py 1-2%.                                                                 |
| ND-5      | Taranis      | 572572          | 4215392          | 0.504    | 46.80    | Tomahawk Mine, FeO-stained, silicified tuff w/ X-cutting quartz veinlets.                                                                                     |
| ND-6      | Taranis      | 571600          | 4214763          | 0.005    | 0.30     | Tomahawk Mine, Strongly altered (advanced argillic alteration) volcanic tuff.                                                                                 |
| ND-7      | Taranis      | 571600          | 4214763          | 0.03     | 2.00     | Prospect at North end of Gordo Claim Block, Strongly altered (advance argillic alteration) and oxidized hematite after pyrite veins/diss) volcanic tuff       |
| ND-8      | Taranis      | 572249          | 4216107          | 0.251    | 83.50    | Arrowhead Shaft, FeO-stained, vuggy quartz vein material w/ fg py < 3%.                                                                                       |
| TK-01     | Taranis      | 571768          | 4215897          | 0.119    | 2.90     | Hammerhead Pit, intensely altered Tertiary Volcanic with stockwork of qtz stringers and sulfides (<1%)                                                        |
| TK-02     | Taranis      | 571769          | 4215898          | 0.025    | 0.50     | Azimuth 65, dip 78 degrees Northwest, Hammerhead Pit?                                                                                                         |
| TK-03     | Taranis 2003 | 571858          | 4215335          | 0.007    | 1.30     | Calcite vein from prospect pit, c.g. calcite with strong dark brown pervasive feox.                                                                           |
| TK-04     | Taranis 2003 | 572061          | 4215825          | 0.017    | 0.30     | Bleached volcanic with fine Feox veinlets, wk argillic alteration.                                                                                            |

# APPENDIX 4 – Needles Rock Chip Sample Table

| Sample ID | Campaign     | Easting (NAD83) | Northing (NAD83) | Au (g/t) | Ag (g/t) | Comments                                                                                                                          |
|-----------|--------------|-----------------|------------------|----------|----------|-----------------------------------------------------------------------------------------------------------------------------------|
| TK-05     | Taranis 2003 | 572101          | 4215912          | 0.008    | 0.80     | F.g. low temp quartz vein with minor feox in fractures.                                                                           |
| TK-06     | Taranis 2003 | 572192          | 4216063          | 0.015    | 1.20     | Quartz vein \silicified breccia with crustiform texture and mod feox in veinlets, remnant volcanic .texture.                      |
| TK-07     | Taranis 2003 | 572331          | 4216169          | 0.025    | 0.80     | Volcanic with quartz vein stockwork, light grey clear qtz veins, weak feox.                                                       |
| TK-08     | Taranis 2003 | 572159          | 4217026          | 0.016    | 1.10     | Volcanic with quartz vein stockwork, gossan texture locally, strong feox + Mn (?) ox and specular hematite.                       |
| TK-09     | Taranis 2003 | 572171          | 4217014          | 0.022    | 1.30     | Silicified volcanic with very strong feox, gossan locally + iron carbonate (siderite) veinlets.                                   |
| TK-10     | Taranis 2003 | 571754          | 4216834          | 0.282    | 16.60    | Amorphous, low-temp quartz vein + silicified volcanic breccia, x-cutting qtz veinlets, mod FeO.                                   |
| TK-11     | Taranis 2003 | 571601          | 4216844          | 0.012    | 1.40     | Quartzite with x-cutting qtz veinlets, bladed texture (qtz after calcite?), + mod FeO pervasive.                                  |
| TK-12     | Taranis 2003 | 571778          | 4216842          | 0.392    | 0.50     | Qtz vein, massive, w/ moderate, feox locally, + Mn (?) ox? Originally thought to be qtzite, AZ 130, dip 50 SW.                    |
| TK-13     | Taranis 2003 | 571899          | 4217071          | 0.009    | 0.20     | Qtz vein/gossan, massive w/ dark oxide strong locally. Vein AZ 83, dip unknown.                                                   |
| TK-14     | Taranis 2003 | 571896          | 4217196          | 0.173    | 0.70     | Bleached volcanics w/ weak quartz vein stockwork, moderate feox. Prospect pit.Vein, AZ 130 , dip 80 NE.                           |
| TK-15     | Taranis 2003 | 571909          | 4217125          | 0.007    | <0.2     | Dense quartz vein/silicified breccia w/ strong maroon feox, pervasive. Prospect pit.                                              |
| TK-17     | Taranis 2003 | 572053          | 4216194          | 0.451    | 0.20     | Banded chalcedony vein. Green/grey w/ moderate feox locally. Prospect pit.                                                        |
| NDX1      | Taranis 2003 | 572776          | 4213917          | 0.134    | 93.20    | Quartz vein stockwork from pit, weak feox.                                                                                        |
| NDX2      | Taranis 2003 | 573153          | 4216138          | 0.069    | 58.60    | Description not found.                                                                                                            |
| NDX3      | Taranis 2003 | 572207          | 4217017          | 0.017    | 3.00     | Float sample, silicified breccia with local strong feox.                                                                          |
| NDX4      | Taranis 2003 | 572241          | 4216120          | 0.022    | 1.20     | Float sample taken near shaft, qtz vein stockwork, vuggy texture, moderate pervasive feox.                                        |
| NDX5      | Taranis 2003 | 572258          | 4216211          | 0.073    | 4.10     | Float sample taken 200 feet north of shaft, silicified volcanic w\wk bx texture, minor crustiform qtz veinlets, mod. Maroon feox. |
| NDX6      | Taranis 2003 | 572240          | 4216240          | 0.115    | 1.00     | Qtz vein stockwork, brecciated volcanics, brown feox on veinlet rims.                                                             |
| NDX7      | Taranis 2003 | 572333          | 4216554          | 0.005    | <0.2     | Qtz vein stockwork + pervasive maroon feox, crustiform veins, float sample.                                                       |
| NDX8      | Taranis 2003 | 572389          | 4216562          | 0.005    | 0.20     | Qtz vein stockwork + brown feox, crustiform, open-space texture, feox on veinlet margins.                                         |
| NDX9      | Taranis 2003 | 572422          | 4216608          | 0.005    | <0.2     | Qtz vein stockwork \silicified volcanic, crustiform veins with strong dark brown feox in cavities.                                |
| NDX10     | Taranis 2003 | 571631          | 4216829          | 0.117    | 72.00    | Massive qtz vein, OC, AZ 300, colloform texture, wk feox+ dark grey qtz (sulfides?). Composite sample.                            |
| NDX11     | Taranis 2003 | 571647          | 4216875          | 0.045    | 3.40     | Silicified brecciated volcanic, with moderate feox on fractures and matrix, float.                                                |
| NDX12     | Taranis 2003 | 572167          | 4217024          | 0.017    | 1.00     | Silicified volcanic + qtz vein stockwork, float with weak feox.                                                                   |
| NDX13     | Taranis 2003 | 572335          | 4216426          | 0.019    | 2.20     | Float sample, near shaft, Qtz vein stockwork, crustiform veins with maroon \brown feox, weak Mn, open space quartz.               |

# APPENDIX 4 – Needles Rock Chip Sample Table

| Sample ID         | Campaign     | Easting (NAD83) | Northing (NAD83) | Au (g/t) | Ag (g/t) | Comments                                                                                                                  |
|-------------------|--------------|-----------------|------------------|----------|----------|---------------------------------------------------------------------------------------------------------------------------|
| NDX14             | Taranis 2003 | 572352          | 4216463          | 0.023    | 2.20     | Float, quartz vein stockwork, crustiform veins with black Mn oxides in open spaces, near shafts.                          |
| NDX15             | Taranis 2003 | 571599          | 4216845          | 0.065    | 4.40     | Taken from near TK-11 sample location. Pit, silicified breccia \ volcanics, w \ moderate feox on clast rims, strong SiO2. |
| NDX16             | Taranis 2003 | 571436          | 4216572          | 0.072    | 0.70     | OC, Sugary quartz vein stockwork with dark brown feox, crustiform texture, AZ 30, dip vertical (?)                        |
| NDX17             | Taranis 2003 | 571951          | 4217046          | 0.006    | <0.2     | Float, quartz vein stockwork + gossan, strong specular hematite on fractures and in veins.                                |
| NDX18             | Taranis 2003 | 572096          | 4215954          | 0.005    | 0.20     | OC, Quartz vein stokwork in feox stained volcanics, crustifrom veins with strong oxides (realgar?)                        |
| NDX19             | Taranis 2003 | 572138          | 4215982          | 0.056    | 1.70     | Massive quartz vein from pit, AZ 80. Green oxide + possible disseminated sulfides (?), Multiphase xcutting qtz veins      |
| NDX20             | Taranis 2003 | 571613          | 4215012          | 0.443    | 0.70     | Pit, weak qtz vein stockwork with moderate feox, on NW fault.                                                             |
| NDX21             | Taranis 2003 | 572359          | 4214708          | 0.005    | 0.20     | Pit, silicified volcanic, light grey microcrystalline quartz vein in NW-striking structure.                               |
| NDX22             | Taranis 2003 | 572766          | 4214869          | 0.023    | 1.10     | Float near shaft, quartz vein stockwork, with strong feox locally, crustiform quartz veins.                               |
| NDX23             | Taranis 2003 | 572978          | 4214926          | 0.016    | <0.2     | Quartz vein stockwork, crustiform veins with chocolate brown feox on vein margins.                                        |
| NDX24             | Taranis 2003 | 572084          | 4214641          | 0.044    | 0.50     | Shaft dump, quartz vein stockwork, with crustiform veinlets, strong brown feox on vein margins.                           |
| NDX25             | Taranis 2003 | 572514          | 4214212          | 0.054    | 15.80    | Pit, drusy quartz veins with maroon \ brown feox, stockwrok veins.                                                        |
| NDX26             | Taranis 2003 | 572425          | 4214348          | 0.083    | 1.10     | Laminar crustiform quartz veins with moderate feox on vein margins.                                                       |
| NDX27             | Taranis 2003 | 572548          | 4214993          | 0.005    | <0.2     | OC, stron Mn oxides, weak feox, weak quartz vein stockwork, light grey.                                                   |
| NDX28             | Taranis 2003 | 571650          | 4216283          | 0.005    | 0.20     | Float sample, green laminar quartz vein with vocanic replacement texture, flourite (?) "Picture rock".                    |
| NDX29             | Taranis 2003 | 571831          | 4216385          | 0.083    | 0.80     | Description not found.                                                                                                    |
| NDX30             | Taranis 2003 | 572048          | 4216235          | 0.225    | 12.40    | Float sample, crustiform qtz veins + moderate feox.                                                                       |
| NDX31             | Taranis 2003 | 572096          | 4216346          | 0.092    | 1.50     | Light grey quartz vein stockwork+ strong feox, from pit.                                                                  |
| NDX32             | Taranis 2003 | 572434          | 4216765          | 0.661    | 13.00    | Gossan with quartz veins, strong feox.                                                                                    |
| NDX33             | Taranis 2003 | 572249          | 4214550          | 0.007    | 0.40     | Pit, bleached feox, volcanics.                                                                                            |
| NDX34             | Taranis 2003 | 572265          | 4214920          | 0.013    | 0.70     | Bleached volcanics with light grey quartz vein stockwork, weak feox, from pit.                                            |
| 572680<br>4215648 | Taranis      | 572680          | 4215648          | 0.01     | 0.30     | Massive quartz vein with dissmenated sulfide casts + mod \ strong pervasive feox.                                         |
| 571796<br>4216820 | Taranis      | 571796          | 4216820          | 0.011    | 0.30     | Massive chalcedony vein with minor Feox on fractures.                                                                     |
| 572011 4217114    | Taranis      | 572011          | 4217114          | <0.005   | <0.2     | Silicified breccia \ quartz vein with abundant feox in matrix.                                                            |
| 572172<br>4216446 | Taranis      | 572172          | 4216446          | 0.011    | 0.40     | Volcanic tuff with weak feox on fractures.                                                                                |
| 572061<br>4217060 | Taranis      | 572061          | 4217060          | 0.012    | 0.20     | Silicified breccia with strong feox in matrix. Also smoky "grey" quartz, possilbe f.g. (sulfides?)                        |
| 571785<br>4216843 | Taranis      | 571785          | 4216843          | 0.005    | <0.2     | Massive chalcedony vein with minor Feox on fractures, minor grey quartz.                                                  |
| 572110<br>4217068 | Taranis      | 572110          | 4217068          | 0.005    | <0.2     | Quartz vein stockwork \ gossan with very strong feox \ specular hematite, possibly manganese.                             |

# APPENDIX 4 – Needles Rock Chip Sample Table

| Sample ID         | Campaign       | Easting (NAD83) | Northing (NAD83) | Au (g/t) | Ag (g/t) | Comments                                                                                                                       |
|-------------------|----------------|-----------------|------------------|----------|----------|--------------------------------------------------------------------------------------------------------------------------------|
| 572417<br>4216357 | Taranis        | 572417          | 4216357          | 0.007    | 0.50     | Volcanic tuff with strong feox on fractures, veinlets.                                                                         |
| 572126<br>4217024 | Taranis        | 572126          | 4217024          | <0.005   | 0.70     | Quartz vein stockwork \ weak, with dark ox, possibly manganese.                                                                |
| 571910<br>4217001 | Taranis        | 571910          | 4217001          | 0.01     | 0.20     | Quartz vein material. Well developed "colloform" texture, ("picture rock"), with strong red \maroon feox in matrix.            |
| 571773<br>4216843 | Taranis        | 571773          | 4216843          | 0.01     | <0.2     | Massive quartz vein with moderate brown Feox on fractures.                                                                     |
| 571780<br>4216840 | Taranis        | 571780          | 4216840          | 0.009    | 0.20     | Massive quartz vein with moderate brown Feox on fractures, weak gossan texture.                                                |
| 571808<br>4216803 | Taranis        | 571808          | 4216803          | 0.012    | 0.20     | Massive chalcedony vein with minor Feox on fractures, minor grey quartz.                                                       |
| 6700W 400S        | Taranis        | 572094          | 4215478          | <0.005   | <0.2     | Massive microxtalline \low temp massive quartz vein with strong grey "smokey" quartz texture.                                  |
| 6500W 450<br>N    | Taranis        | 571875          | 4215636          | <0.005   | <0.2     | Massive microxtalline \low temp massive quartz vein.                                                                           |
| 1000E 900N        | Taranis        | 572898          | 4215642          | 0.02     | 0.90     | Quartz vein material, with strong red \maroon feox in matrix.                                                                  |
| 2400W 500S        | Taranis        | 571785          | 4216440          | 0.289    | 2.00     | Chalcedony veins in stockwork, with mod \strong feox on margins.                                                               |
| N - L1            | Taranis 2003   | 572255          | 4216375          | 0.061    | 24.40    | intensely silicified volcanic with abundant hematite on outside of rock, rock virtually converted to qtz                       |
| N - L2            | Taranis 2003   | 572251          | 4216376          | 0.358    | 99.00    | Highly altered volcanic with abundant hematite, 3 percent vugs lined with quartz xtals, highly altered (mn green tinge, dense) |
| N - J1            | Taranis 2003   | 572259          | 4216370          | 0.009    | 0.90     | Intensely silicified volcanic with moderate hematite and minor brittle structures                                              |
| N - J2            | Taranis 2003   | 572247          | 4216371          | 0.022    | 5.10     | Intensely silicified volcanic with moderate hematite                                                                           |
| N - J3            | Taranis 2003   | 572262          | 4216379          | 0.013    | 0.80     | Highly silicified Volcanic, with 3 perc quartz veinlets and 3 percent vugs infilled with quartz crystals, brecciated           |
| N - T1            | Taranis 2003   | 572253          | 4216372          | 0.01     | 2.00     | Massive qtz flooding producing rock entirely of grey-white colored quartz, abdt feox coating rock                              |
| N - T2            | Taranis 2003   | 572242          | 4216380          | <0.005   | 5.20     | Volcanic, with essentially completely silicified groundmass, locally verging into aqquartz vein, minor jarosite                |
| E0757             | Barrick 080315 | 572118.886      | 4216390.262      | 0.009    | 1.56     | Altered; Fe-stained and silicified crystal tuff near lagged shaft                                                              |
| E2900             | Barrick 080315 | 571459.838      | 4213764.491      | <0.001   | 0.29     | Densely crowded andesite porphyry w/ celadonite stained surfaces- Cu-Oxides?                                                   |
| F3574             | Barrick 080315 | 571292.26       | 4214993.498      | 0.447    | 13.65    | Silicified; goethite stained material from dump of small prospect pit                                                          |
| F3575             | Barrick 080315 | 571419.42       | 4215156.399      | 0.004    | 0.32     | Olive green goethite veins to 1 cm thick cutting lightly altered purplish lithic tuff. Veins strike 120; dip steeply SW        |
| F3576             | Barrick 080315 | 571457.321      | 4215205.439      | 0.069    | 0.90     | Strongly goethite stained lithic tuff; with strong joint/shear fabric striking 119; dipping 45 SW                              |
| F3577             | Barrick 080315 | 571535.621      | 4215357.599      | 0.019    | 1.47     | White; clay altered; goethite veined tuff                                                                                      |
| F3579             | Barrick 080315 | 571690.151      | 4215010.866      | 0.002    | 0.78     | Bull quartz-like vein material from scrape in clay altered tuff                                                                |
| F3580             | Barrick 080315 | 571752.592      | 4215042.146      | 0.003    | 0.58     | Heavily clay altered white lithic tuff                                                                                         |
| F3581             | Barrick 080315 | 571850.742      | 4215041.796      | 0.003    | 1.23     | Goethite webwork in clay altered lithic tuff                                                                                   |
| F3582             | Barrick 080315 | 571690.002      | 4215525.619      | <0.001   | 0.06     | Very coarse grained calcite vein at least 30 cm thick; orientation unknown; cuts clay altered tuff                             |

# APPENDIX 4 – Needles Rock Chip Sample Table

| Sample ID | Campaign       | Easting (NAD83) | Northing (NAD83) | Au (g/t) | Ag (g/t) | Comments                                                                                                                                                                                       |
|-----------|----------------|-----------------|------------------|----------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| G08301    | Barrick 080315 | 572568.927      | 4215761.436      | < 0.001  | 0.15     | Amorphous silica/ silicified vein in quartz eye tuff with jarosite; goethitic veins                                                                                                            |
| G17032    | Barrick 080315 | 572174.067      | 4216552.872      | 0.017    | 5.25     | General dump grab- heavily goethite stained dump with lesser jarosite over silicified rhyolite tuff. Structure in shaft strikes N-S; dips 75-80 W. Sample includes some silica-sulfide breccia |
| G17033    | Barrick 080315 | 572201.487      | 4216625.902      | 0.012    | 1.53     | Dump grab of silicified tuff breccia. Less goethite and more hematite than next dump to the south; no silica sulfide material                                                                  |
| G17034    | Barrick 080315 | 572277.997      | 4216364.491      | 0.077    | 1.22     | Goethite stained pale grey crystal tuff in dump from small; very rectangular shaft. Silicified with anastomosing quartz veins terminated in open space; some silica sulfide material           |
| G17035    | Barrick 080315 | 572436.876      | 4215580.606      | 0.365    | 98.00    | Highly selective sample- most quartz veined and jarositic material in dump                                                                                                                     |
| G21732    | Barrick 080315 | 572844.307      | 4214979.501      | < 0.001  | 0.20     | Yellow and white (jarositic) crystal tuff from S-facing tipple; arrowhead (vertical) shaft                                                                                                     |
| G21733    | Barrick 080315 | 572855.027      | 4214977.711      | 0.001    | 0.09     | Clayey jarositic altered crystal tuff from N-facing tipple; Arrowhead vertical shaft                                                                                                           |
| G21734    | Barrick 080315 | 572860.987      | 4214978.101      | 0.016    | 0.23     | Purplish lithic tuff from W-facing tipple; Arrowhead vertical shaft                                                                                                                            |
| G21735    | Barrick 080315 | 573013.367      | 4214965.48       | 0.017    | 0.27     | Goethite coated altered crystal tuff                                                                                                                                                           |
| G21736    | Barrick 080315 | 573107.988      | 4215016.15       | < 0.001  | 0.10     | Goethite vein striking 335; near vertical; cutting altered crystal tuff                                                                                                                        |
| G21737    | Barrick 080315 | 572898.457      | 4214966.89       | 0.001    | 0.42     | White altered crystal tuff with goethite veins to 1 cm. several vein orientations but dominantly 335                                                                                           |
| G21738    | Barrick 080315 | 572714.806      | 4215053.132      | < 0.001  | 0.09     | Selected dump sample- 1 cm goethite veins in jato site stained white altered tuff                                                                                                              |
| G21739    | Barrick 080315 | 572682.606      | 4215230.503      | < 0.001  | 0.05     | Altered lithic tuff with goethite vein lets; minor silicification?                                                                                                                             |
| G21740    | Barrick 080315 | 572520.756      | 4215589.035      | 3.05     | 578.00   | Silica vein material with sulfides- segregated material from loading area                                                                                                                      |
| G21741    | Barrick 080315 | 572522.776      | 4215578.735      | 0.013    | 2.53     | Grey heavily silicified and brecciated tuff (protolith uncertain) from NW corner of very large dump                                                                                            |
| E9491     | Barrick 080315 | 573296.407      | 4214097.824      | 0.062    | 0.47     | Very white argillized tuff with copious clear gypsum from dump                                                                                                                                 |
| E9492     | Barrick 080315 | 573313.157      | 4214069.464      | 0.002    | 0.15     | Tuff with two cm feldspar megacrysts                                                                                                                                                           |
| E9493     | Barrick 080315 | 573227.697      | 4214110.974      | 0.25     | 46.80    | White to purple fg crystal biotite tuff; lightly silicified                                                                                                                                    |
| E9497     | Barrick 080315 | 573102.967      | 4214549.607      | 0.001    | 0.11     | Fe stained lightly argillized tuff from small prospect pit                                                                                                                                     |
| E9498     | Barrick 080315 | 573127.507      | 4214561.807      | 0.008    | 0.72     | Silicified and argillized tuff from deeper prospect pit. Fe stained and friable; pit also contained one jackrabbit and one Prince Albert tobacco can.                                          |
| E9499     | Barrick 080315 | 573162.007      | 4214597.407      | 0.001    | 0.40     | Fresh-looking quartz crystal rhyolite tuff from prospect pit                                                                                                                                   |
| E9500     | Barrick 080315 | 573160.607      | 4214616.367      | 0.003    | 0.17     | Fe stained lithic tuff                                                                                                                                                                         |
| E9654     | Barrick 080315 | 571459.838      | 4213764.491      | < 0.001  | 1.47     | Densely crowded andesite porphyry-fresh                                                                                                                                                        |
| E9901     | Barrick 080315 | 573029.186      | 4214433.877      | < 0.001  | 0.09     | Lightly argillized tuff                                                                                                                                                                        |
| E9903     | Barrick 080315 | 572932.566      | 4214467.408      | < 0.001  | 0.09     | Fg lithic-crystal tuff; pale tan on weathered surface; very white where freshly broken. Minor liesegang Fe staining.                                                                           |
| E9904     | Barrick 080315 | 572880.796      | 4214724.159      | < 0.001  | 0.07     | Crystal lithic tuff with quartz eyes to 5 mm. Lithic frags altered to very pale greenish color.                                                                                                |
| E9905     | Barrick 080315 | 572952.357      | 4214755.429      | 0.006    | 0.33     | Very white argillized crystal tuff in prospect pit-light Fe staining                                                                                                                           |

# APPENDIX 4 – Needles Rock Chip Sample Table

| Sample ID | Campaign       | Easting (NAD83) | Northing (NAD83) | Au (g/t) | Ag (g/t) | Comments                                                                                                                                          |
|-----------|----------------|-----------------|------------------|----------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| E9906     | Barrick 080315 | 573066.907      | 4214815.049      | <0.001   | 0.04     | Crystal-lithos tuff with abundant 3–5mm reserved quartz phenos and sparse lithic fragments 0.5 to 3 cm                                            |
| E9907     | Barrick 080315 | 573089.477      | 4214812.139      | <0.001   | 0.17     | Fractures in fg white lithic tuff with 10–15 cm Fe stained selveges                                                                               |
| E9909     | Barrick 080315 | 572510.856      | 4215587.395      | <0.001   | 0.08     | Core sample from Arrowhead dump–abandoned core. Hole N71; around 57'. Altered crystal tuff; clay altered; with stock work/ pseudo-breccia texture |
| E9910     | Barrick 080315 | 572167.046      | 4216311.161      | 0.028    | 2.02     | Silica cemented polymict breccia at lagged vertical shaft. Clasts of various volcanics; mostly heavily clay altered.                              |
| E9917     | Barrick 080315 | 572695.549      | 4216335.948      | <0.001   | 0.15     | Lightly altered tan–brown crystal tuff with goethite veining and liesegang banding                                                                |
| E9918     | Barrick 080315 | 572566.897      | 4215981.927      | 0.003    | 0.33     | Chip sample from trench– cream–white crystal tuff                                                                                                 |
| E9919     | Barrick 080315 | 572543.947      | 4216007.578      | 0.003    | 0.30     | Creamy white crystal–lithic tuff                                                                                                                  |
| E9920     | Barrick 080315 | 572735.418      | 4215976.556      | 0.29     | 1.56     | Banded carbonate vein material from dump                                                                                                          |
| E9921     | Barrick 080315 | 572719.738      | 4216013.477      | 0.005    | 0.39     | Pale greenish grey to creamy white crystal–lithic tuff; argillized; liesegang banded                                                              |
| E9922     | Barrick 080315 | 572694.948      | 4215755.035      | <0.001   | 0.09     | Tan to white lithic crystal tuff with sedimentary rock clasts and quartz phenos to 3 mm                                                           |
| E9923     | Barrick 080315 | 572643.107      | 4215706.415      | <0.001   | 0.15     | Highly altered sedimentary rock– not in place                                                                                                     |
| E9924     | Barrick 080315 | 572585.547      | 4215719.886      | 0.001    | 0.31     | Creamy white crystal tuff from dump around 10 ft deep shaft                                                                                       |
| E9925     | Barrick 080315 | 572523.617      | 4215750.736      | <0.001   | 0.05     | Tan brown tuff unit with euhedral quartz to 5 mm...Gardiner's LTD unit?                                                                           |
| E9926     | Barrick 080315 | 572629.887      | 4215635.055      | 0.003    | 0.37     | Golden brown clay altered tuff with pieces of less altered grey crystal tuff with large euhedral quartz phenos                                    |
| E9927     | Barrick 080315 | 572616.827      | 4215624.405      | 0.001    | 0.41     | Grey crystal tuff from dump                                                                                                                       |
| E9928     | Barrick 080315 | 572770.608      | 4215600.804      | <0.001   | 0.05     | Crystal tuff with sparse; coarse quartz phenos                                                                                                    |
| E9929     | Barrick 080315 | 572780.258      | 4215620.424      | 0.001    | 0.09     | Marble                                                                                                                                            |
| E9930     | Barrick 080315 | 572855.968      | 4215588.694      | <0.001   | 0.20     | Pale cream colored crystal tuff from small trench                                                                                                 |
| E9931     | Barrick 080315 | 572802.688      | 4215642.144      | <0.001   | 0.07     | Small pit in tan brown crystal tuff                                                                                                               |
| E9932     | Barrick 080315 | 573039.789      | 4215667.903      | 0.042    | 1.75     | Pale cream crystal tuff with goethite; from small prospect pit                                                                                    |
| E9933     | Barrick 080315 | 573019.209      | 4215683.363      | 0.492    | 4.26     | Small shaft in tan–brown clay altered crystal tuff                                                                                                |
| E9934     | Barrick 080315 | 572997.749      | 4215690.164      | 0.002    | 0.10     | Grey fiamme tuff                                                                                                                                  |
| E9935     | Barrick 080315 | 572924.859      | 4215789.384      | 0.162    | 2.84     | White tuff with abundant goethite; almost to the point of gossan. Strong clay alteration                                                          |
| E9937     | Barrick 080315 | 573208.42       | 4215748.093      | 28.3     | 622.00   | Segregated pile on dump– oxidized breccia material; tuff protolith                                                                                |
| E9938     | Barrick 080315 | 573334.151      | 4215782.182      | 0.301    | 5.55     | Grey green; very altered; gusano–like material                                                                                                    |
| E9939     | Barrick 080315 | 573326.941      | 4215763.802      | 0.047    | 0.64     | Purplish; very coarsly crystalline tuff                                                                                                           |
| E9940     | Barrick 080315 | 573450.011      | 4215800.312      | 0.089    | 1.52     | Heavily clay altered tuff with quartz veins                                                                                                       |
| E9941     | Barrick 080315 | 573549.722      | 4215782.011      | 0.006    | 0.10     | Altered Tuff                                                                                                                                      |
| G08361    | Barrick 080315 | 573188.32       | 4215759.433      | 0.111    | 1.21     | Grey clay altered crystal tuff with goethite staining; quartz veins filled with porcelaneous amorphous silica                                     |
| G08362    | Barrick 080315 | 573254.07       | 4215772.013      | 0.371    | 4.21     | Anastomosing quartz veins and quartz vein breccia in purplish crystal tuff; intersection of N75E and N25W trends                                  |
| G08363    | Barrick 080315 | 573365.511      | 4215844.363      | 0.003    | 0.17     | Clay altered lithic tuff with limonitic fractures; on trend with quartz veined material in prospect pits but without anastomosing quartz veins    |

# APPENDIX 4 – Needles Rock Chip Sample Table

| Sample ID | Campaign       | Easting (NAD83) | Northing (NAD83) | Au (g/t) | Ag (g/t) | Comments                                                                                                                                                                                     |
|-----------|----------------|-----------------|------------------|----------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| G08364    | Barrick 080315 | 573360.431      | 4215921.553      | <0.001   | 0.27     | Crystal tuff with adularia overgrowths on feldspar phenocrysts; hematitic liesegang banding. Some quartz; goethite; jarosite                                                                 |
| G08365    | Barrick 080315 | 573428.531      | 4215956.013      | 0.001    | 0.15     | Anastomosing 1mm quartz veins in 2-4 cm bands; cutting grey-purple pumaceous lithic tuff. Veins sets oriented N65-70E                                                                        |
| G08366    | Barrick 080315 | 573496.032      | 4215890.922      | 2.17     | 3.62     | Large clear massive quartz vein (2-3cm thick) trending N-S; with mm scale cockscomb vein lets on parallel and N65E orientations                                                              |
| G08367    | Barrick 080315 | 573495.172      | 4215889.032      | 0.017    | 0.10     | N-s goethite sheeted vein lets cutting greyish purple pumaceous lithic tuff                                                                                                                  |
| G08369    | Barrick 080315 | 573502.612      | 4215880.782      | 0.053    | 0.90     | Anastomosing quartz vein lets with open space filled by chalcedonic silica; cutting tan-yellow crystal tuff with goethite and jarosite                                                       |
| G08370    | Barrick 080315 | 573624.782      | 4215987.742      | 0.169    | 1.79     | Selective sample- quartz vein material and oxidized; heavily clay altered lithic tuff with goethite and jarosite. Structure in small shaft strikes N45E; dipping steeply SE; approx 2 m wide |
| G08371    | Barrick 080315 | 573621.713      | 4216017.562      | 0.17     | 7.59     | Three meter wide zone if anastomosing quartz veins and vein breccia cutting strongly clay altered crystal tuff                                                                               |
| G08372    | Barrick 080315 | 573699.512      | 4215725.32       | 0.03     | 5.12     | Dense swarm of anastomosing quartz veins to 2 cm wide; vein swarm and pervasive silicification of grey crystal tuff approx six meters wide. Goethite stock work veining outboard             |
| G08373    | Barrick 080315 | 573134.59       | 4215746.193      | 0.926    | 18.75    | Goethite-jarosite-barite vein fill material with minor euhedral quartz on margins. Barite euhedral; rhombic; water-clear                                                                     |
| G17025    | Barrick 080315 | 571839.484      | 4215780.27       | 0.002    | 0.43     | Dove grey crystal tuff; silicified; with yellow-brown jarosite/hematite coatings on fractures                                                                                                |
| G17026    | Barrick 080315 | 571833.284      | 4215857          | 0.003    | 0.23     | Prominent rib of silicified (+adularia?) crystal tuff                                                                                                                                        |
| G17027    | Barrick 080315 | 571912.344      | 4216021.261      | 0.012    | 0.37     | Goethite veined and silicified clay altered white crystal tuff                                                                                                                               |
| G17028    | Barrick 080315 | 571945.405      | 4216101.661      | 0.019    | 1.13     | Jarosite stained clay altered white crystal tuff with irregular silicification                                                                                                               |
| G17029    | Barrick 080315 | 572078.106      | 4216249.091      | 0.017    | 0.44     | Goethite stained breccia in small prospect pit- rounded pebble sized clasts; clay altered rhyolite infill; close spatial relationship to fault                                               |
| G17030    | Barrick 080315 | 572171.426      | 4216326.921      | 0.007    | 1.49     | Silicified rhyolite clast breccia ledge above small prospect pit                                                                                                                             |
| G17031    | Barrick 080315 | 572175.736      | 4216355.261      | 0.026    | 1.79     | General dump grab- jarosite stained silicified yellow brown rhyolite tuff. Structure visible in shaft strikes N-S; dips steeply W                                                            |
| G21840    | Barrick 080315 | 573210.26       | 4215749.003      | 18.6     | 157.00   | Jarosite stained ; silicified segregated material on shaft dump; duplicate of E9937                                                                                                          |
| G21841    | Barrick 080315 | 573217.96       | 4215741.413      | 33       | 613.00   | Different pile of segregated material on dump; less jarosite                                                                                                                                 |
| G21842    | Barrick 080315 | 573199.9        | 4215740.143      | 2.7      | 18.85    | General dump grab                                                                                                                                                                            |
| G21844    | Barrick 080315 | 573220.32       | 4215742.213      | 2.08     | 106.00   | More goethitic/hematitic altered tuff; some silicification; from small pile which may have been a tent foundation                                                                            |
| G21845    | Barrick 080315 | 573230.91       | 4215744.193      | 0.058    | 2.43     | 3 cm thick goethite vein in dump material- disproportionately heavy                                                                                                                          |
| G21846    | Barrick 080315 | 573268.12       | 4215761.503      | 0.122    | 1.57     | Sub cropping grey white altered tuff with. 2-5mm quartz veins and goethite staining                                                                                                          |

# APPENDIX 4 – Needles Rock Chip Sample Table

| Sample ID | Campaign           | Easting (NAD83) | Northing (NAD83) | Au (g/t) | Ag (g/t) | Comments                                                                                                                                                                                                                                                                                                 |
|-----------|--------------------|-----------------|------------------|----------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| G21847    | Barrick 080315     | 573289.79       | 4215799.533      | 0.015    | 0.21     | Goethite stained crystal tuff                                                                                                                                                                                                                                                                            |
| G21848    | Barrick 080315     | 573232.33       | 4215732.663      | 1.03     | 8.31     | Goethite stained silicified material in small prospect pit                                                                                                                                                                                                                                               |
| G21849    | Barrick 080315     | 573137.2        | 4215729.473      | 0.03     | 0.29     | Goethite stained altered tuff with cock's comb quartz; in tiny scrape                                                                                                                                                                                                                                    |
| ND-1001   | Astro October 2017 | 573217.91       | 4215740.943      | 3.73     | 67.60    | Twin of Barrick sample G21841 Dump grab at East Shaft of stg shattered; silic latite/trachyte dike w/micro qtz vnlt; brecciated qtz and open space druze. Hema dust on fracs; low sulfide. Shaft on N75E 70S qtz vein 20 cm thick along contact of latite and partially welded qtz latite/rhyolite tuff. |
| ND-1002   | Astro October 2017 | 573208.91       | 4215743.943      | 6.64     | 148.00   | Twin of Barrick E9937 Select of limonitic dump material. Stg limon in fault breccia w/vuggy qtz vein.                                                                                                                                                                                                    |
| ND-1003   | Astro October 2017 | 573201.91       | 4215739.943      | 1.1      | 16.90    | Twin of G21842 General dump grab at East Shaft. Bleached; wk arg-limon latite w/silic stringers and qtz vnlt.                                                                                                                                                                                            |
| ND-1004   | Astro October 2017 | 573266.91       | 4215765.943      | 0.03     | 0.70     | Twin of Barrick G21846 Subcropping gray latite w/narrow druzey qtz vnlt and local breccia. At contact w/ partially welded rhyo tuff (qtz phenos prominent).                                                                                                                                              |
| ND-1005   | Astro October 2017 | 573231.91       | 4215725.943      | 0.08     | 0.50     | Twin of Barrick G21848 At small prospect pit. Wk silic partially welded; qtz latite w/abundant qtz phenos and local druzey qtz vnlt.                                                                                                                                                                     |
| ND-1006   | Astro October 2017 | 573251.91       | 4215771.943      | <0.01    | 0.20     | Twin of Barrick G08362 Partially welded qtz latite tuff w/local silica flooding and limonitization. No real qtz veining here. Have alteration flooding w/leaching of feldspars.                                                                                                                          |
| ND-1007   | Astro October 2017 | 573220.91       | 4215741.943      | 0.46     | 12.20    | Twin of Barrick G21844 limon/goethitic latite dike and partially welded qtz latite tuff w/local qtz vnlt.                                                                                                                                                                                                |
| ND-1008   | Astro October 2017 | 573137.91       | 4215728.943      | 0.08     | 5.50     | Twin of Barrick G08373 Select sample of barite-qtz veining in limon qtz latite partially welded tuff. Stringer veins on S-side of latite dike.                                                                                                                                                           |
| ND-1009   | Astro October 2017 | 573015.909      | 4215686.944      | 0.29     | 2.20     | Twin of Barrick E9933 Stg. Limon partially welded tuff on S-side of latite dike. Mod arg alt along N30W 80NE shear w/local wk silic. Dike looks to cut shear and is unaltered.                                                                                                                           |
| ND-1010   | Astro October 2017 | 573187.91       | 4215757.943      | <0.01    | 0.20     | Twin of Barrick G08361 Grab from subcrop of variably arg-silic partially welded tuff and latite dike w/local silica flooding in breccia. Sparse opaline vnlt.                                                                                                                                            |
| ND-1011   | Astro October 2017 | 573330.911      | 4215778.942      | 0.66     | 2.80     | Twin of Barrick E9938 at prospect pit on 0.5m wide E-W 80S qtz vnt zone w/greenish chlorite or smectite alt selvages in partially welded tuff.                                                                                                                                                           |
| ND-1012   | Astro October 2017 | 572918.909      | 4215783.944      | 0.5      | 3.30     | Twin of Barrick E9935 at prospect in stg arg poorly welded qtz latite tuff along contact with N35W 65NE flow-banded biot trachyte dike with stg limonitized dike margin. 2m cut across sheeted silic-arg shear w/stg goethite along contact.                                                             |
| ND-1013   | Astro October 2017 | 572730.908      | 4215976.946      | 0.01     | <0.2     | Twin of Barrick E9920 Select grab of banded carbonate vein from dump at shallow shaft within stg bleached fg felsic tuff (?). Vein zone is 1.5m wide; strikes N40W vert.                                                                                                                                 |
| ND-1014   | Astro October 2017 | 572956.909      | 4216048.946      | 0.02     | 0.50     | Areal at pit on N25W vert fractures in wk welded tuff w/local qtz pods and mod limon. Looks to be on N-edge of altered zone (or beneath alt cap ?)                                                                                                                                                       |
| ND-1015   | Astro October 2017 | 572944.909      | 4216004.945      | 0.03     | 0.40     | Dump grab at shaft (50m deep) on N50W vert fracture zone w/qtz-carbonate veining in arg-limon wk welded qtz latite tuff.                                                                                                                                                                                 |
| ND-1016   | Astro October 2017 | 572828.909      | 4216001.946      | 0.05     | 0.60     | Grab at prospect pit of N35W 70SW shear in arg wk welded qtz latite tuff w/wk qtz vnlt.                                                                                                                                                                                                                  |

## APPENDIX 4 – Needles Rock Chip Sample Table (Whopper Jnr Prospect)

| Sample ID      | Campaign     | Easting<br>(NAD83) | Northing<br>(NAD83) | As (ppm) | Sb (ppm) | Hg (ppm) |
|----------------|--------------|--------------------|---------------------|----------|----------|----------|
| 5266           | Astro 2020   | 571520             | 4217041             | 4800     | 87       | 3.0      |
| 5267           | Astro 2020   | 571570             | 4217028             | 116      | 5        | 0.0      |
| 5268           | Astro 2020   | 571680             | 4217025             | 251      | 3        | 0.0      |
| 5269           | Astro 2020   | 571700             | 4217034             | 41       | 0        | 0.0      |
| NDX11          | Taranis 2003 | 571647             | 4216875             | 827      | 16       | 4.0      |
| TK-11          | Taranis 2003 | 571601             | 4216844             | 968      | 29       | 1.0      |
| NDX15          | Taranis 2003 | 571599             | 4216845             | 3900     | 77       | 4.0      |
| NDX10          | Taranis 2003 | 571631             | 4216829             | 196      | 2        | <1       |
| TK-10          | Taranis 2003 | 571754             | 4216834             | 567      | 8        | 2.0      |
| 571773 4216843 | Taranis      | 571773             | 4216843             | 863      | 10       | 1.0      |
| TK-12          | Taranis 2003 | 571778             | 4216842             | 46       | <2       | <1       |
| 571785 4216843 | Taranis      | 571785             | 4216843             | 9        | 3        | <1       |
| 571808 4216803 | Taranis      | 571808             | 4216803             | 120      | <2       | <1       |
| 571796 4216820 | Taranis      | 571796             | 4216820             | 27       | 7        | <1       |
| 571780 4216840 | Taranis      | 571780             | 4216840             | 35       | 2        | <1       |