

Report on the Aimee Lake Anomaly  
and Surrounding Conductive Materials

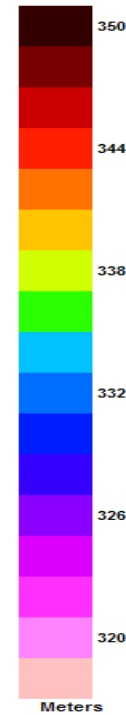
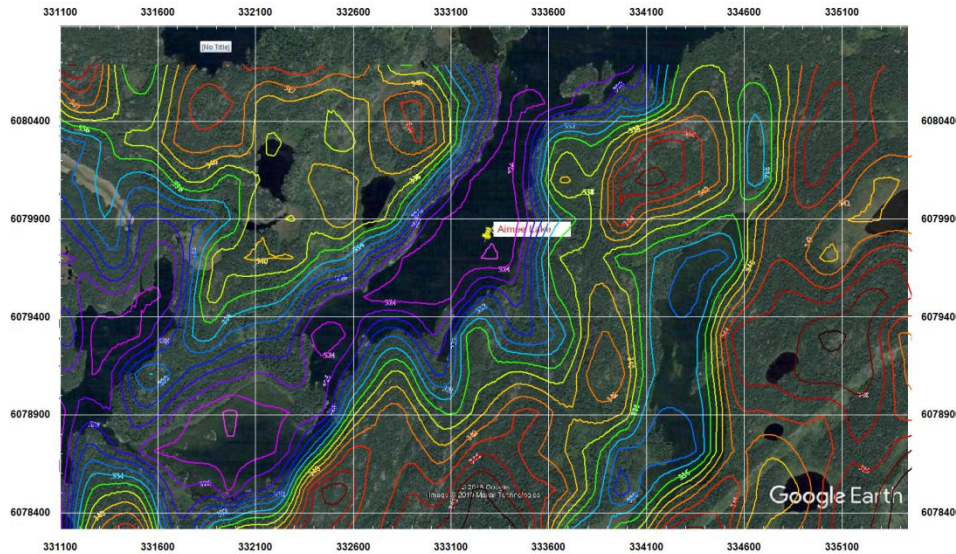
for Copper Reef Mining Corporation

December, 2019, Eikon Technologies

R.W. Groom, PhD,

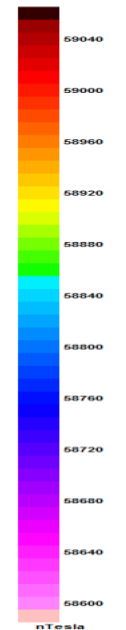
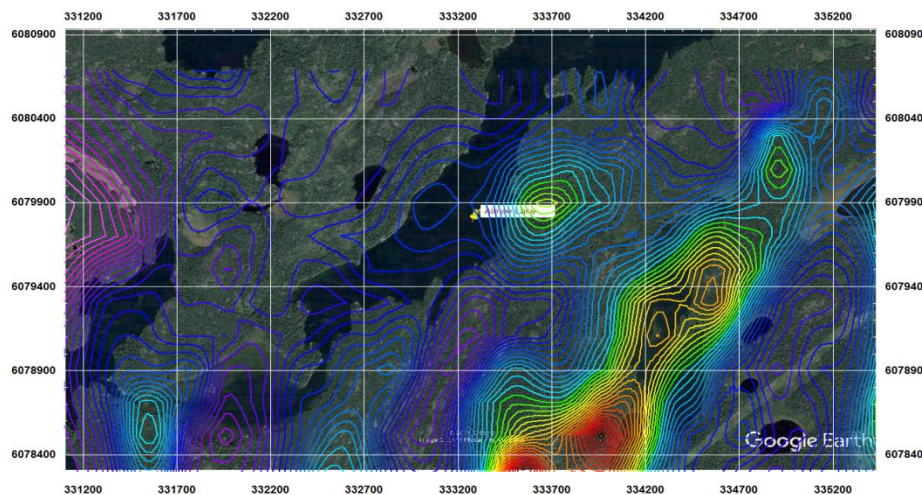
# Aimee Lake Anomaly

## Topography and Magnetics



### Topography

Elevation variation approximately 30m.



### Magnetic Response

no magnetic response associated with the Aimee Lake VTEM anomaly

Strong low to the west  
NE striking high to the east  
Small high just east of the lake

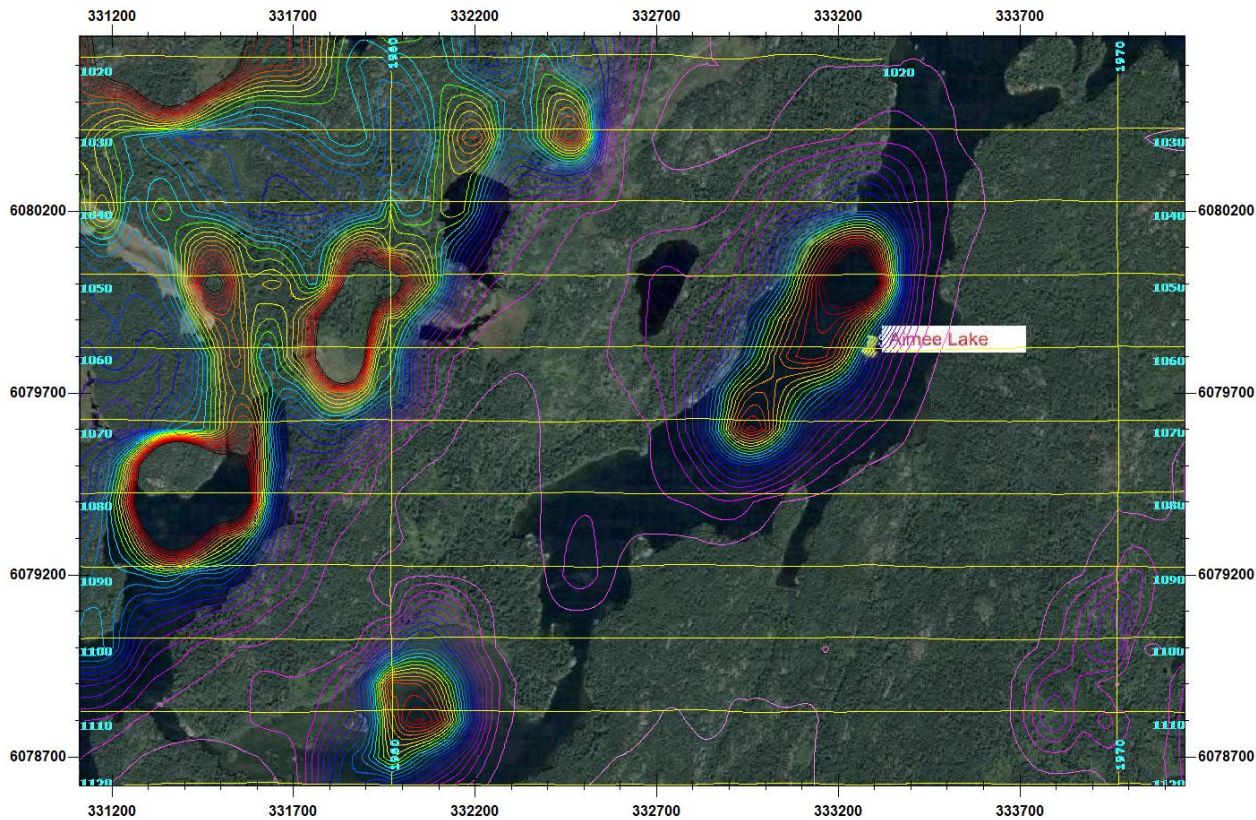
# Aimee Lake Anomaly

## Early VTEM Responses

### Early Time VTEM Response Ch4

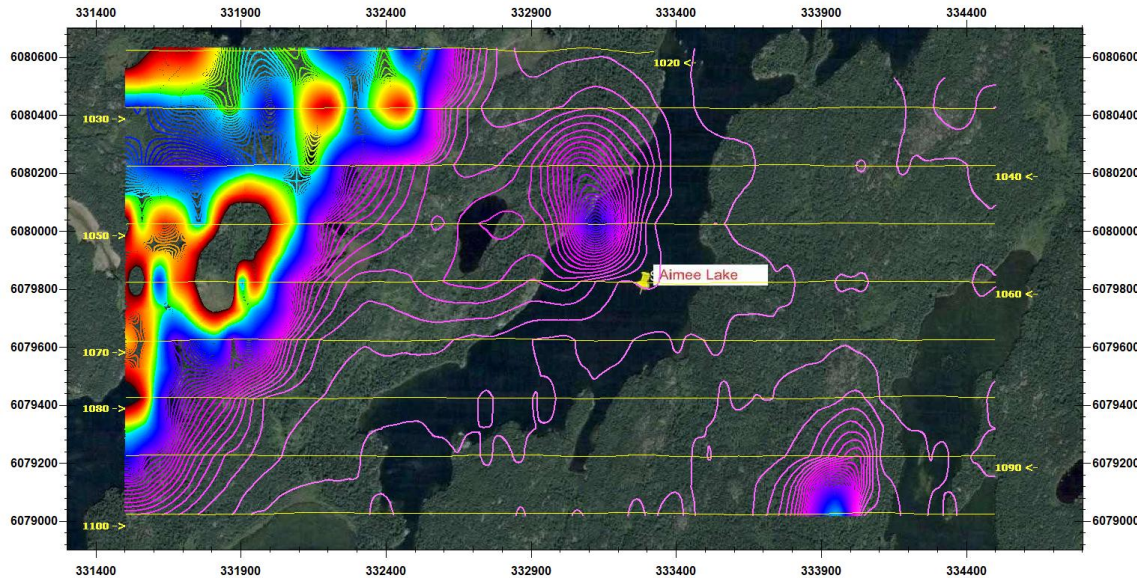
Apparent large lake bottom response in the centre of the lake. Other lakes in the region have similar large responses.

However, this apparent lake bottom response does not extend to the north or south in the lake. Modeling indicates that this early time response is a shallow feature with a low conductance not unlike other lake bottom responses in this area and in other areas in the region.



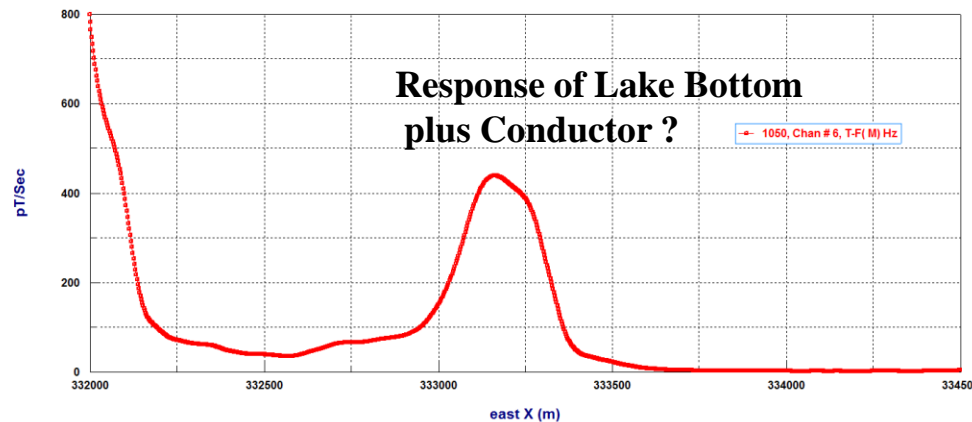
I believe it is also important to note the response in the NW corner of this map. The shallow response is much more conductive here than west of this region. This shallow response is not due to material at the surface but rather the conductive material is at some depth.

# Aimee Lake Anomaly – Contributing Structure



## Early Mid-Time VTEM Response

Large Responses to the west are continuing to overlap the Aimee Lake anomaly. The extent Of the conductive material can be seen not just by the red highs but the extent of the blue which is equivalent to the response at the heart of the Aimee Lake anomaly.



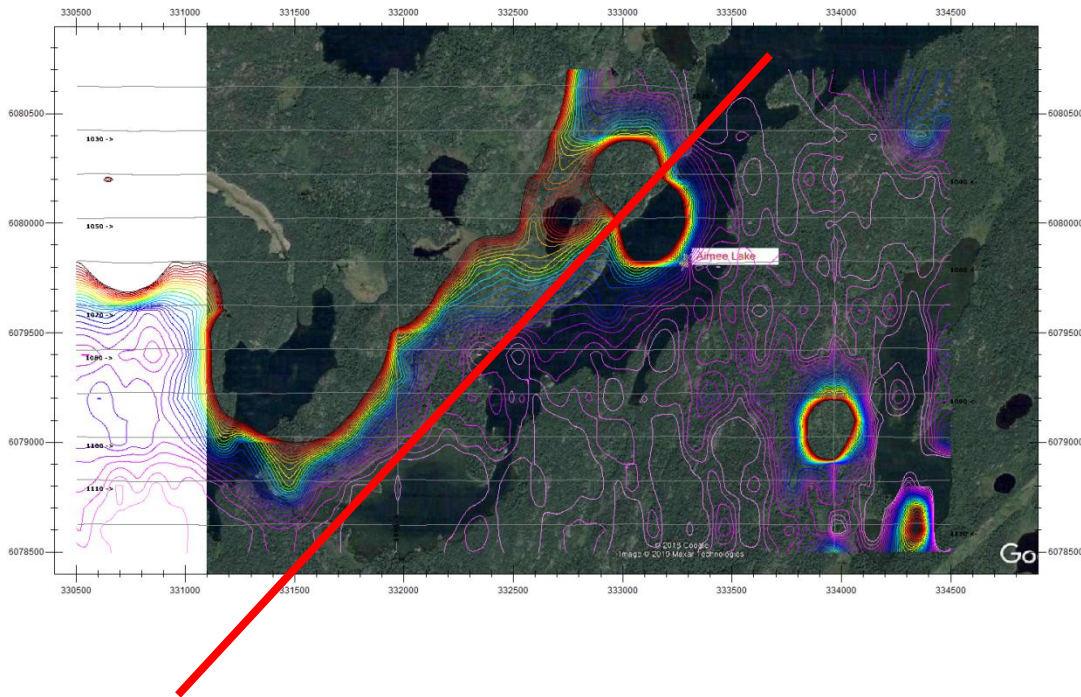
Line 1050 Ch6

Plots of the early time data across Aimee Lake shows not only the extent of the shallow (sediments) but also that there is a dramatic change in the background resistivities that apparently ends somewhere within the lake.

Modeling indicates that there is a thin conducting cover both to the west and to the east of the lake. But, what is dramatically different about the structure to the east of the lake is that the highly resistive structure expected at depth transitions to conductive material at depths greater than 400m.

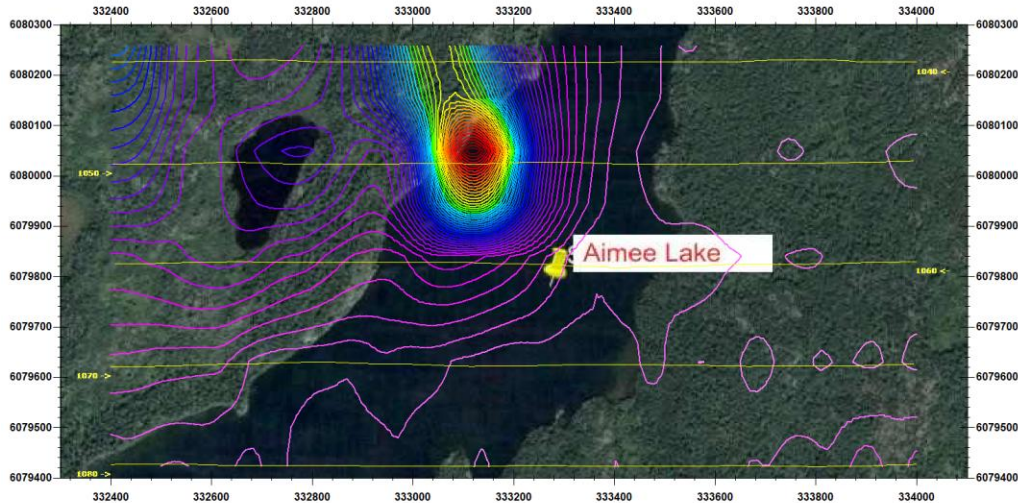
# Geology as inferred from EM

## Transition Boundary at Depth



Analyzing the VTEM data away from lakes and anomalies, there is evident a very sharp change in the geology along a front roughly parallel to the western boundary of Aimee Lake. On the east side, the background resistivity is a shallow, thin modest conductive cover and then a very resistive basement as deep as the VTEM can see. However, to the west, at about a depth of 400m, the earth becomes far less resistive and ending in a mostly conductive material. That is the VTEM data cannot see below the conducting material. A limited amount of modeling would indicate that the conductive material extends to a depth of at least 700m. And it is possible that this conductive material pervades entirely across the NW corner of this map.

# Aimee Lake Anomaly – Focus- Lines 1030, 1040, 1050 and 1060



## Early LateTime VTEM Response (Ch18)

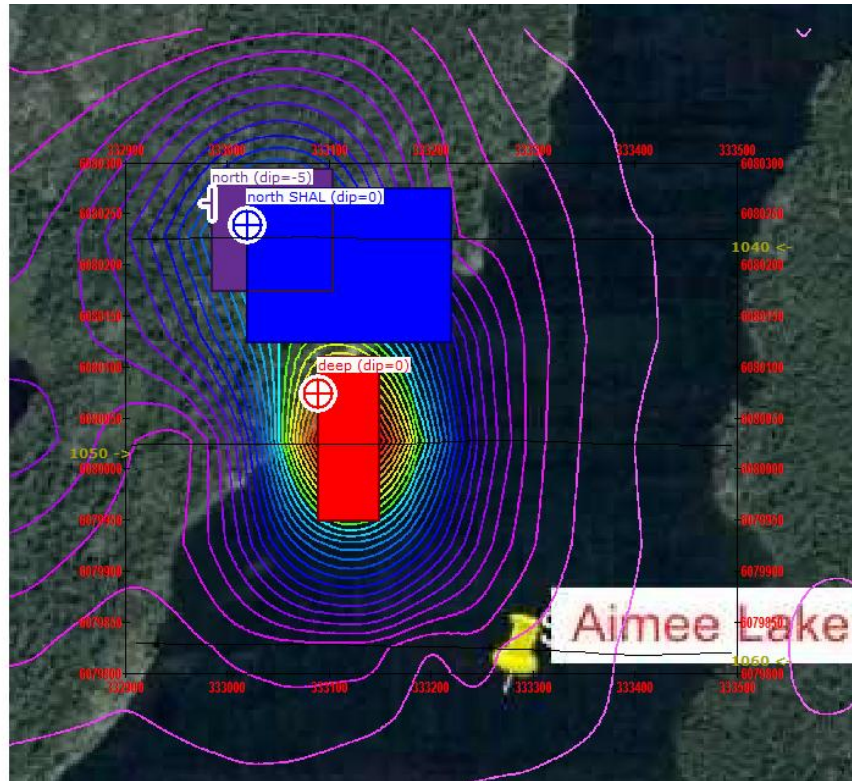
In order to isolate the response of the Aimee Lake anomaly, gridding must be restricted to the immediate area around the anomaly

Response to NNW along L1040 much smaller than response on L1050

From the above result and other examinations, it is not clear if there is one anomaly dipping significantly to the NNW or 2 targets. However, all our modeling attempts cannot confirm that the targets on L1040 and L1050 are connected.

Additionally, it is most likely that the anomaly on L1050 does not extend south to L1060. Given that the targets do to extend across flight lines, the strike of the targets cannot be determined.

# Aimee Lake Anomaly – Structures



## Points:

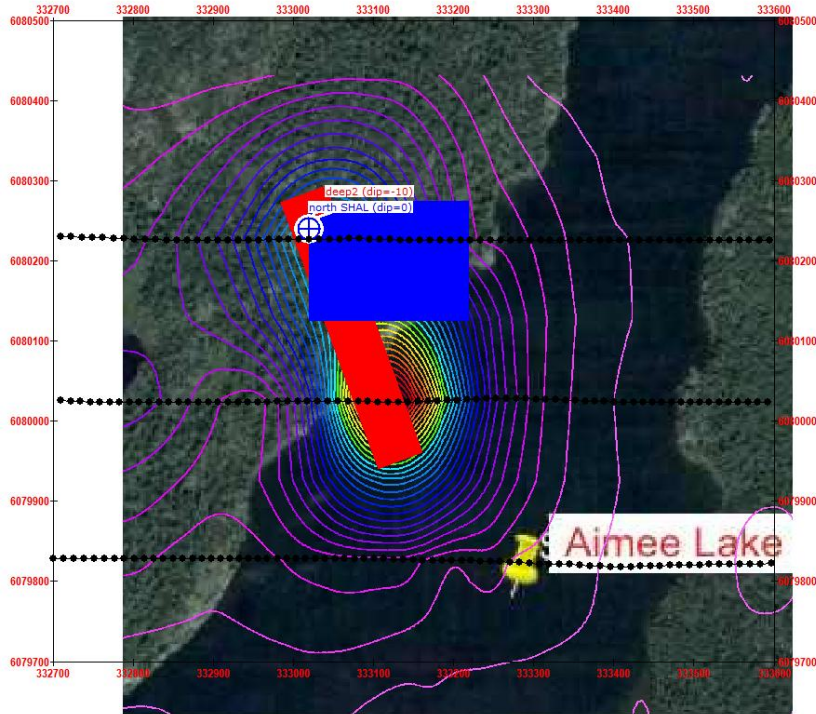
1. Strike angle cannot be determined thus strike assumed NS
2. Strike extent difficult to determine but must be limited to not appear on neighboring flight lines

**Depth** : Distance below ground or lake surface.

## Plates

- DEEP**: strongest conductor, 300 S. 160m x 60m, depth to top: 115m, no dip
- NORTH**: moderate conductor 95S. 120m x 120m, depth to top: 170m, 5 degree dip to west
- North Shallow** : weak conductor, 5S. 150m x 200m, depth to top: 120m, no dip

# Aimee Lake Anomaly – Structures



This model is also of interest. It does not match the data as well as the previous model. But, if we were allowed more variation in the shape, an equally reasonable fit could be found.

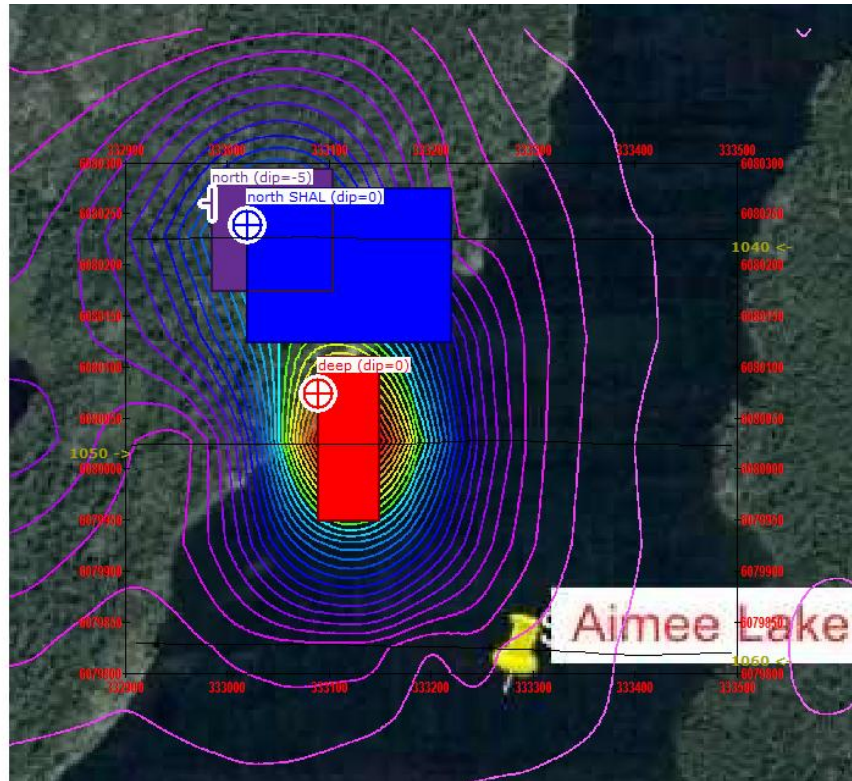
## Plates

**DEEP2:** strongest conductor, 300 S. 360m x 60m, depth to top: 115m, strike: 20 degrees west, Dip: 10 degrees to NNW

**North Shallow :** weak conductor, 5S. 150m x 200m, depth to top: 120m, no dip

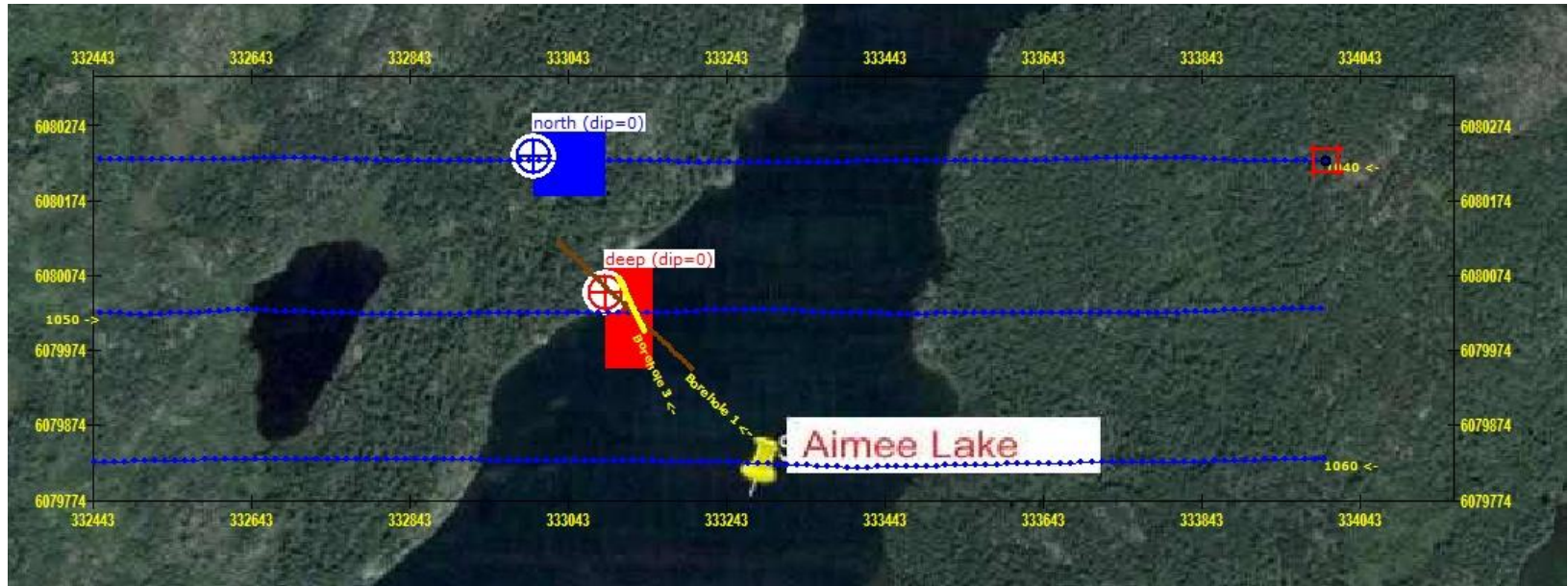


## Aimee Lake Anomaly – Drilling comments



Only the strong conductor showing on L1050 may be worthy of drilling. Specifying the drill is tricky as the target is narrow. Also, given the complexity of the other conducting material, depth to top is questionable from the modeling. Drilling should possibly be from the south intersecting the modeled plate to the south of L1050 and continuing north and deeper so as to deal with the uncertainty of depth of burial.

# Aimee Lake Anomaly – Drilling suggestions



## **AL\_1\_borehole**

**Collar: 333200E, 6079950N**

**Azimuth: 45degree west of north**

**Dip angle: 45 degrees**

**Hole Depth: 335m**

**Suggested Minimum Depth: 215m**

**Depth down Hole to Intersect: 160m**

**Vertical depth to Intersect: 114m**

## **AL\_3\_borehole**

**Collar: 333140E, 6080000N**

**Azimuth: 25degree west of north**

**Dip angle: 75 degrees**

**Hole Depth: 300m**

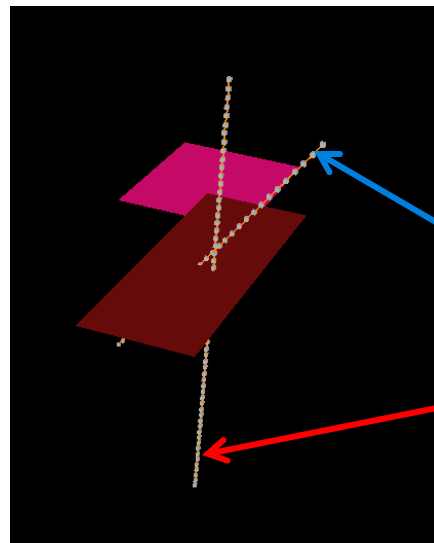
**Suggested Minimum Depth: 155m**

**Depth down Hole to Intersect: 118m**

**Vertical depth to Intersect: 114m**

Both borehole designs are longer than required but a suggest minimum depth is given.

# Aimee Lake Anomaly – Drilling suggestions



View from South East.

AL\_1

AL\_3

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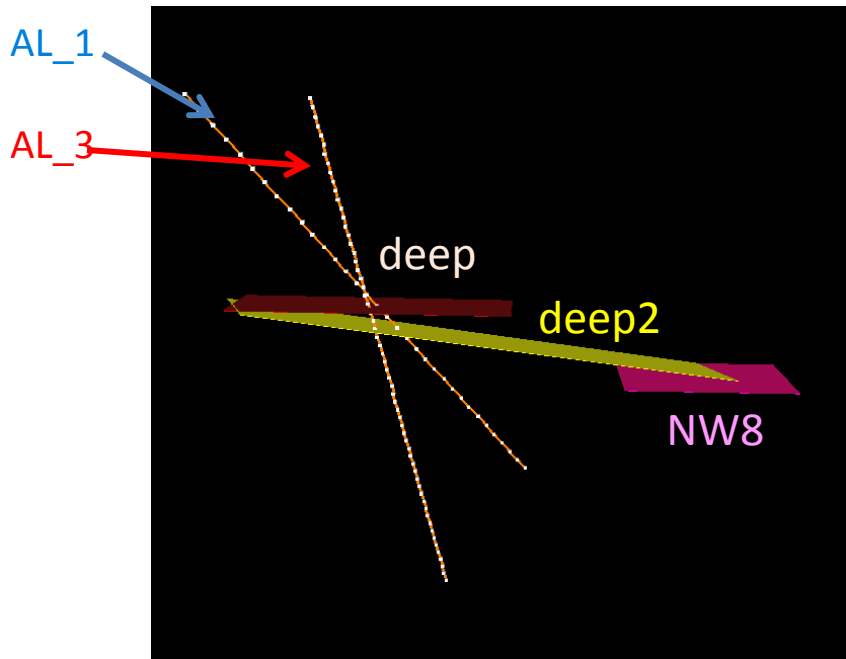
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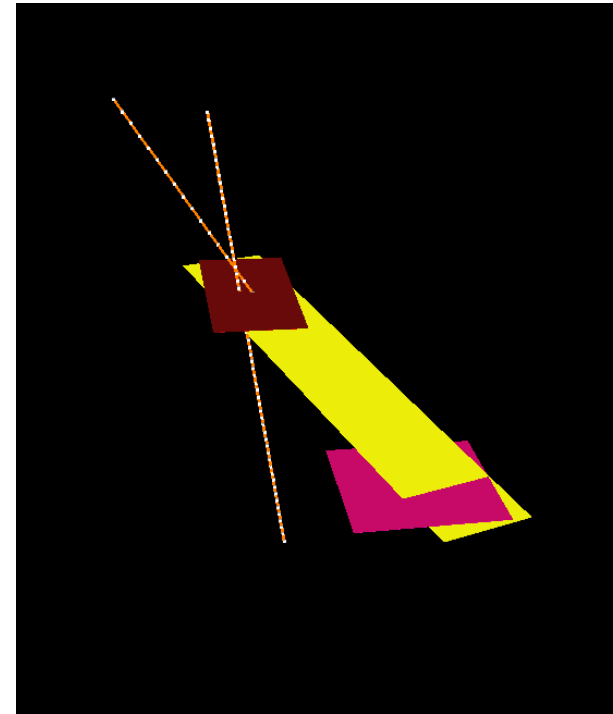
# Aimee Lake Anomaly – Drilling suggestions



View from East.

Model 1: Plates Deep and NW8

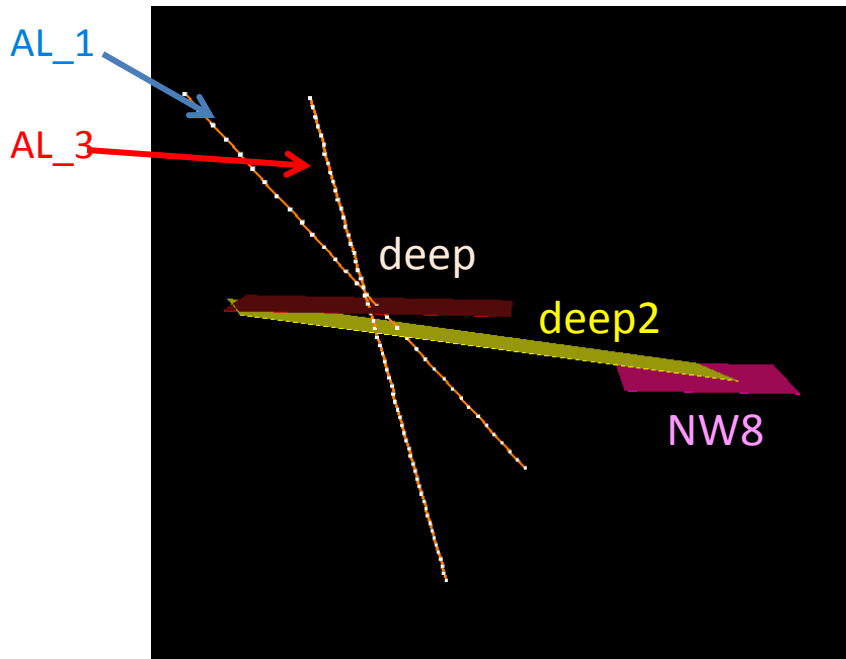
Model 2: Plate Deep2.



View from North

*As the strike length of target DEEP is poorly constrained by the data, it is important to strike it near its center. If DEEP and NW8 are indeed connected (DEEP2), then we can afford to intersect further to the north. The steeper hole intersects both deep plates but the drilling distance is shorter.*

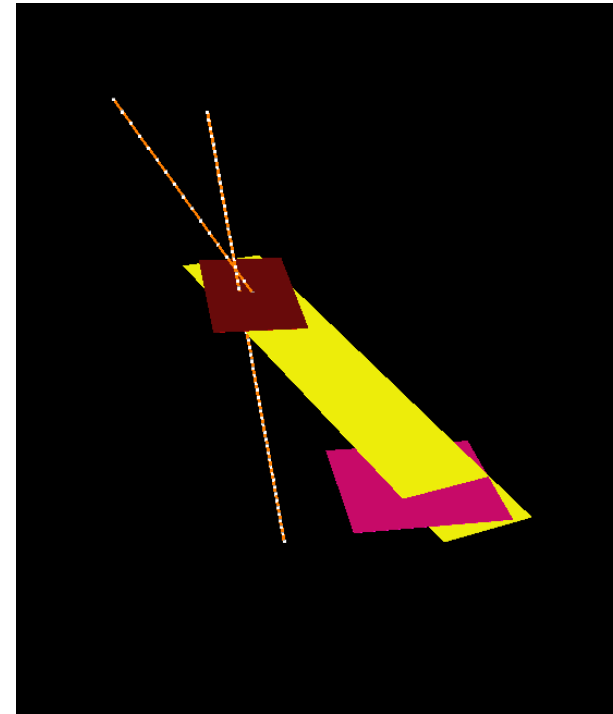
# Aimee Lake Anomaly – Drilling suggestions



View from East.

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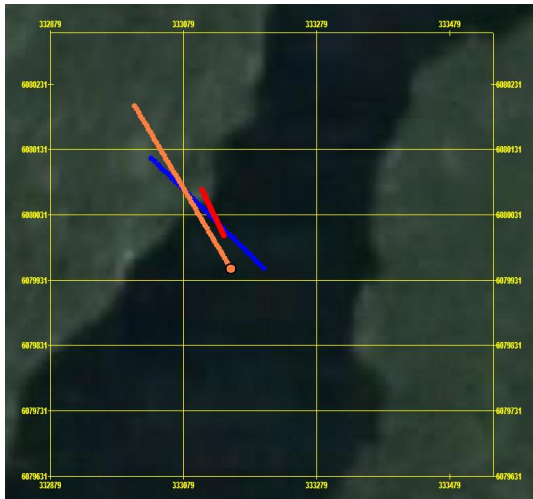
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# Aimee Lake Anomaly – Drilling suggestions



## **AL\_4\_borehole**

**Collar: 333150E, 6079950N**

**Azimuth: 30 degree west of north**

**Dip angle: 55 degrees**

**Hole Depth: 347m**

**Suggested Minimum Depth: 230m**

**Depth down Hole to Intersect: 140m**

**Vertical depth to Intersect: 114m**

