

# Arctic Geophysics Inc.

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Geophysical Surveys • Prospecting • Consulting

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## **Geoelectrical Survey with 2D Resistivity, Squaw Creek, Yukon, September 19<sup>th</sup> - 20<sup>th</sup> 2009**

**For: Gem Steel Edmonton Ltd.**

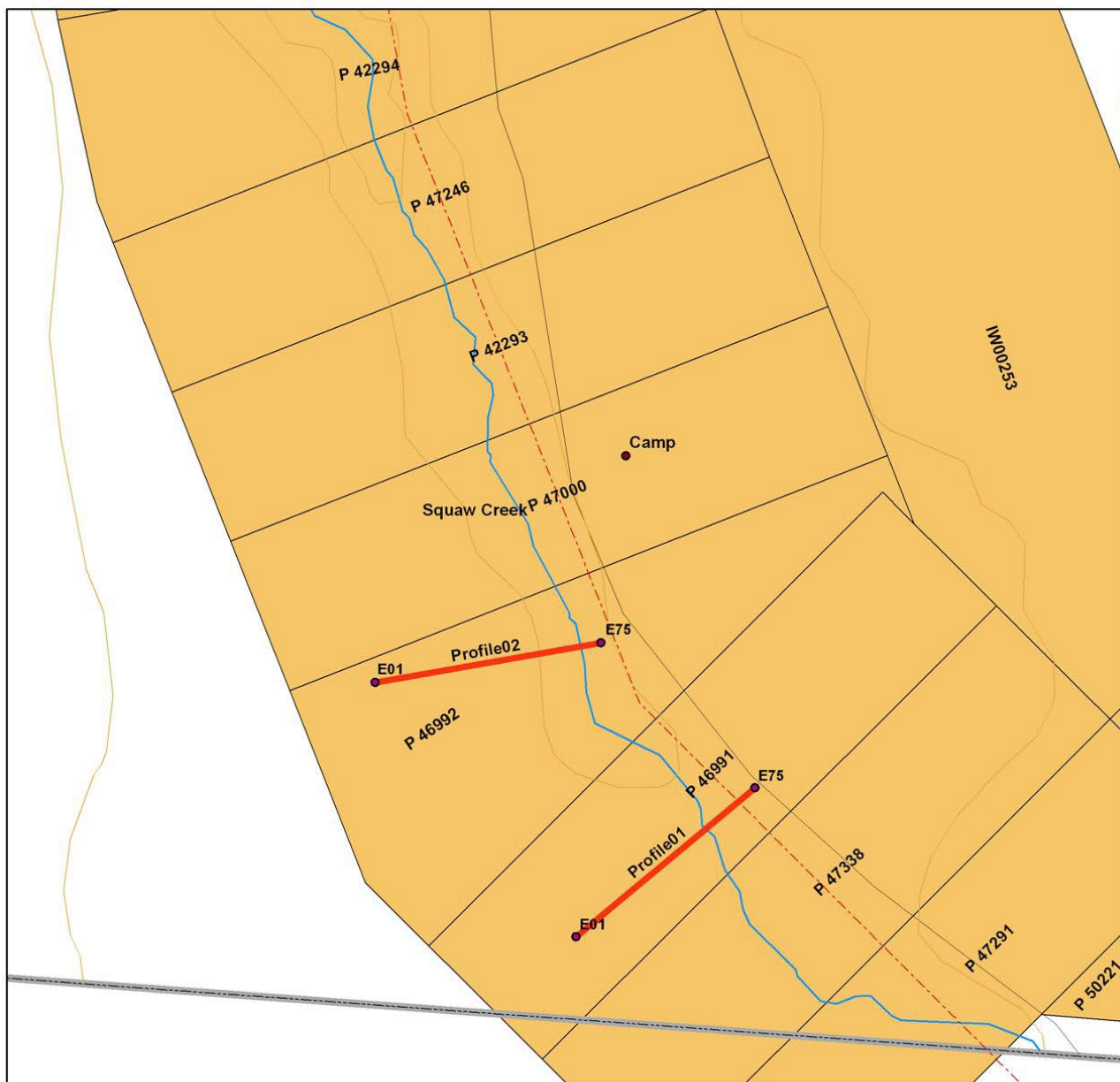
Operator: Stefan Ostermaier,  
Arctic Geophysics Inc.

Brad Gemmer  
9060 – 24 Street  
Edmonton, Alberta  
T6P 1X8, Canada

Preliminary notes:

The resistivity profile is the foundation for the determination of the stratification (humus-gravel-bedrock). In it the beginning of bedrock is marked with a black line

The profiles show ground-layers approximately 15% thicker than they are in reality. The thickening of the model layers is caused by the inversion software. The correction factor for the determination of the true layer thickness of 0.85 was determined by us on the basis of numerous resistivity profiles verified by drilling, trenching and mining. – The in the interpretations mentioned layer thicknesses and depths have already been recalculated to the expected real values.



### Legend

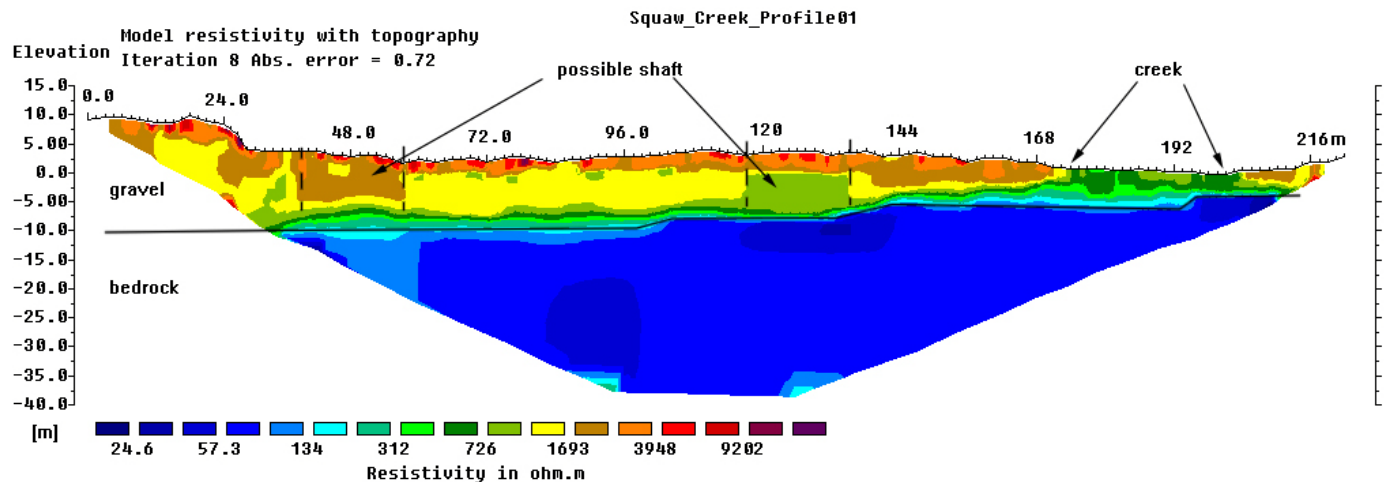
- measuring line
- electrodes
- contour line
- water course
- Yukon border
- - - placer baseline
- placer claims
- prospecting lease

1:5,000



## Profile01

Line: Crossvalley  
View: Downstream  
Electrodes: 75, spacing 3m  
Array: Schlumberger  
Location: 0m (N60° 00' 02.7"; W137° 07' 34.5")  
222m (N60° 00' 07.6"; W137° 07' 24.3")



### Interpretation:

The profile shows a distinct gravel-bedrock interface, with resistivity values of 300 - 9000  $\Omega$ m (green - red) for the gravel and 200  $\Omega$ m (blue) and less for the bedrock. This suggests schist as bedrock, which was observed further downstream.

The bedrock has a stepped incline from left to right representing a terraces-like structure. The bedrock topography shows small depressions which could be formed by former alluvial transportation.

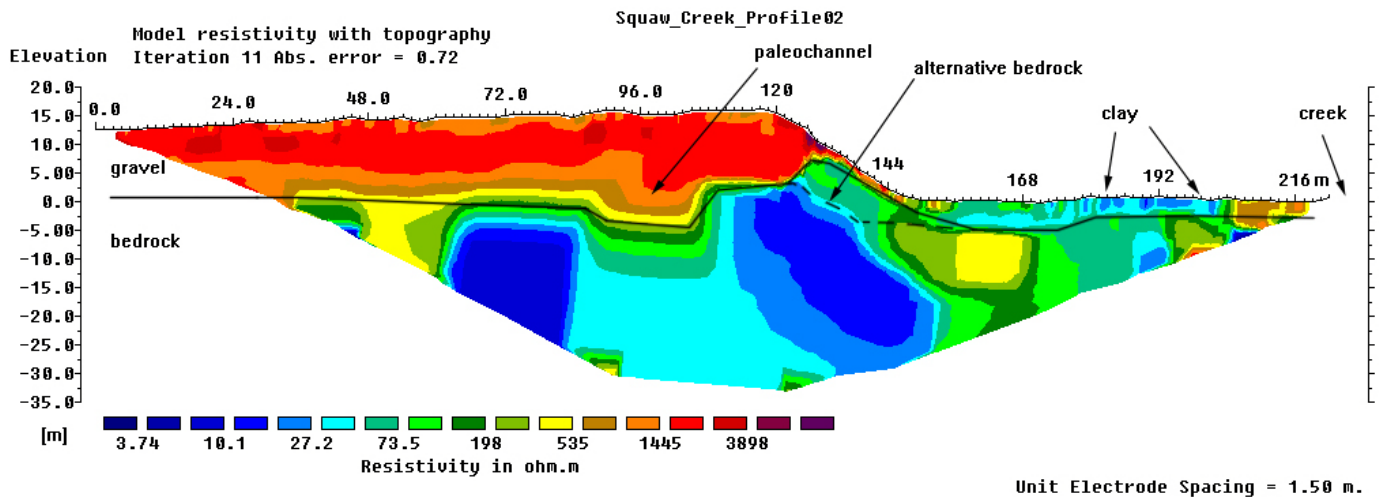
From 35m to 135m in the profile the depth to bedrock stays at a nearly uniform 10m. At 135 to 195m the depth to bedrock decreases to approximately 7m. To the right of 195m the bedrock comes up to about 3m.

From 40 to 60m and 117 to 135m in the profile there are disturbances in the gravel. These disturbances could represent shafts dug during former mining activity. The disturbance from 40 to 60m in the profile has higher resistivity values than the surrounding gravel which indicates washed gravel. The second disturbance at 117 to 135m has a higher conductivity which indicates water saturated gravels (compare creek).

The area from 140 to 170m could also represent washed gravel but there is too little data to be certain.

## Profile02

Line: Crossvalley  
View: Downstream  
Electrodes: 75, spacing 3m  
Array: Schlumberger  
Location: 0m (N60° 00' 10.0"; W137° 07' 47.9")  
222m (N60° 00' 11.7"; W137° 07' 34.3")



### Interpretation:

The profile shows a gravel bench on the left side of the profile with app. 15m depth to bedrock. The bedrock there has heterogeneous resistivity values. At this location the bedrock consists most likely of schist ( 3 - 40  $\Omega$ m, blue tuquoise) and quartzite ( 200-450  $\Omega$ m, green yellow) which was observed on the opposite side of the creek. The low resistivity of the schist is caused by a higher percentage of well conducting accessory minerals such as graphite<sup>1</sup>. The varying resistivity in the bedrock as a whole might be affected by changing amounts of pore volume saturated with ion-rich water as a result of rock fractures followed by weathering.

The bench on the left side of the profile, 0 to 150m, consists of gravel with app. 1000 to 3000  $\Omega$ m. The bedrock under the bench starts at 30m in the profile with a depth of 12m. Then the bedrock increases steadily to a depth of 14m at 85m in the profile. From 85 to 105m there is a paleochannel with 16m depth to bedrock. Right of the channel the bedrock forms a reef at 125 to 150m; this is also the end of the bench with only 2m overburden at the slope.

An alternative interpretation of the bedrock between 125 and 150m would put the bedrock at a nearly uniform 7m under the slope, this however is less likely.

From 150m to the end of the profile the depth to bedrock decreases slightly from 7 to 5m.

<sup>1</sup> Graphitic schist rock has been observed on the surface.

At 170 to 202m in the profile the overburden consists of clay. From 155 to 170m there might also be clay on top of bedrock but this is tentative.

Note: All these conclusions are based on the interpretation of the measured data.

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Date

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GPS Data  
Profile01

Electrode	m	Depth to bedrock	Lat. Long.	Elevation
1	0	-	N60 00 02.7 W137 07 34.5	9.45
2	3	-	N60 00 02.8 W137 07 34.3	9.75
3	6	-	N60 00 02.8 W137 07 34.1	9.75
4	9	-	N60 00 02.9 W137 07 33.9	9.45
5	12	-	N60 00 03.0 W137 07 33.8	8.84
6	15	-	N60 00 03.1 W137 07 33.6	8.84
7	18	-	N60 00 03.2 W137 07 33.6	10.06
8	21	-	N60 00 03.2 W137 07 33.5	9.14
9	24	-	N60 00 03.3 W137 07 33.4	8.53
10	27	-	N60 00 03.4 W137 07 33.3	6.71
11	30	-	N60 00 03.4 W137 07 33.1	4.27
12	33	12m ?	N60 00 03.5 W137 07 33.0	3.96
13	36	12m	N60 00 03.5 W137 07 32.8	3.96
14	39	12m	N60 00 03.6 W137 07 32.7	3.96
15	42	12m	N60 00 03.6 W137 07 32.6	3.96
16	45	11.5m	N60 00 03.7 W137 07 32.5	3.35
17	48	11m	N60 00 03.8 W137 07 32.4	3.05
18	51	10m	N60 00 03.8 W137 07 32.2	3.35
19	54	10m	N60 00 03.9 W137 07 32.1	3.05
20	57	10m	N60 00 04.0 W137 07 31.9	1.83
21	60	10m	N60 00 04.1 W137 07 31.8	2.44
22	63	10m	N60 00 04.2 W137 07 31.6	2.13
23	66	10m	N60 00 04.3 W137 07 31.4	2.44
24	69	10m	N60 00 04.3 W137 07 31.3	2.74
25	72	10m	N60 00 04.4 W137 07 31.1	2.13
26	75	10m	N60 00 04.4 W137 07 31.0	2.74
27	78	10m	N60 00 04.5 W137 07 30.8	3.05
28	81	10m	N60 00 04.6 W137 07 30.7	2.44
29	84	10m	N60 00 04.6 W137 07 30.6	2.13
30	87	10m		
31	90	10m	N60 00 04.8 W137 07 30.3	2.74
32	93	10m	N60 00 04.9 W137 07 30.2	3.05
33	96	10m	N60 00 04.9 W137 07 30.1	3.05
34	99	9m	N60 00 05.0 W137 07 29.9	3.05
35	102	9m	N60 00 05.1	3.35

Electrode	m	Depth to bedrock	Lat. Long.	Elevation
			W137 07 29.8	
36	105	9m	N60 00 05.2 W137 07 29.7	3.66
37	108	9m	N60 00 05.2 W137 07 29.6	3.96
38	111	9m	N60 00 05.3 W137 07 29.5	4.27
39	114	9m	N60 00 05.4 W137 07 29.4	3.66
40	117	9m	N60 00 05.5 W137 07 29.3	3.35
41	120	9m	N60 00 05.5 W137 07 29.2	3.66
42	123	9m	N60 00 05.6 W137 07 29.1	3.96
43	126	9m	N60 00 05.7 W137 07 28.9	3.96
44	129	9m	N60 00 05.7 W137 07 28.8	3.96
45	132	9m	N60 00 05.8 W137 07 28.7	3.35
46	135	9m	N60 00 05.8 W137 07 28.5	3.66
47	138	8m	N60 00 05.9 W137 07 28.4	3.96
48	141	8m	N60 00 05.9 W137 07 28.2	3.05
49	144	7m	N60 00 06.0 W137 07 28.0	3.35
50	147	7m	N60 00 06.0 W137 07 27.8	3.66
51	150	7m	N60 00 06.1 W137 07 27.6	3.05
52	153	7m	N60 00 06.2 W137 07 27.5	3.05
53	156	7m	N60 00 06.3 W137 07 27.3	2.13
54	159	7m	N60 00 06.3 W137 07 27.2	2.74
55	162	7m	N60 00 06.4 W137 07 27.0	2.74
56	165	7m	N60 00 06.5 W137 07 26.9	2.13
57	168	7m	N60 00 06.5 W137 07 26.7	2.13
58	171	6m	N60 00 06.6 W137 07 26.6	1.22
59	174	6m	N60 00 06.7 W137 07 26.5	0.91
60	177	6m	N60 00 06.7 W137 07 26.3	0.91
61	180	6m	N60 00 06.8 W137 07 26.1	0.91
62	183	6m	N60 00 06.8 W137 07 26.0	0.61
63	186	5m	N60 00 06.9 W137 07 25.9	0.91
64	189	5m	N60 00 06.9 W137 07 25.7	0.61
65	192	5m	N60 00 07.0 W137 07 25.6	0.3
66	195	3m	N60 00 07.1 W137 07 25.4	0.3
67	198	3m	N60 00 07.1 W137 07 25.3	0
68	201	3m	N60 00 07.2 W137 07 25.2	0
69	204	3m	N60 00 07.3	0.61



Electrode	m	Depth to bedrock	Lat. Long.	Elevation
			W137 07 25.0	
70	207	3m	N60 00 07.3 W137 07 24.9	0.61
71	210	3m	N60 00 07.4 W137 07 24.7	0.91
72	213	-	N60 00 07.5 W137 07 24.6	0.91

## GPS Data Profile02

Electrode	m	Depth to bedrock	Lat. Long.	Elevation
1	0	-	N60 00 10.0 W137 07 47.9	12.8
2	3	-	N60 00 10.0 W137 07 47.7	12.8
3	6	-	N60 00 10.0 W137 07 47.5	12.8
4	9	-	N60 00 10.0 W137 07 47.3	13.11
5	12	-	N60 00 10.1 W137 07 47.1	13.11
6	15	-	N60 00 10.1 W137 07 46.9	13.41
7	18	-	N60 00 10.1 W137 07 46.7	13.41
8	21	-	N60 00 10.2 W137 07 46.5	13.72
9	24	-	N60 00 10.2 W137 07 46.3	13.72
10	27	-	N60 00 10.2 W137 07 46.0	14.33
11	30	12m	N60 00 10.2 W137 07 45.8	14.02
12	33	12m	N60 00 10.2 W137 07 45.6	14.02
13	36	12m	N60 00 10.3 W137 07 45.4	14.33
14	39	12m	N60 00 10.3 W137 07 45.3	14.02
15	42	12m	N60 00 10.3 W137 07 45.1	14.63
16	45	12m	N60 00 10.4 W137 07 44.9	14.94
17	48	13m	N60 00 10.4 W137 07 44.8	14.63
18	51	13m	N60 00 10.4 W137 07 44.6	14.63
19	54	13m	N60 00 10.5 W137 07 44.4	14.94
20	57	13m	N60 00 10.5 W137 07 44.2	14.33
21	60	13m	N60 00 10.6 W137 07 44.1	14.94
22	63	13m	N60 00 10.6 W137 07 43.9	14.94
23	66	13m	N60 00 10.6 W137 07 43.7	14.94
24	69	14m	N60 00 10.6 W137 07 43.5	14.94
25	72	14m	N60 00 10.6 W137 07 43.4	15.24
26	75	14m	N60 00 10.6 W137 07 43.2	15.54
27	78	14m	N60 00 10.7 W137 07 43.0	15.54
28	81	14m	N60 00 10.7 W137 07 42.8	15.54

Electrode	m	Depth to bedrock	Lat. Long.	Elevation
73	216	-	N60 00 07.5 W137 07 24.5	2.13
74	219	-	N60 00 07.5 W137 07 24.4	2.13
75	222	-	N60 00 07.6 W137 07 24.3	3.05

Electrode	m	Depth to bedrock	Lat. Long.	Elevation
29	84	14m	N60 00 10.7 W137 07 42.6	14.94
30	87	14.5m	N60 00 10.7 W137 07 42.4	15.85
31	90	15m	N60 00 10.7 W137 07 42.2	16.15
32	93	15.5m	N60 00 10.8 W137 07 42.1	16.15
33	96	16m	N60 00 10.7 W137 07 41.9	15.54
34	99	16m	N60 00 10.7 W137 07 41.7	15.54
35	102	16m	N60 00 10.7 W137 07 41.5	15.54
36	105	16m	N60 00 10.8 W137 07 41.3	16.15
37	108	14m	N60 00 10.8 W137 07 41.1	16.15
38	111	12m	N60 00 10.9 W137 07 40.9	16.15
39	114	12m	N60 00 10.9 W137 07 40.8	16.15
40	117	11m	N60 00 10.9 W137 07 40.6	16.46
41	120	10m	N60 00 10.9 W137 07 40.4	15.85
42	123	7m	N60 00 11.0 W137 07 40.2	14.33
43	126	5m	N60 00 11.0 W137 07 39.9	13.41
44	129	2.5m	N60 00 10.9 W137 07 39.7	10.36
45	132	2m	N60 00 10.9 W137 07 39.6	9.45
46	135	2m	N60 00 10.9 W137 07 39.5	7.92
47	138	2m	N60 00 11.1 W137 07 39.4	5.79
48	141	2m	N60 00 11.2 W137 07 39.1	4.27
49	144	2m	N60 00 11.2 W137 07 39.0	2.44
50	147	2m	N60 00 11.1 W137 07 38.8	1.22
51	150	2m	N60 00 11.2 W137 07 38.6	0.61
52	153	2.5m	N60 00 11.1 W137 07 38.3	0.61
53	156	3m	N60 00 11.1 W137 07 38.2	0.3
54	159	4m	N60 00 11.1 W137 07 38.1	0.61
55	162	4m	N60 00 11.1 W137 07 37.9	0.61
56	165	4m	N60 00 11.1 W137 07 37.8	0.3

Electrode	m	Depth to bedrock	Lat. Long.	Elevation
57	168	4m	N60 00 11.2 W137 07 37.6	0.3
58	171	4m	N60 00 11.2 W137 07 37.4	0
59	174	4m	N60 00 11.3 W137 07 37.2	0.61
60	177	3m	N60 00 11.3 W137 07 37.0	0.61
61	180	3m	N60 00 11.3 W137 07 36.8	1.22
62	183	3m	N60 00 11.3 W137 07 36.7	0.91
63	186	3m	N60 00 11.4 W137 07 36.5	1.22
64	189	3m	N60 00 11.4 W137 07 36.3	0.91
65	192	3m	N60 00 11.4 W137 07 36.2	1.22
66	195	3m	N60 00 11.5 W137 07 36.0	0.91
67	198	2.5m	N60 00 11.5	0.91

Electrode	m	Depth to bedrock	Lat. Long.	Elevation
			W137 07 35.8	
68	201	2.5m	N60 00 11.5 W137 07 35.6	0.61
69	204	2.5m	N60 00 11.6 W137 07 35.5	0.91
70	207	2.5m	N60 00 11.6 W137 07 35.3	0.61
71	210	2.5m	N60 00 11.6 W137 07 35.1	0.61
72	213	2m	N60 00 11.6 W137 07 34.9	0.3
73	216	2m	N60 00 11.7 W137 07 34.7	0.3
74	219	-	N60 00 11.7 W137 07 34.5	0.3
75	222	-	N60 00 11.7 W137 07 34.3	0.91

## Claim Coordinates

Coordinates for the claims from the GIS shapefiles of the Yukon Mining Recorder. The coordinates represent the corners (clockwise) of the claims.

Grant Number with Lat. Long.

### P 42293

60.0038913787949 -137.132606252042  
60.0051243632542 -137.133790356928  
60.0074961027051 -137.123940717233  
60.0062630214763 -137.122756886268

### P 42294

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60.0082189150045 -137.136188428747  
60.0095437811074 -137.125475243126  
60.0087435139012 -137.125065218061

### P 47338

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60.0029260087596 -137.117469986566  
59.9987845917568 -137.124613522394  
59.9996789581002 -137.126680831215

### P 46991

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60.0047149132754 -137.12160483621  
60.0044676809392 -137.121033425224  
60.0038204871385 -137.119537363571  
59.9996789581002 -137.126680831215

### P 46992

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60.0050298273312 -137.12157291716

### P 47000

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60.0050298273312 -137.12157291716

### P 47226

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60.013948822799 -137.127733302839  
60.0125849802584 -137.138343822806  
60.0137040695264 -137.138896389282  
60.0137188855576 -137.138781202748  
60.0136843773562 -137.138723370989

### P 47227

60.0125849802584 -137.138343822806  
60.013948822799 -137.127733302839  
60.0128322759337 -137.127160900353  
60.0114658765941 -137.137791329546

### P 47228

60.0114658765941 -137.137791329546  
60.0128322759337 -137.127160900353  
60.0117157254397 -137.126588520147  
60.010346779096 -137.13723884072

### P 47229

60.010346779096 -137.13723884072  
60.0117157254397 -137.126588520147  
60.0105991693506 -137.126016215767  
60.0092276685157 -137.136686389406

### P 47230

60.0092276685157 -137.136686389406  
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### P 47246

60.0051243632542 -137.133790356928  
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### P 47291

59.9987845917568 -137.124613522394  
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60.0020315127017 -137.115402746086  
59.9978865004768 -137.122552053292

### P 47116

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