Three BC Mines and their historical landscapes:
From imagery to map to imagery

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Outline

• 3 BC mines
• Preamble / Why?
• (my) Question(s)
• Methods
• Summary
3 mines...
...May 2105 email from student who wanted to see...

“...Highland Valley prior to the development of Highland Valley Copper Mine...”
Highland Valley Copper Mine

Vancouver

Kamloops
[section] of 92I/11 east, 1st ed, 1948
[section] of 92I/11 east, 1st ed, 1948 over current imagery via QGIS
[section of] Highland Valley Copper current imagery (via QGIS)
How / Why is a lake no longer a lake?

[section of] 92I/11 east, 1st ed, 1948


<table>
<thead>
<tr>
<th>Name</th>
<th>Big Divide Lake</th>
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<td>Key</td>
<td>JAHVQ</td>
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<td>Status</td>
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<tr>
<td>Feature Type</td>
<td>Lake</td>
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Highland Valley Copper purchased the reserves:
• Chilthnaux #12 near 24 Mile Lake
• Quiltanton #13 between Quiltanton and Little Divide Lakes

Highland Valley Centre sustainable waste management environmental assessment certificate application: Appendix J - Archaeological overview assessment, 2007
Bing (and/or) Google Maps of Highland Valley Copper
Highland Valley Copper current imagery (via QGIS)
How / Why is a lake no longer a lake?

<table>
<thead>
<tr>
<th>Name</th>
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First Edition: 1958

Highland Valley Copper
one tailings lake...

http://www.bcsnowcat.ca
questions

• What was the landscape before mines?

• What imagery can answer the above?

• What can historical aerial photos and maps reveal?

• How / Why is a lake no longer a lake?

• How / Why is an island no longer an island?

• Why is former landscape important?
methods / sources

• aerial photography

• maps

• reports from the 1910s onwards
Why not satellite imagery?....


…the mines examined in this presentation were established before high resolution satellite imagery was available...
some background history: Aerial photos and map production


Sandwell, A. The camera takes to the air. *Canadian Geographical Journal*, 1930

Purser, R. Geography from the air. *Canadian Geographical Journal*, 1941


Thomson, D.W. *Men and meridians: The history of surveying and mapping in Canada*, 1966

Sebert, L.M. *Every square inch: The story of Canadian topographic mapping*, 1970

Thomson, D.W. *Skyview Canada: A story of aerial photography in Canada*, 1975
aerial photos & mining: literature


“…maps and aerial photography…”
“...how and why was this landscape made?”
“...an understanding of places and regions requires historical understanding...”

historical landscape important?

But…

If we insist that “…the history of geography must be explored in order to throw light upon the contemporary…[this] is a way of avoiding looking in the most obvious places.

The best place to start is…here and now.”

“…need to be sure that we are dealing with the actual past, not with a modern simulacrum. All the lineaments of the present are historical, yet they are continuously reborn in the minds of every culture and of every generation.”


The past I have re-constructed is through my eyes...
Island Copper Mine, 1971 - 1995
Coal and geologists in the area, 1915...

Koskeemo coal area, GSC Map 1419
(Vancouver) Island Copper Mine, 1971 - 1995

- pit 400m below sea level
- 1.4m tonnes valuable mined
- 800m tonnes waste rock
- 200m tonnes tailings

Aspinal, C. *The Story of Island Copper, 1995*
...but others state...

- dispersal of tailings greater extent than predicted. 
  *Assessment of metal mine submarine tailings discharge to marine environments*, 1996

- (federal) *Metal Mining Effluent Regulations*, 2002

- Governments and NGOs re-evaluating underwater tailing. 

- *Fisheries habitat compensation planning for mine drainage impacts at the Island Copper Mine*, 2007

- “…resulted in a permanent alteration of the native habitat and the smothering of resident benthic biota…”
  *Dold, B. Submarine tailings disposal (STD) - A review. Minerals, 2014*
[section of] A6129-99, (1938)
[section of] A6129-99, (1938)
laid over NTS 92L/11, (2nd Ed, 1958)
BC7742-074, 1975
[section of] NTS 92L/11, (3\textsuperscript{rd} Ed, 1976)
[section of] NTS 92L/11

2nd Ed, 1958

Island Copper Mine

3rd Ed, 1976
[section of] BC7742-074, 1975

[section of] NTS 92L/11, (3rd Ed, 1976)
Underwater tailings placement at Island Copper Mine, 2002

pre-mine bathymetry
pre-mine bathymetry, 1968

“being filled”, 1974

1997
[section of] NTS 92L/11, (3rd Ed, 1976)

from Imagery
to Map
to Imagery
Before Island Copper Mine (1971-decommissioned 1995): Rupert Inlet, Vancouver Island, BC

From 1938, 1958, 1975 to current.

- 346,000 tonnes valuable
- 300m tonnes excavated

1975

2010

http://changematters.esri.com/compare
future Brenda mines
[section of] BC7198-183, 1969
Before Brenda Mines...
Humans...

Goudie, A.S. *The human impact on the natural environment: Past, present, and future* (7th edition since the 1980s!)

"…what we see in today's mining landscapes are aided by early written descriptions, historical maps…"

"Historic aerial photographs supply the documentation required for analysts to compile a record over time…"


"…vegetation was studied using historical aerial photographs..."

Brenda Mines reclamation

http://www.archivos.ca
“...the
• general public
• planners
• politicians
• land managers
• ecological modelers
• restoration ecologists
are some of the potential users of landscape history.”
“To know a place is also to know the past. Place...is the past and the present...”

Yi-Fu Tuan, 1975. Place: An Experiential Perspective. *Geographical Review* 65(2)