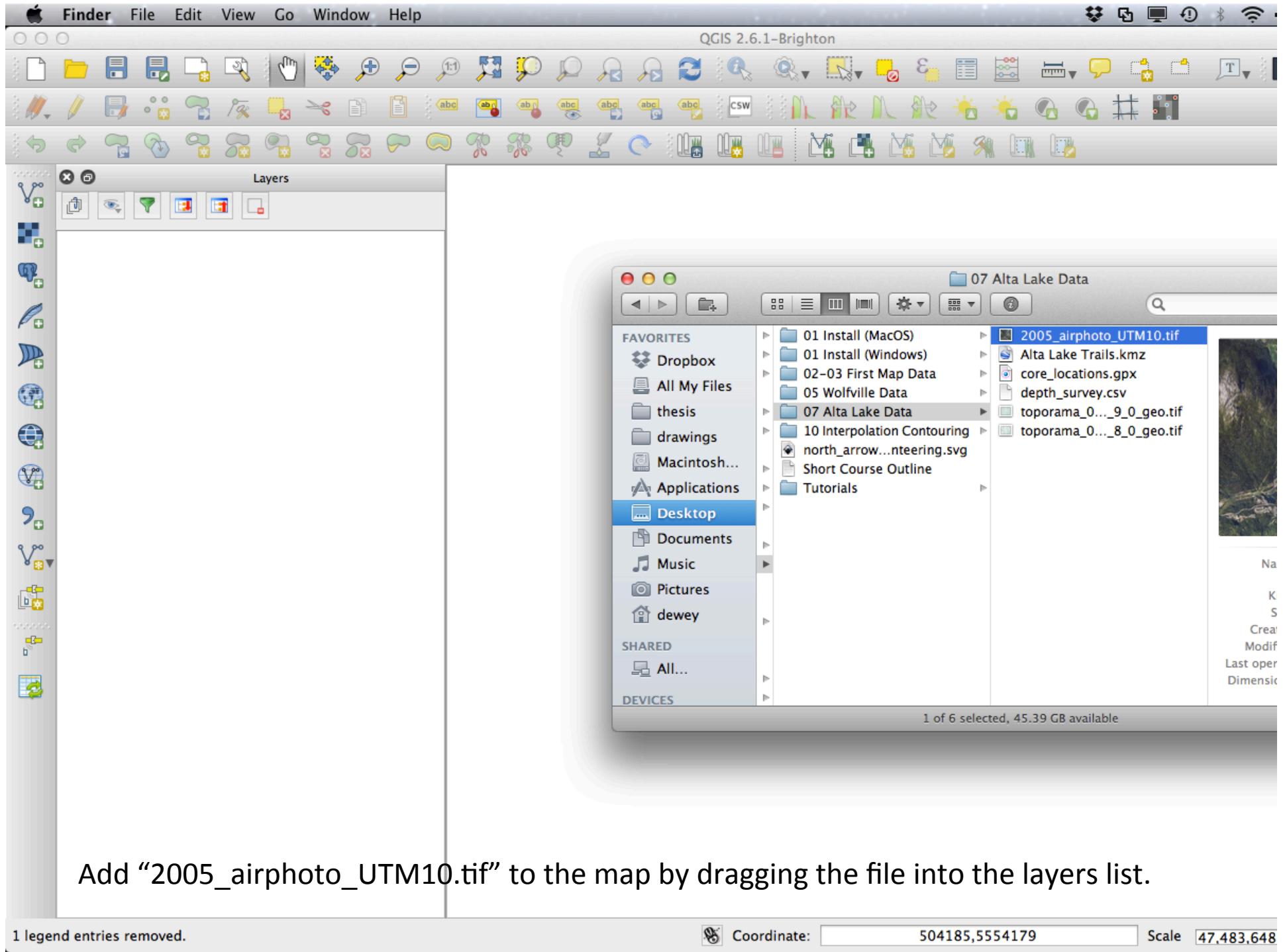


7. Importing Data From GPS, CSV, and Google Earth (KML/KMZ)

Purpose

- Learn to import data from multiple sources and formats
- Learn to export data in multiple sources



QGIS Project Edit View Layer Settings Plugins Vector Raster Database Web Processing Window Help

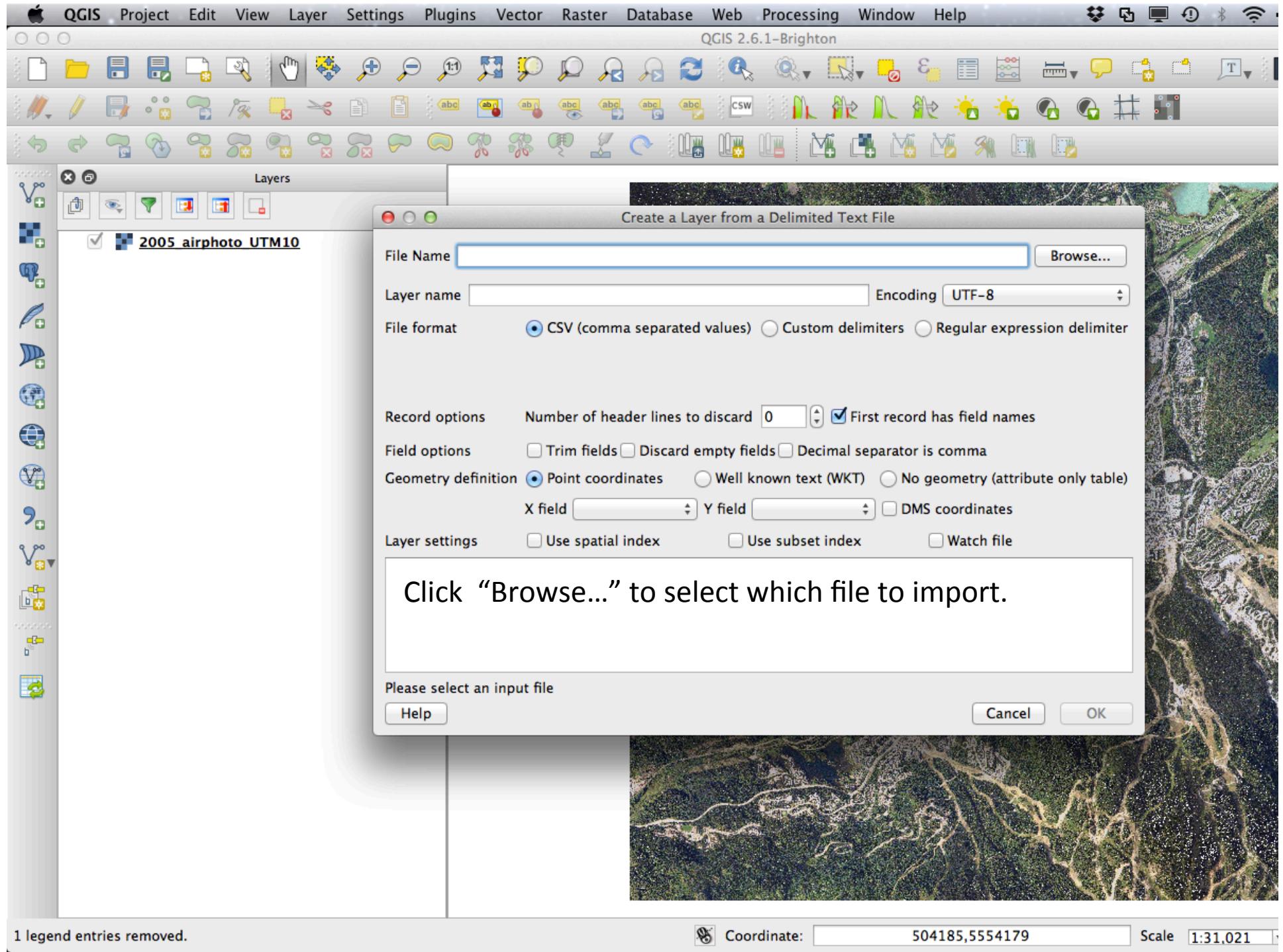
QGIS 2.6.1-Brighton

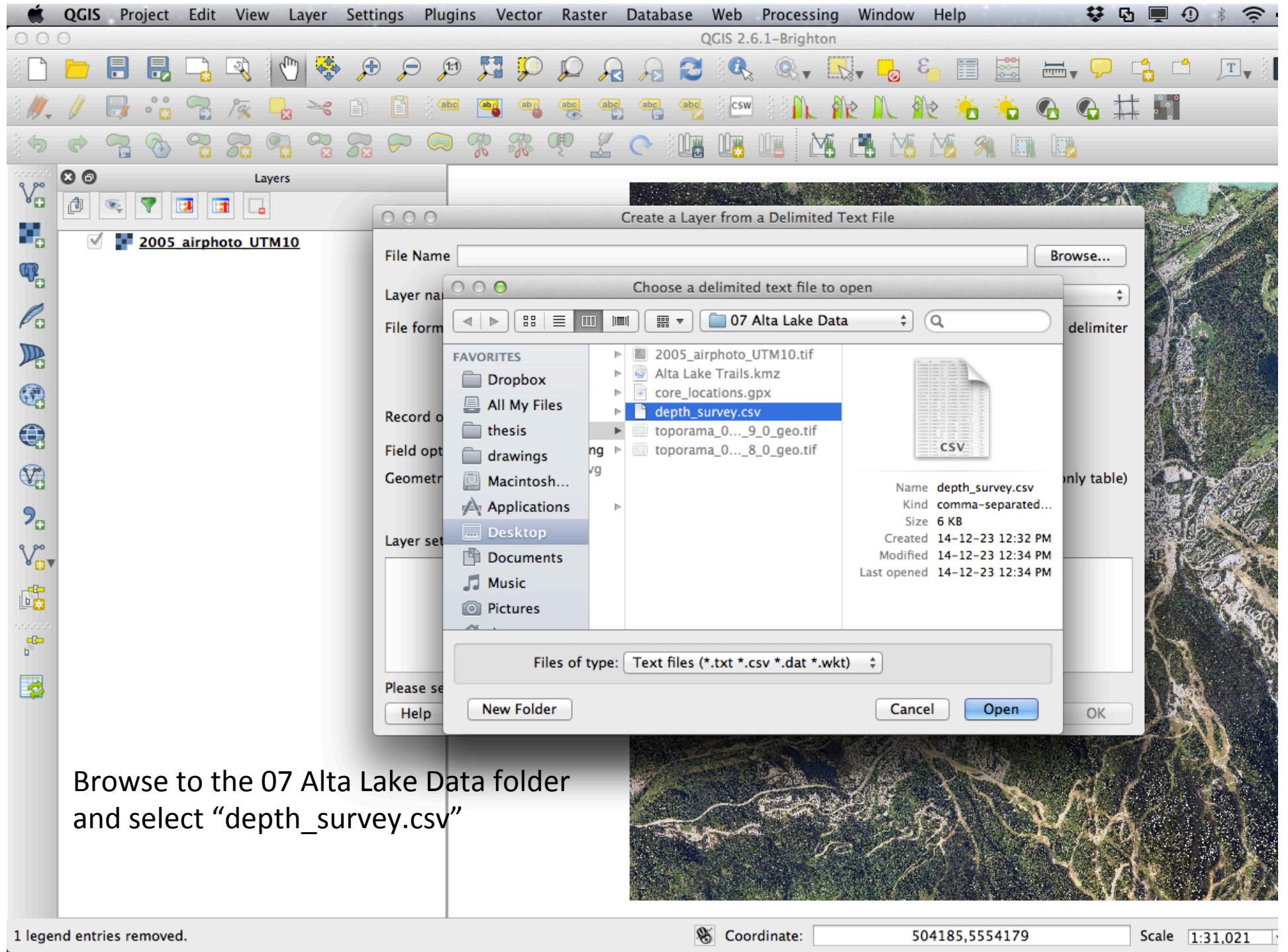
Layers

2005 airphoto UTM10

Next, we'll import CSV (comma separated values) data to the map. This is useful because a CSV file can be produced easily in Excel, so you can create point vector data with specific coordinates (for example, that you wrote in a field notebook). Click the "Add Delimited Text Layer" button to start.

Coordinate: 504185,5554179 Scale 1:31,021





QGIS Project Edit View Layer Settings Plugins Vector Raster Database Web Processing Window Help

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Layers

2005 airphoto UTM10

Create a Layer from a Delimited Text File

File Name /Users/dewey/Desktop/GIS Short Course/07 Alta Lake Data/depth_survey.csv

Layer name depth_survey Encoding UTF-8

File format CSV (comma separated values) Custom delimiters Regular expression delimiter

Record options Number of header lines to discard 0 First record has field names

Field options Trim fields Discard empty fields Decimal separator is comma

Geometry definition Point coordinates Well known text (WKT) No geometry (attribute only table)

X field lon Y field lat DMS coordinates

Layer settings Use spatial index Use subset index Watch file

	lon	lat	temp_f	dbt_ft	dbt_m	speed_kts	heading_de
1	-122.9806433	50.10873167	66.92	14.468475	4.409991039	3.4	50.3
2	-122.9798283	50.10935667	67.1	6.561666667	1.999995936	3.4	24.6
3	-122.9793533	50.11033667	67.1	9.383183333	2.859994188	3.5	21.9
4	-122.9797167	50.11161667	67.1	0.491608222	2.880004128	2.6	0.7

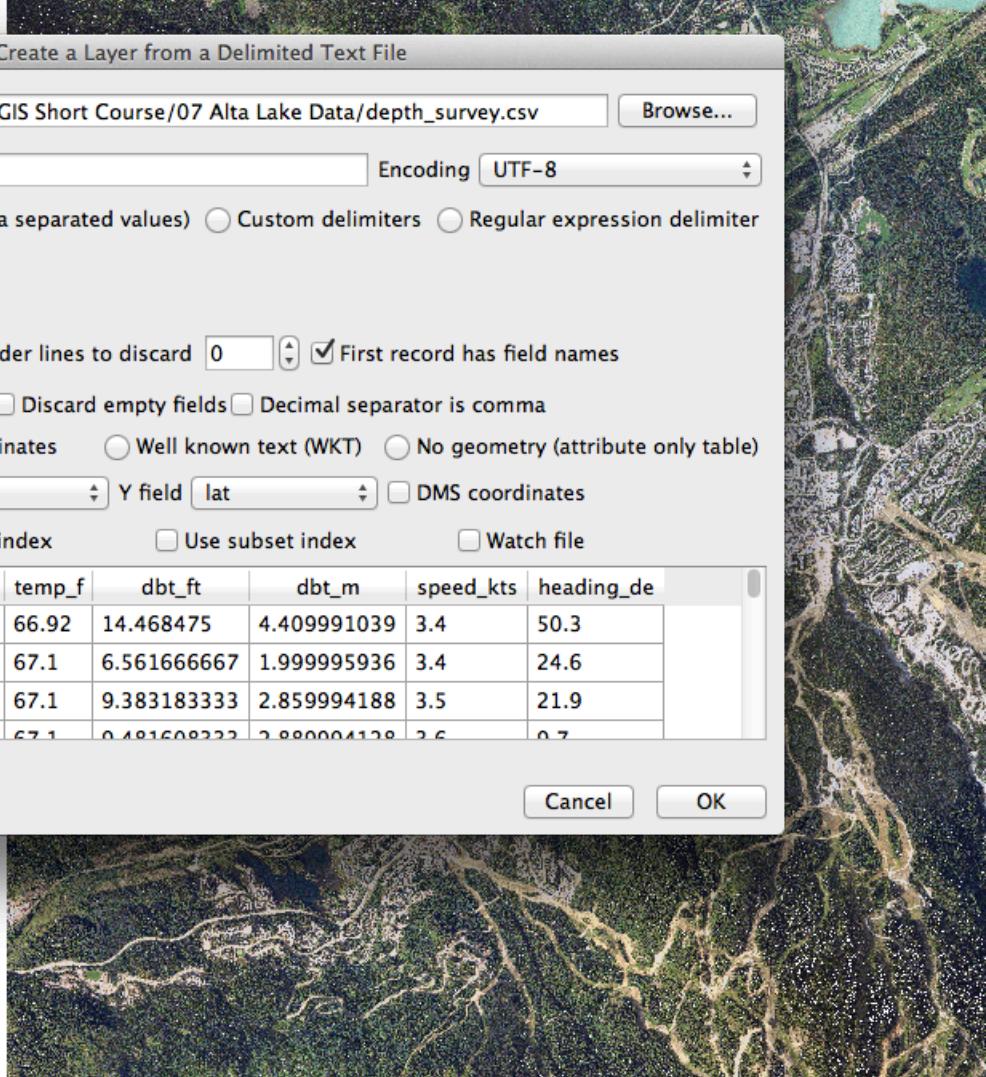
Help Cancel OK

Choose the X field and Y field (in this case lon and lat) to select which columns will represent the geometry of the data.

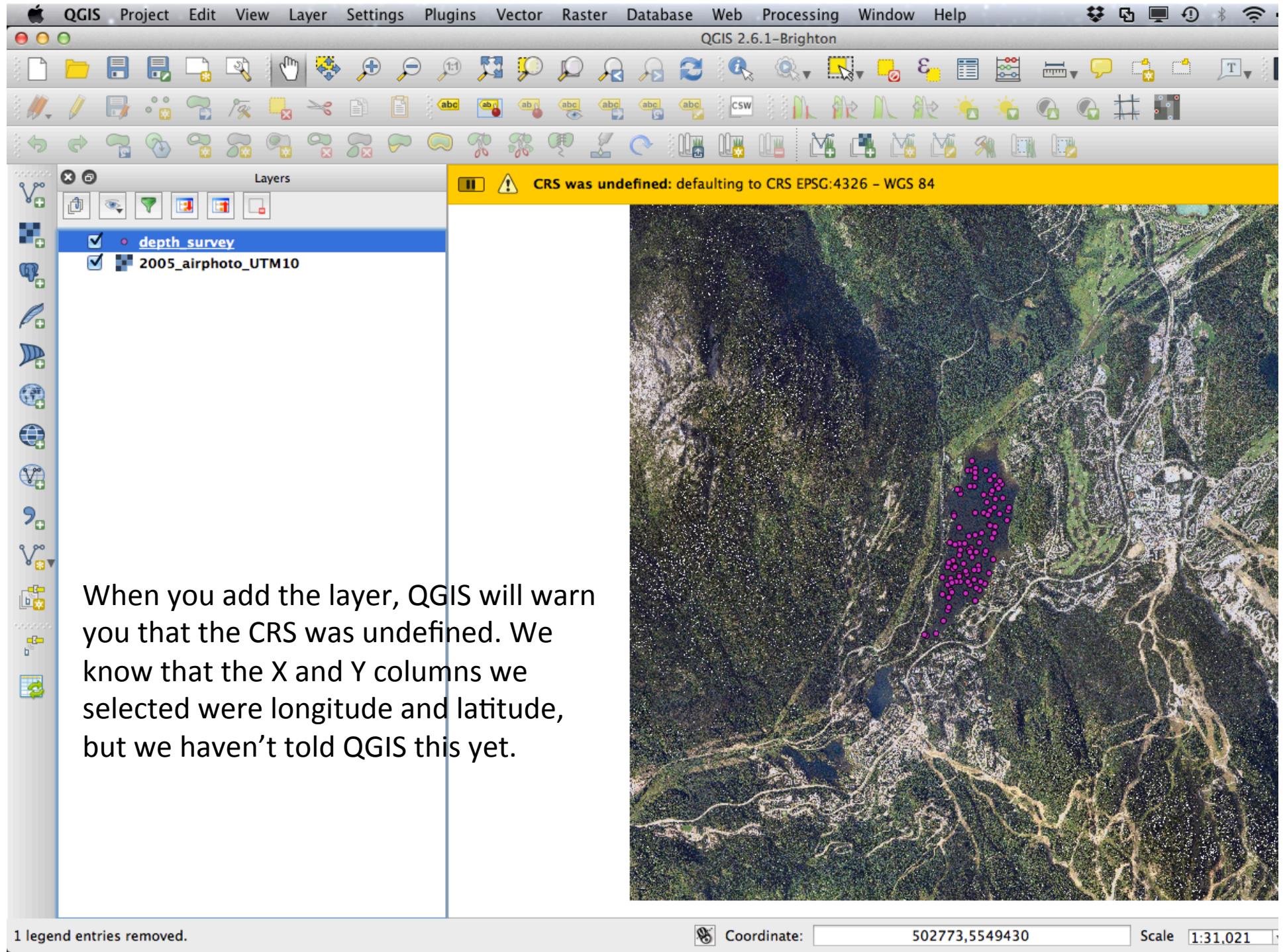
1 legend entries removed.

Coordinate: 504185,5554179

Scale 1:31,021



When you add the layer, QGIS will warn you that the CRS was undefined. We know that the X and Y columns we selected were longitude and latitude, but we haven't told QGIS this yet.



The screenshot shows the QGIS interface with a satellite map of a forested area. A cluster of magenta dots is visible in the center-right portion of the map, representing the 'depth survey' data. The 'Layers' panel on the left shows two layers: 'depth survey' (selected) and '2005_airphoto_UTM10'. A yellow warning bar at the top right states: 'CRS was undefined: defaulting to CRS EPSG:4326 – WGS 84'. The bottom status bar indicates 'Coordinate: 502773,5549430' and 'Scale 1:31,021'.

QGIS Project Edit View Layer Settings Plugins Vector Raster Database Web Processing Window Help

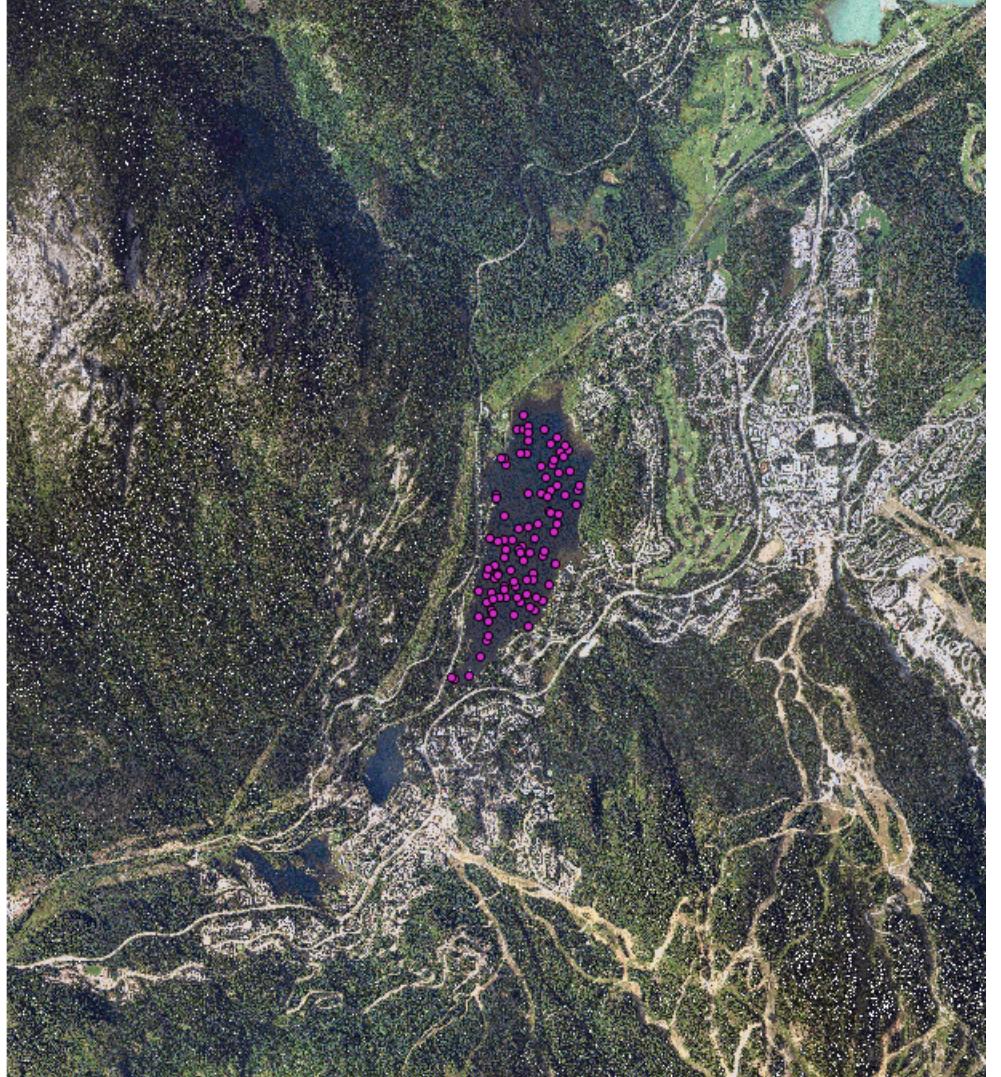
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Layers

dep... 200

- Zoom to Layer
- Show in overview
- Remove
- Duplicate
- Set Layer Scale Visibility
- Set Layer CRS**
- Set Project CRS from Layer
- Open Attribute Table
- Save As...
- Save As Layer Definition File...
- Filter...
- Show Feature Count
- Properties
- Rename
- Copy Style

To set the CRS for a layer, right click the layer and select “Set Layer CRS”.



Coordinate: 495911,5553446 Scale 1:31,021

QGIS Project Edit View Layer Settings Plugins Vector Raster Database Web Processing Window Help

Coordinate Reference System Selector

Define this layer's coordinate reference system:
This layer appears to have no projection specification. By default, this layer will now have its projection set to that of the project, but you may override this by selecting a different projection below.

Filter

Recently used coordinate reference systems

Coordinate Reference System	Authority ID
WGS 84 / UTM zone 10N	EPSG:32610
Canada_Albers_Equal_Area_Conic	EPSG:102001
NAD83 / UTM zone 20N	EPSG:26920
NAD83 / UTM zone 10N	EPSG:26910
WGS 84 / UTM zone 20N	EPSG:32620
WGS 84	EPSG:4326

Coordinate reference systems of the world Hide deprecated CRSs

Coordinate Reference System	Authority ID
Voirol 1879 (Paris)	EPSG:4821
WGS 66	EPSG:4760
WGS 72	EPSG:4322
WGS 72BE	EPSG:4324
WGS 84	EPSG:4326
WGS72	ICRF-WGS72C

Selected CRS: WGS 84

+proj=longlat +datum=WGS84 +no_defs

Help Cancel OK

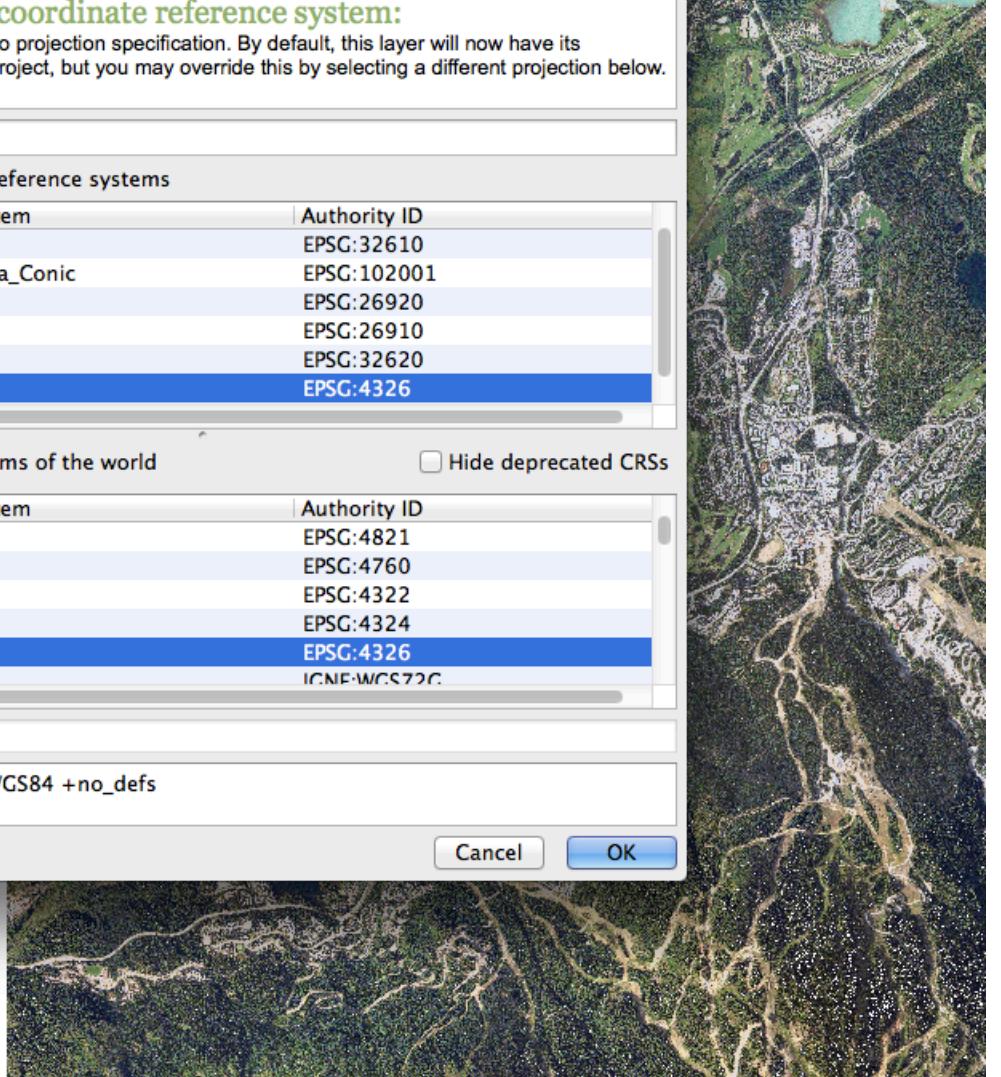
Layers

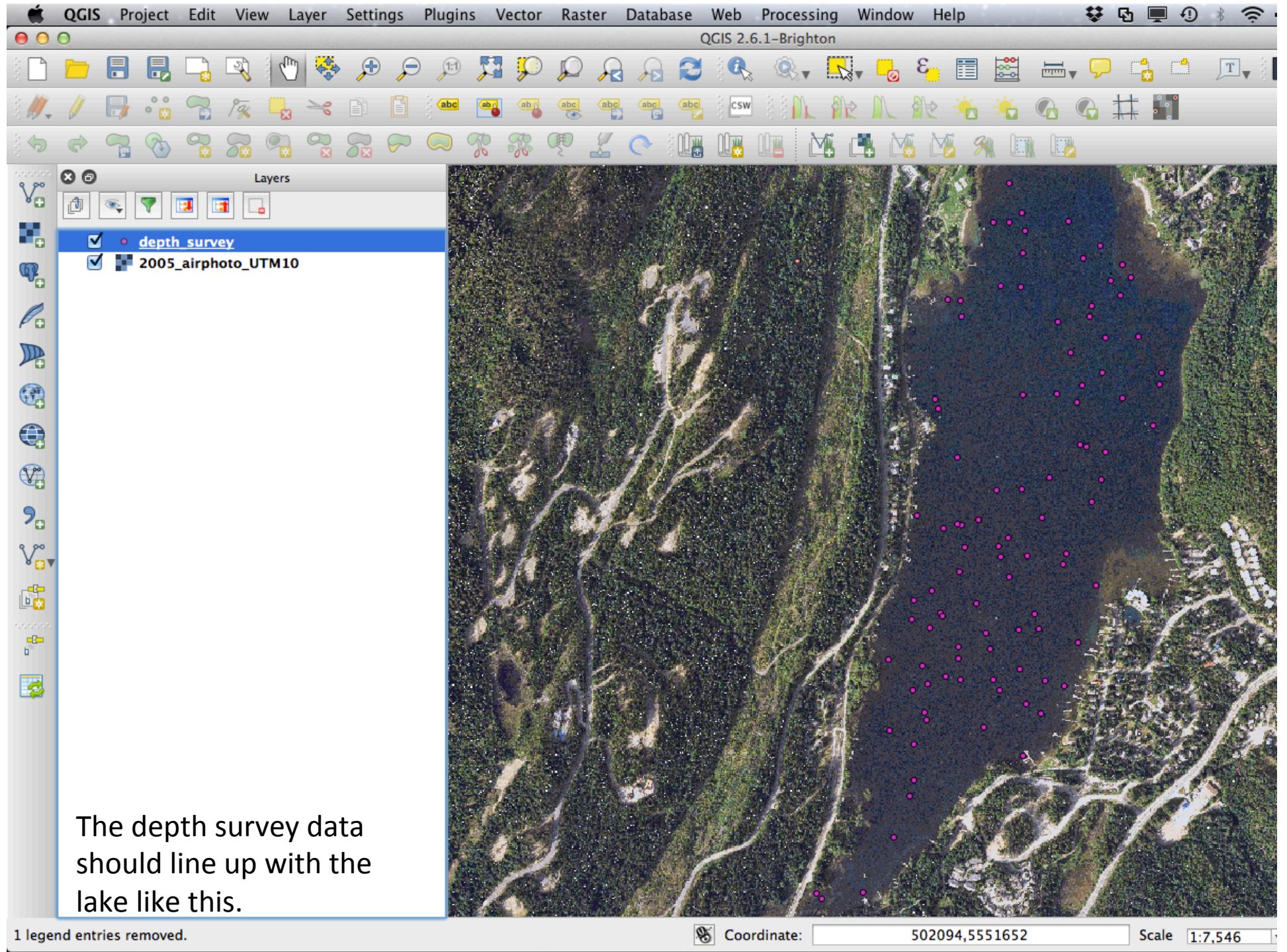
depth survey

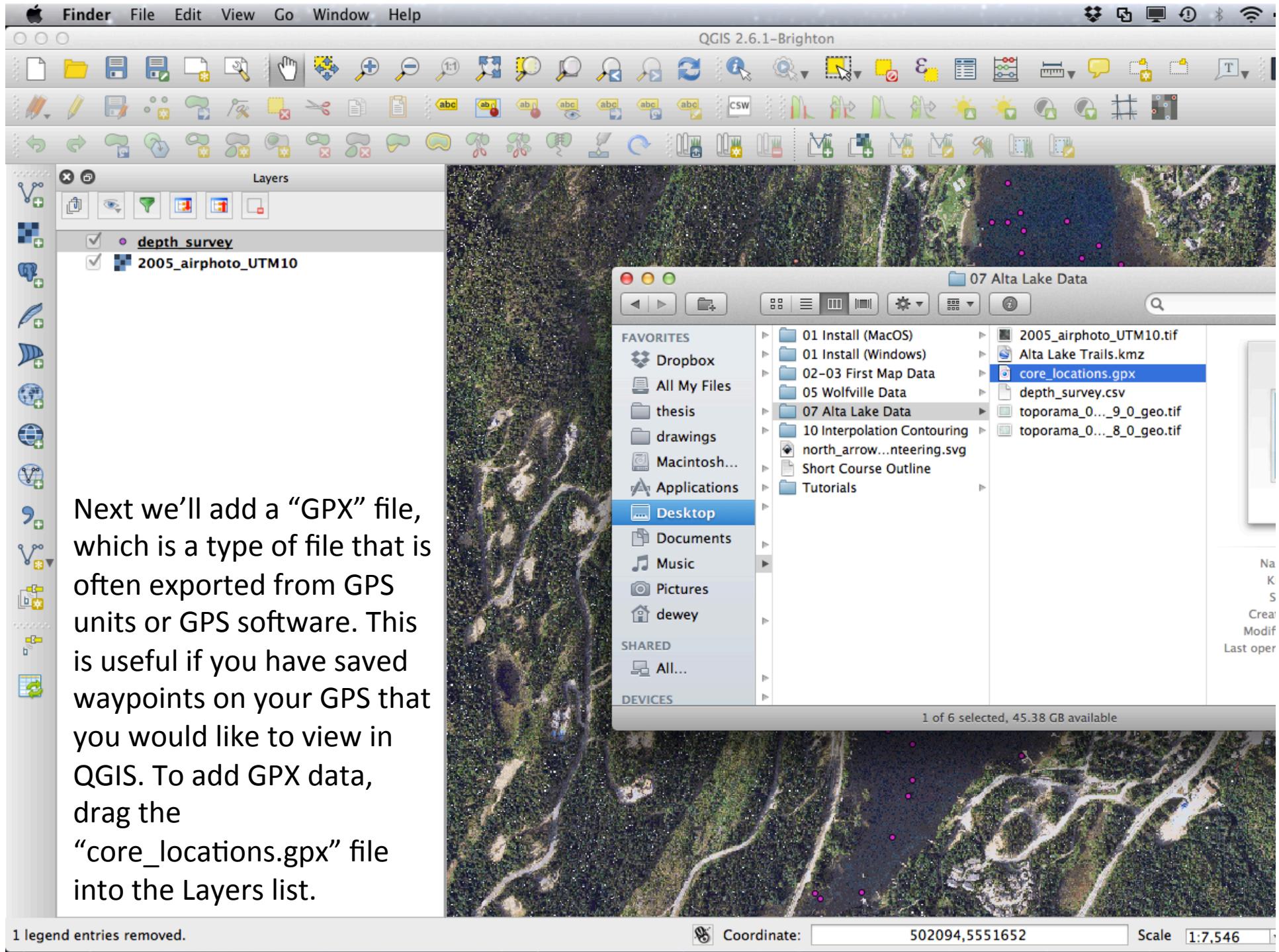
2005_airphoto_UTM10

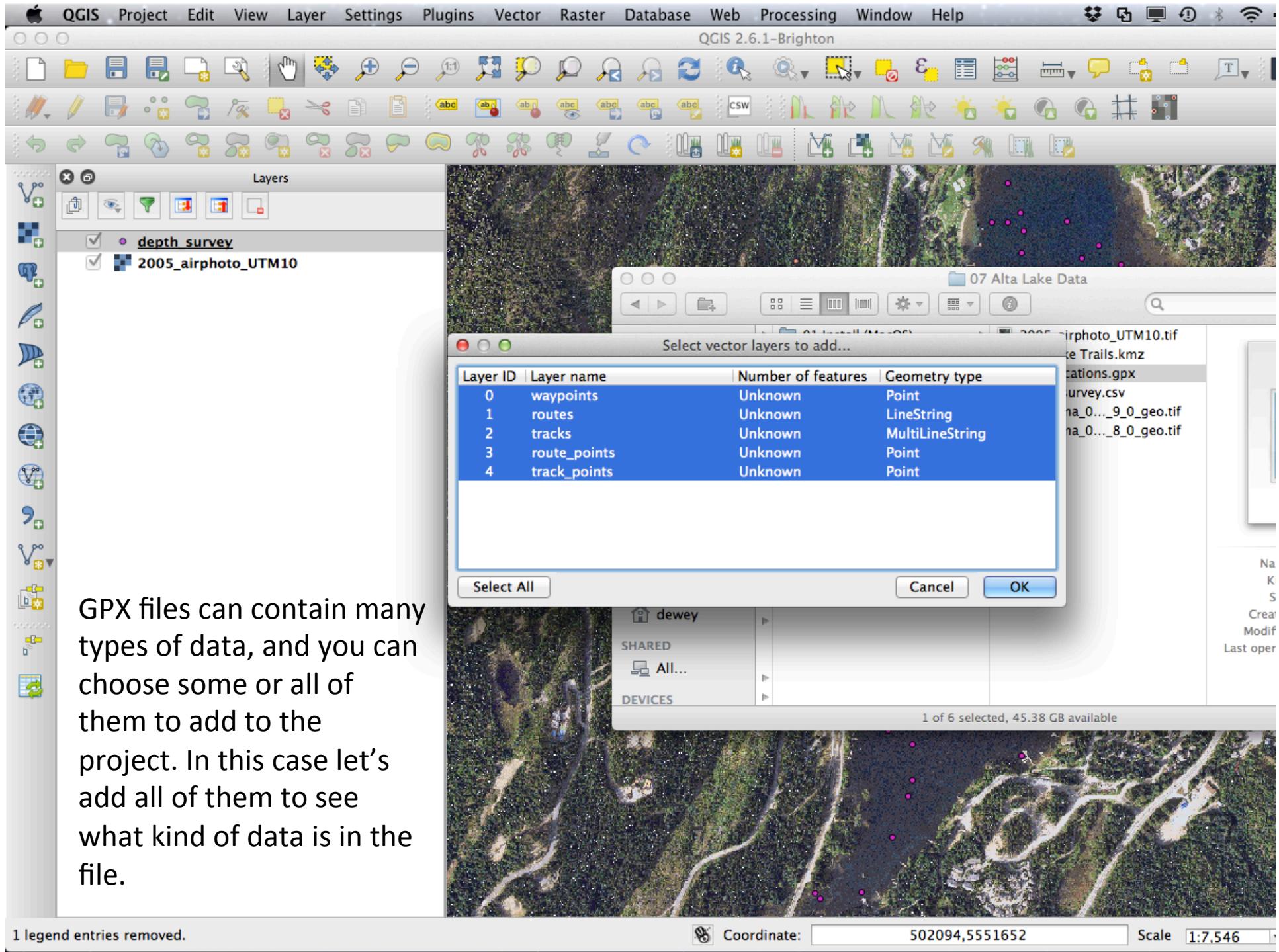
Remember that “WGS 84” is the CRS for lat/lion coordinates. Ensure that this is selected.

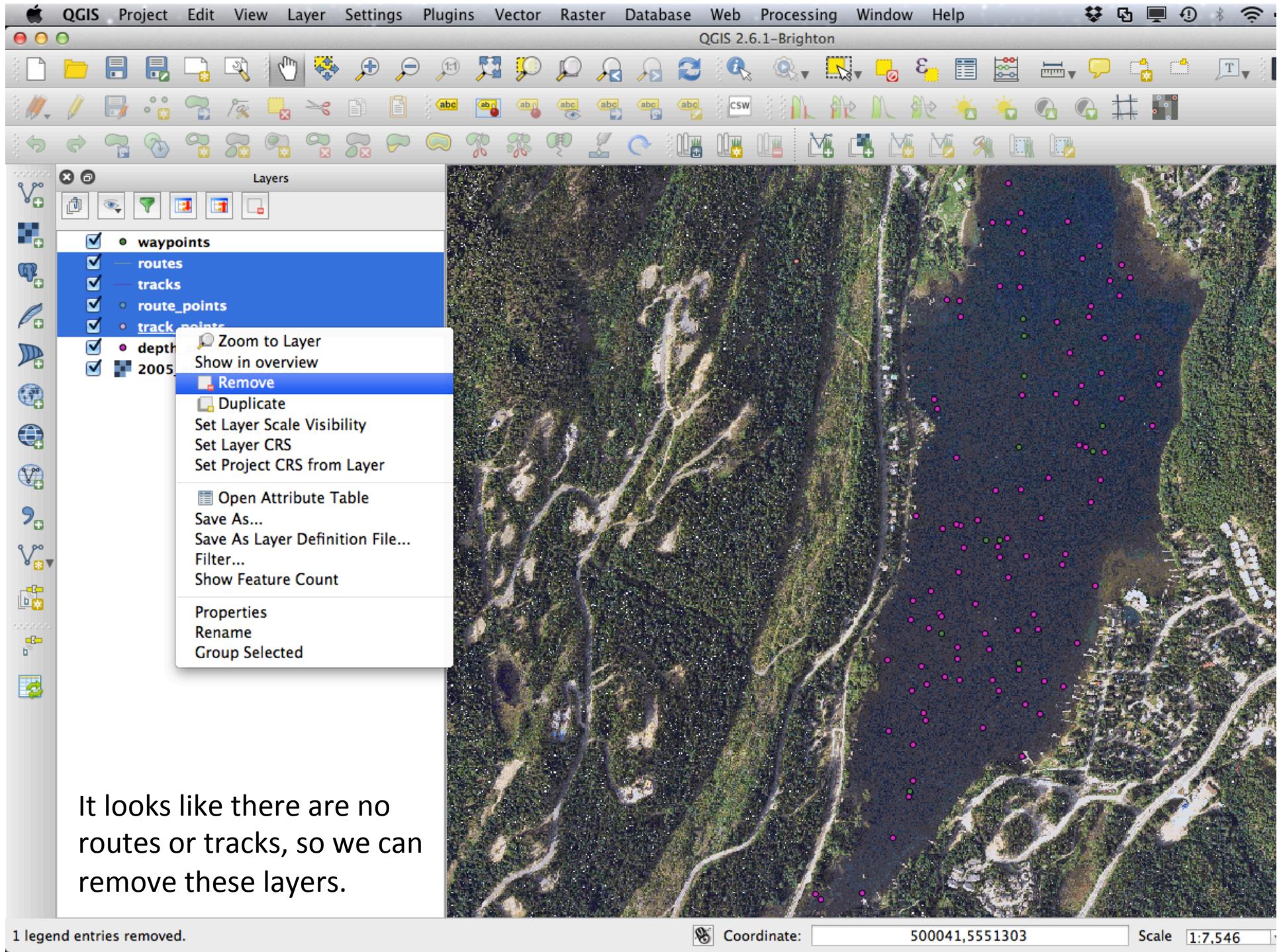
Coordinate: 495911,5553446 Scale 1:31,021











1 legend entries removed.



Coordinate:

500041,5551303

Scale 1:7,546

The waypoints are not very visible as green dots, so let's change the style of the layer so we can see them more clearly.

Coordinate: 501790,5551772 Scale 1:7,546

QGIS Project Edit View Layer Settings Plugins Vector Raster Database Web Processing Window Help

Layer Properties – waypoints | Style

General Style Labels Fields Display Actions Joins Diagrams Metadata

Single Symbol

Unit Millimeter Size 8 Transparency 0% Rotation 0.00° Color

Marker

Simple marker

airport arrow capital circle city diamond ellipse

pentagon square star star2 star3 triangle triangle2

Save Advanced

Layer rendering

Layer transparency 0 Layer blending mode Normal Feature blending mode Normal

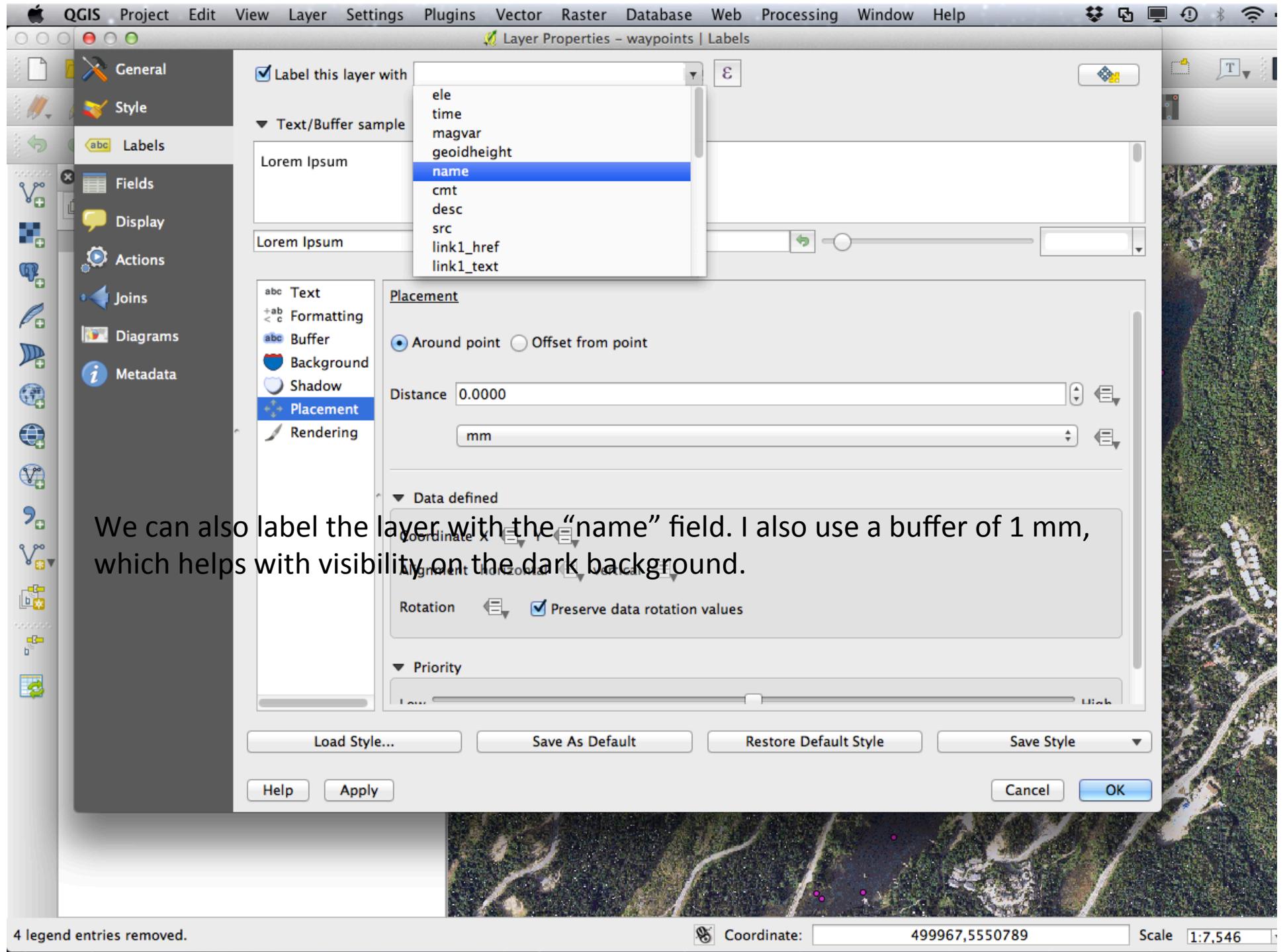
Load Style... Save As Default Restore Default Style Save Style Cancel OK

Help Apply

Coordinate: 501790,5551772 Scale 1:7,546

I choose a star with a size of 8 here, but you can choose whatever you'd like.

The screenshot shows the QGIS application interface with the 'Style' tab selected in the 'Layer Properties' dialog for a layer named 'waypoints'. In the center, there's a preview window showing a red star symbol. To the right of the preview are settings for 'Unit' (Millimeter), 'Size' (set to 8), 'Transparency' (0%), and 'Rotation' (0.00°). Below the preview is a 'Symbols in group' section titled 'Marker' which contains a list of various symbols including 'Simple marker', 'airport', 'arrow', 'capital', 'circle', 'city', 'diamond', 'ellipse', 'pentagon', 'square', 'star' (which is highlighted in blue), 'star2', 'star3', 'triangle', and 'triangle2'. At the bottom of the dialog are buttons for 'Save', 'Advanced', 'Layer rendering' settings (transparency 0, blending modes), and a 'Layer rendering' section. At the very bottom are buttons for 'Load Style...', 'Save As Default', 'Restore Default Style', 'Save Style', 'Cancel', and 'OK'. A note in the center says 'I choose a star with a size of 8 here, but you can choose whatever you'd like.' The background of the dialog shows a satellite map of a river and surrounding land. The status bar at the bottom indicates '4 legend entries removed.', 'Coordinate: 501790,5551772', and 'Scale 1:7,546'.



4 legend entries removed.

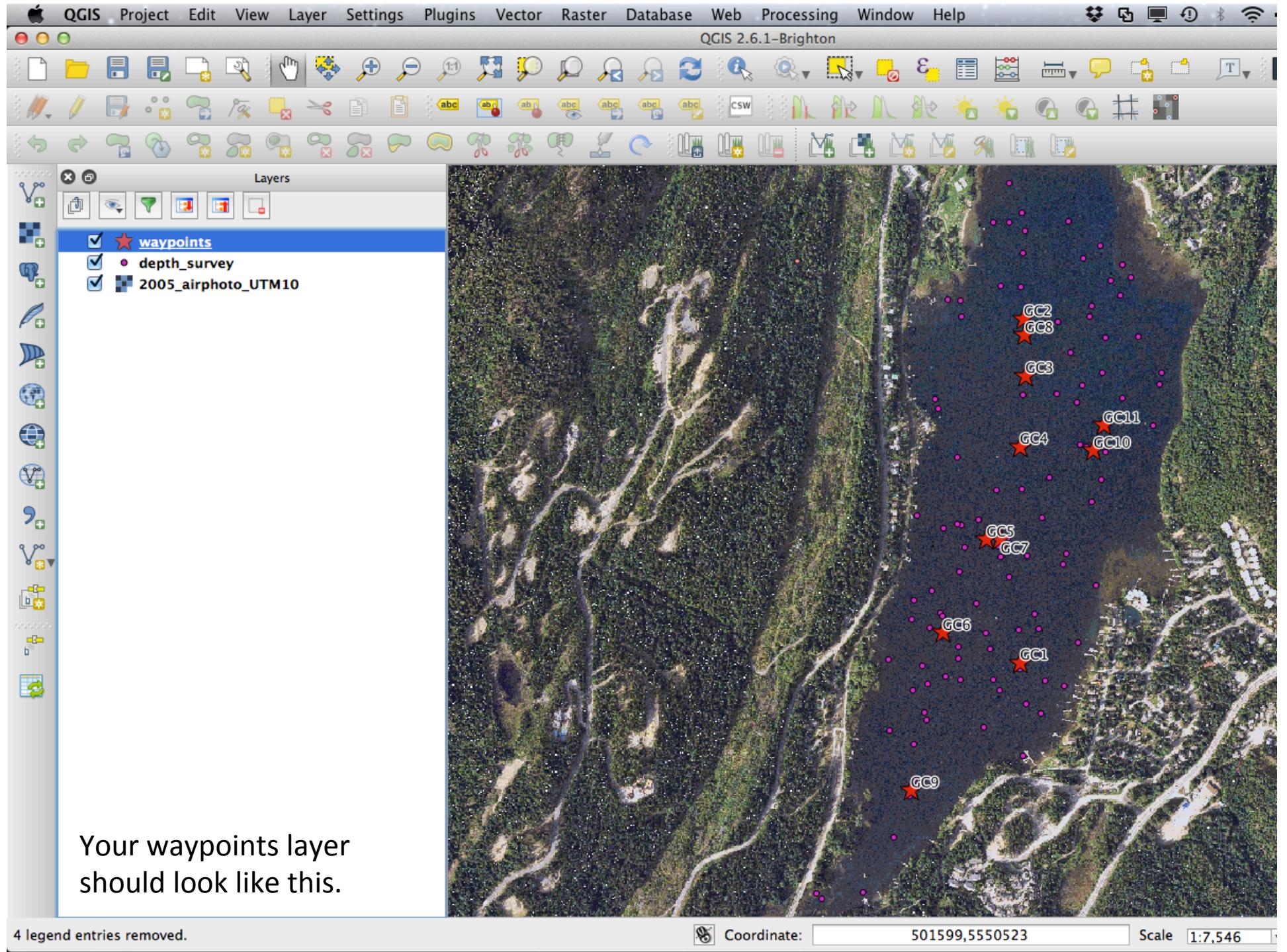


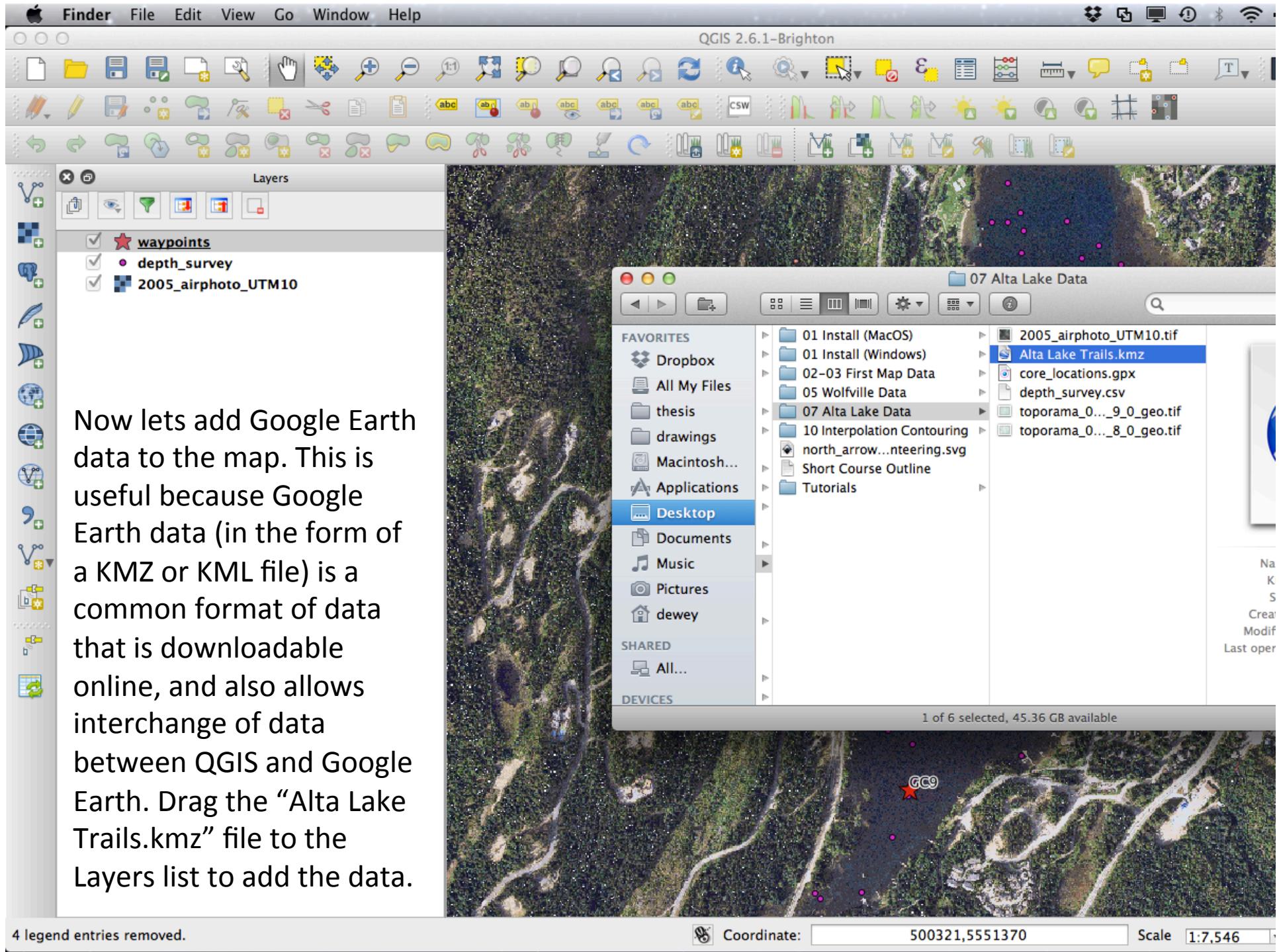
Coordinate:

499967,5550789

Scale

1:7,546





The layer isn't particularly visible as a thin dark line, so let's change the layer style to make it visible.

Coordinate: 500321,5551370

Scale 1:31,021

QGIS Project Edit View Layer Settings Plugins Vector Raster Database Web Processing Window Help

Layer Properties – Whistler Trails | Style

General Style Labels Fields Rendering Display Actions Joins Diagrams Metadata

Single Symbol

Unit Millimeter Transparency 0% Width 1

Color

Symbols in group Open Library

Line

Simple line

Bridleway Canal Canal rive Construction Crossing Cycle path Dam

Ditch Drain Floodway Footpath Jetty Living street LockedRoad

Motorway Motorway li Pedestrian v Primary lin Primary ro Residential Residential

I use a white line with a width of 1 mm, but you can pick your own.

Save Advanced

Layer rendering

Layer transparency 0

Layer blending mode Normal Feature blending mode Normal

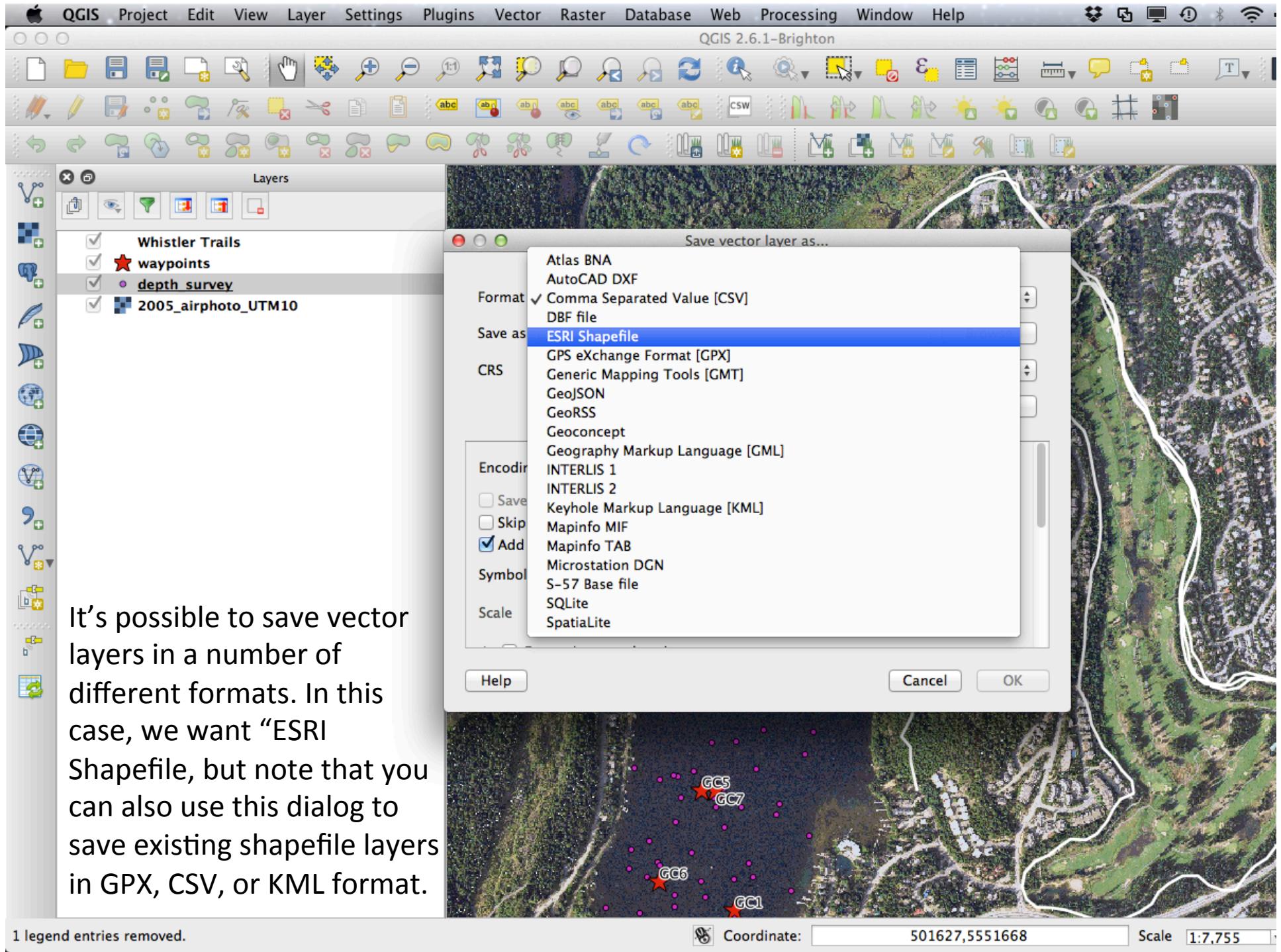
Load Style... Save As Default Restore Default Style Save Style Cancel OK

Help Apply

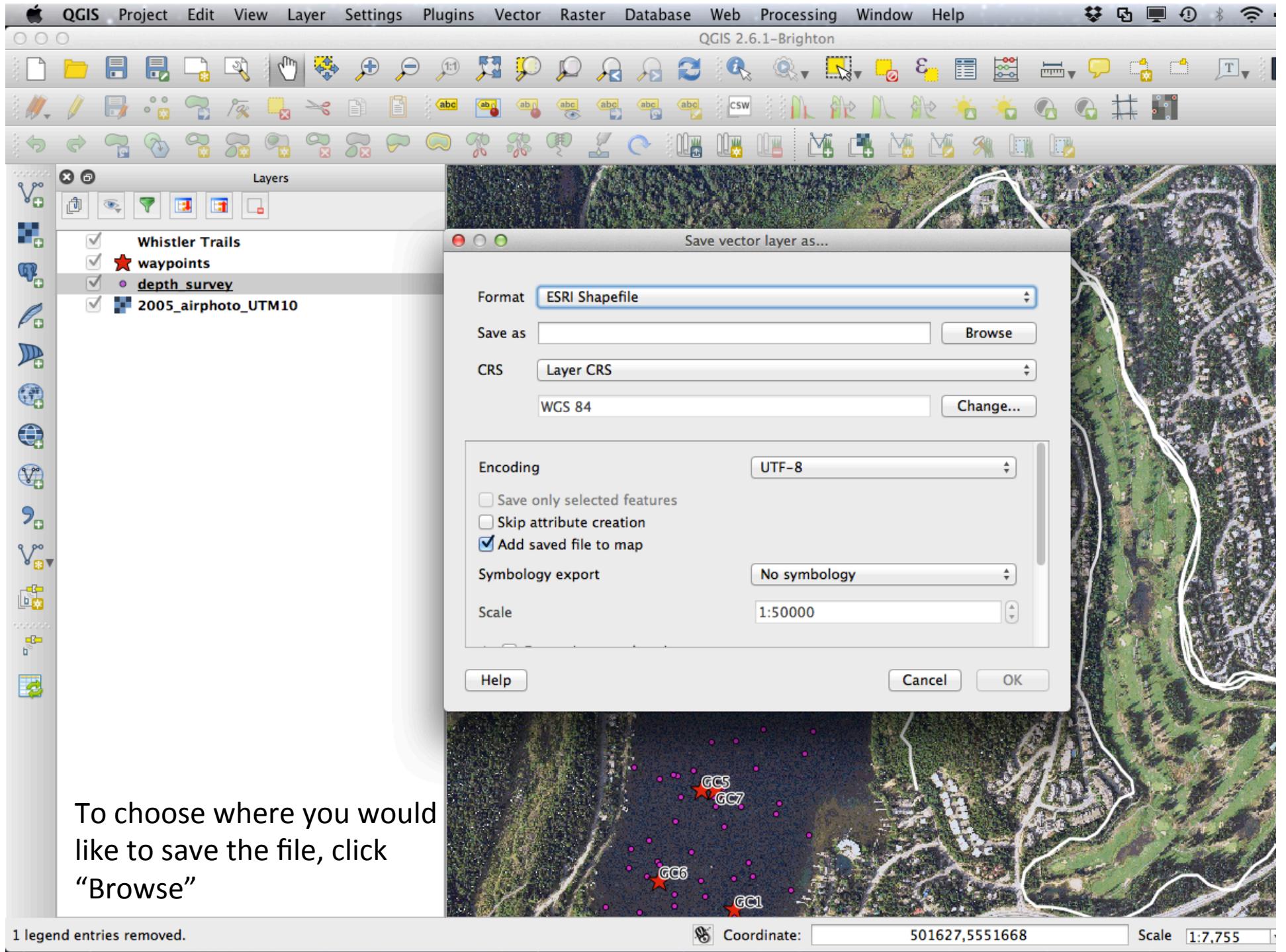
Coordinate: 500321,5551370 Scale 1:31,021

Sometimes it is helpful
(especially when
manipulating vector layers)
to convert data into
shapefile format. To do
this, right click the layer
and choose “Save As...”

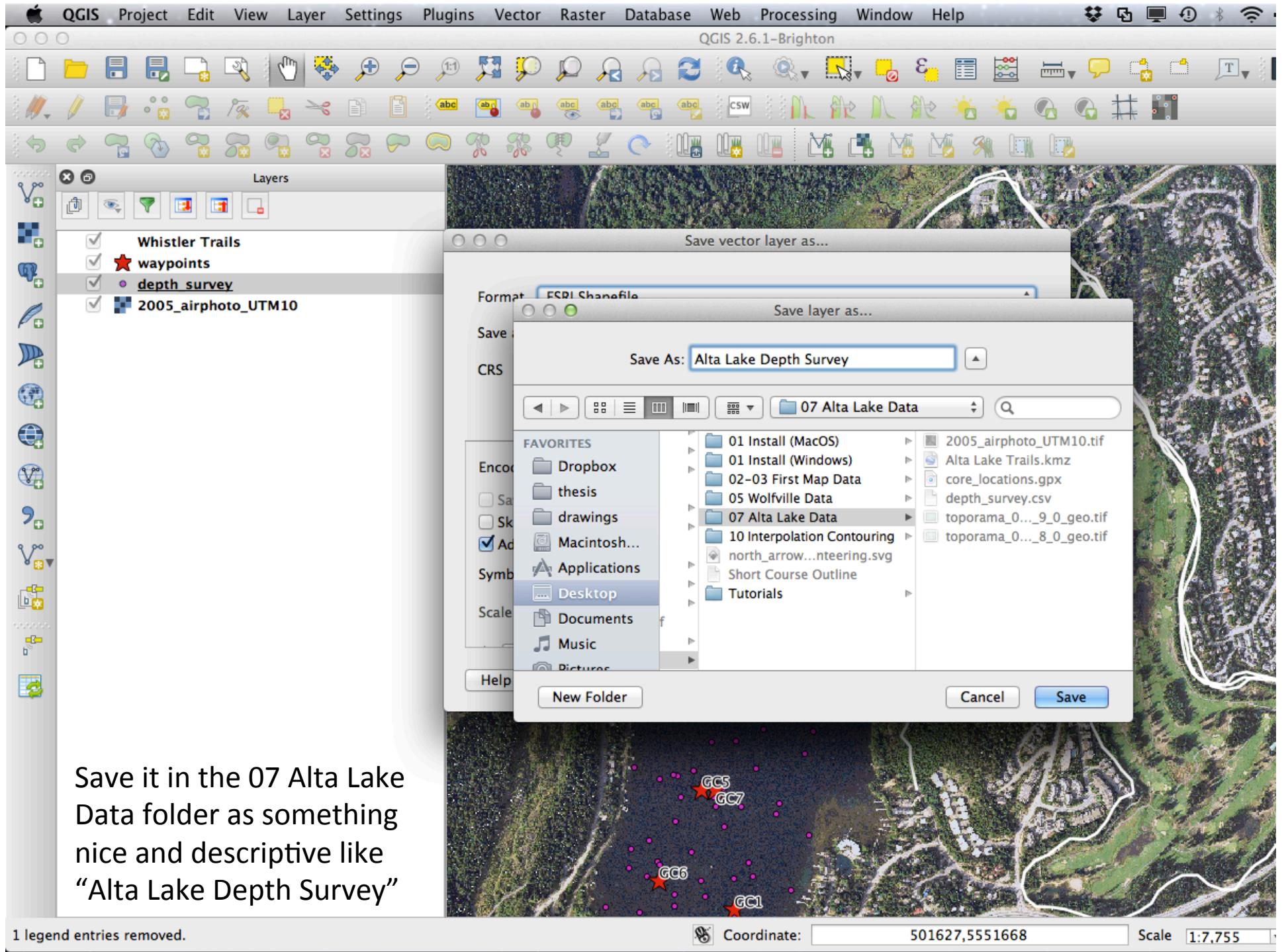
The screenshot shows the QGIS application interface. The top menu bar includes Project, Edit, View, Layer, Settings, Plugins, Vector, Raster, Database, Web, Processing, Window, and Help. Below the menu is a toolbar with various icons for file operations, selection, and editing. The main window features a 'Layers' panel on the left containing a list of layers: 'Whistler Trails' (checked), 'waypoints' (checked), and a third layer which is currently selected and has a context menu open. The context menu for the 'waypoints' layer includes options like 'Zoom to Layer', 'Show in overview', 'Remove', 'Duplicate', 'Set Layer Scale Visibility', 'Set Layer CRS', 'Set Project CRS from Layer', 'Open Attribute Table', 'Save As...', 'Save As Layer Definition File...', 'Filter...', 'Show Feature Count', 'Properties', 'Rename', and 'Copy Style'. The main canvas displays a satellite-style map of a green, hilly landscape with a large white polygonal boundary drawn over it. Inside this boundary, there are numerous small purple dots representing waypoints, and several of these are labeled with codes such as 'GC1', 'GC2', 'GC3', 'GC4', 'GC5', 'GC6', 'GC7', 'GC10', and 'GC11'. The bottom status bar shows the coordinate '500595,5552221' and the scale '1:7,755'.



It's possible to save vector layers in a number of different formats. In this case, we want "ESRI Shapefile", but note that you can also use this dialog to save existing shapefile layers in GPX, CSV, or KML format.



To choose where you would like to save the file, click "Browse"



When we save a file we always have to be aware of the CRS with which we define the geometry. This is most important when doing processing of data, but it's good to be aware of it whenever you save a file. We will use the "Project CRS" (the map display CRS, which is UTM zone 10N) for saving this layer.

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Layers

- Whistler Trails
- waypoints
- depth survey
- 2005_airphoto_UTM10

Save vector layer as...

Format: ESRI Shapefile

Save as: /Users/.../Course/07 Alta Lake Data/Alta Lake Depth Survey.shp

CRS: ✓ Layer CRS
Project CRS
Selected CRS

Encoding: UTF-8

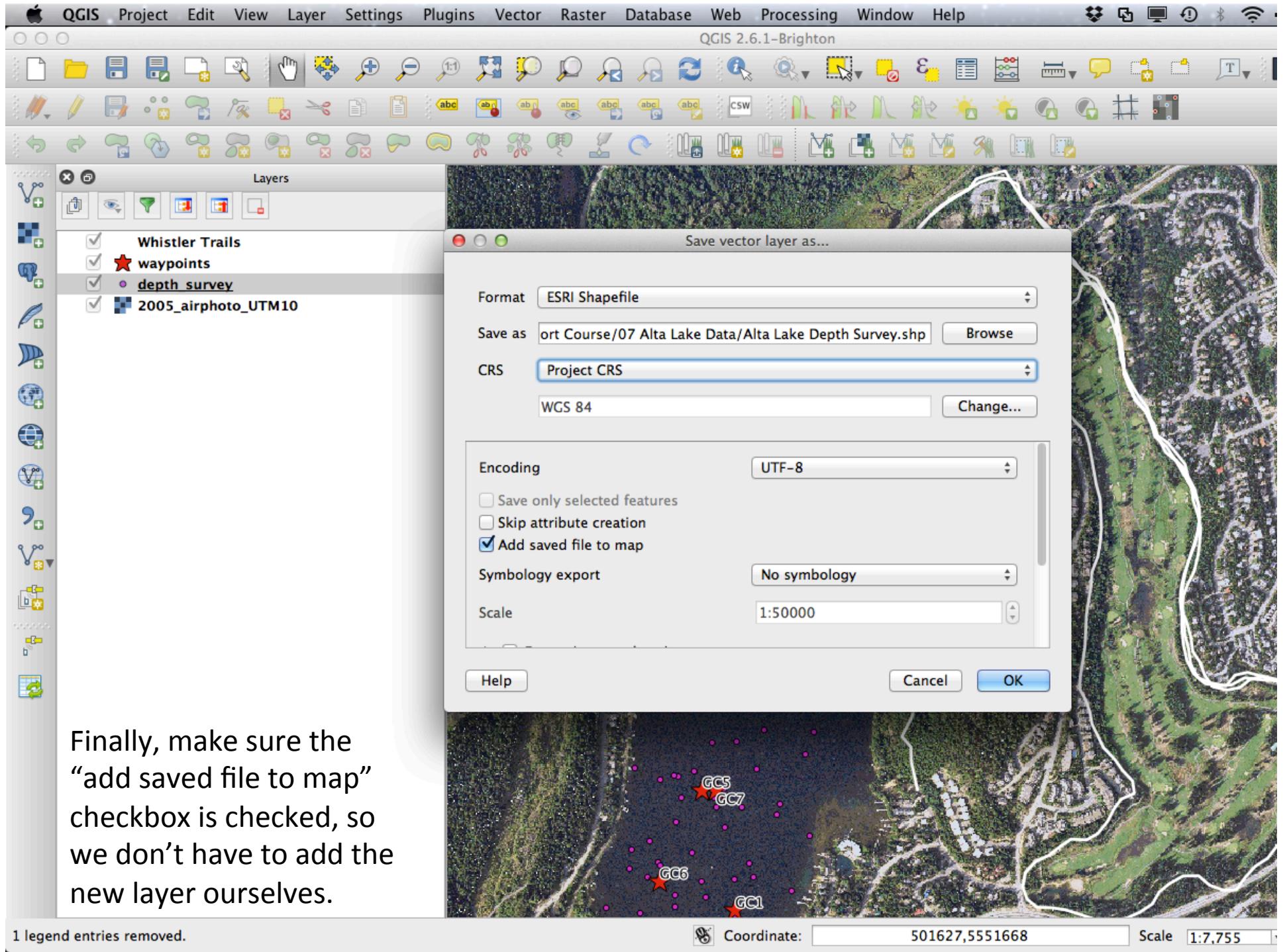
Save only selected features
 Skip attribute creation
 Add saved file to map

Symbology export: No symbology

Scale: 1:50000

Help Cancel OK

Coordinate: 501627,5551668 Scale 1:7,755



Finally, make sure the “add saved file to map” checkbox is checked, so we don’t have to add the new layer ourselves.

QGIS Project Edit View Layer Settings Plugins Vector Raster Database Web Processing Window Help

QGIS 2.6.1-Brighton

Layers

- Whistler Trails
- waypoints
- Alta Lake Depth Survey
- dept** (selected)
- 2005

Remove

Zoom to Layer
Show in overview
Remove
Duplicate
Set Layer Scale Visibility
Set Layer CRS
Set Project CRS from Layer

Open Attribute Table
Save As...
Save As Layer Definition File...
Filter...
Show Feature Count

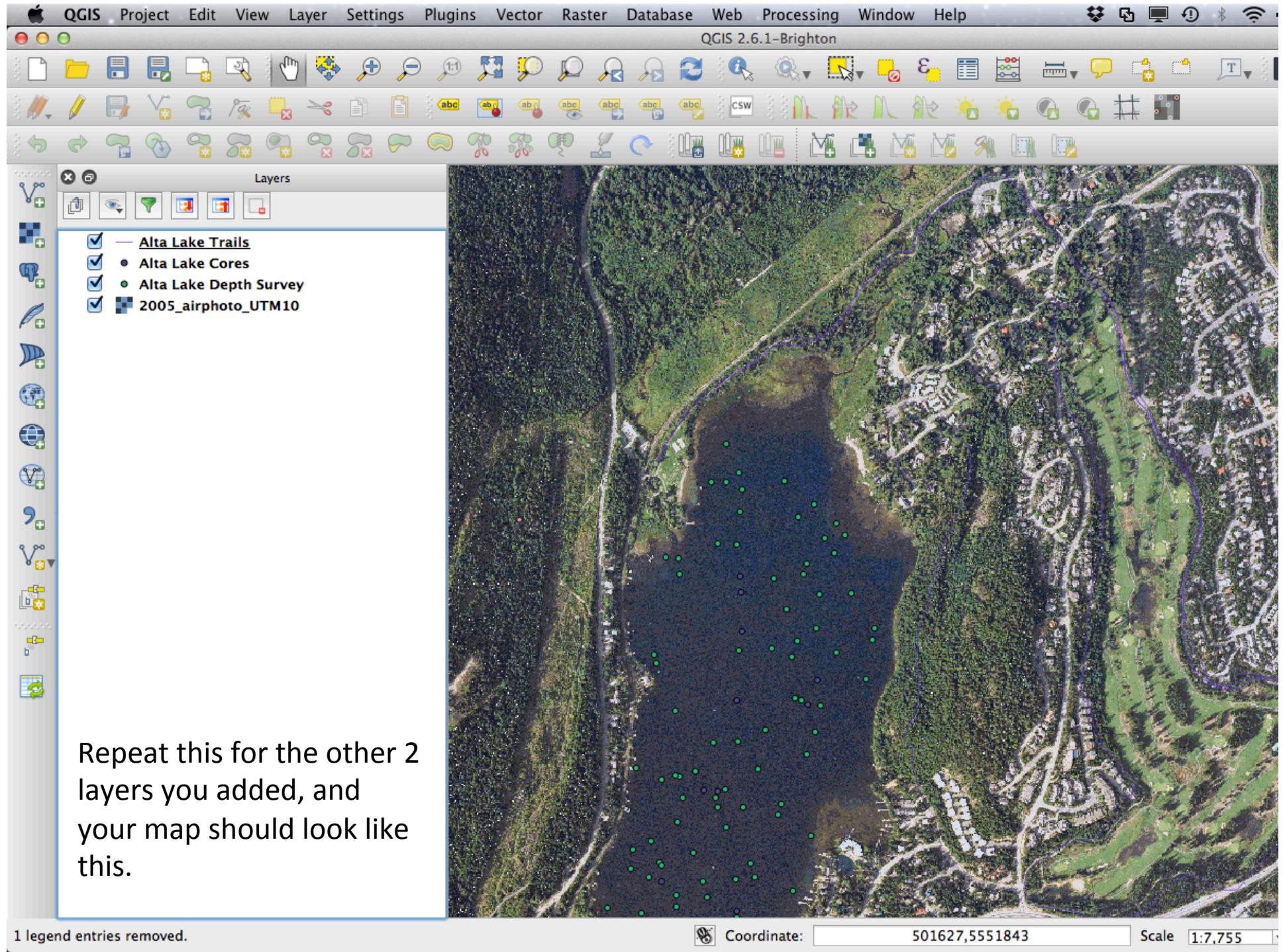
Properties
Rename
Copy Style

We can remove the old layer so that now we are only working with the new shapefile layer.

1 legend entries removed.

Coordinate: 500603,5552450

Scale 1:7,755



1 legend entries removed.



Coordinate:

501627,5551843

Scale

1:7,755

