Stop 2 Munson Mountain

[00:03] We're starting our field tour up on top of Munson Mountain, which unbeknownst to most people is a volcano. “What?” I hear you ask, “There's a volcano in Penticton?” Mhhmm. The cool thing about this volcano though is that it wasn't actually formed here, it was formed much further to the east. Well how on earth did it get here? Another question we want to answer, why is Okanagan Lake where it is today? Why does the Okanagan valley have the shape that it does? Well, to start telling this story we have to go far back in time to the formation of British Columbia. British Columbia was formed by the process called accretion of terrains. Volcanic island arcs off the coast were pushed via plate tectonics up onto the North American Crater. In doing so we created these north-south trending valleys, one of which is the Okanagan valley. Now the Okanagan valley actually came into being when those pushing forces relaxed. At that point in time we also got this volcanic activity which created Munson Mountain. As I said though, Munson Mountain wasn't created where it is located today. Instead, it was further to the east, again closer in time to today we had other movements. Uplift to the east which pushed some of those volcanic features um to slide down off to the west. Now the Okanagan valley, it sits at the boundary between two major geologic belts the um the Intermontane belt to the left and the Omineca belt to the right or to the east sorry, the Omineca belts to the east and the intermontane belt is to the left. This is the major reason why we have such different types of rocks on the east side of Okanagan Lake compared to the west side.

[02:03] ***Words on screen:*** *A bit more detail on the plate tectonic action.*
Let's take a look at the formation of B.C. in a little more detail. So, this all occurred during the Jurassic period which lasted from 180 to 60 million years ago. At this time the North American craton, basically it ends at the Rockies where Alberta is, was moving to the west. At the same time an intermontane super terrain had gathered together off the coast from a series of volcanic island arcs was heading east. When these two masses crashed into each other, material that had been on the seafloor off the coast of the craton was pushed up to form the Rocky Mountains. With the forces involved in the intermontane, the intermontane super terrain smashing into the craton, the Omineca belt, so the region sitting closest to the craton, was metamorphosed.

[03:19] During an Eocene from 55 to 34 million years ago we saw a major change in the forces that were being applied to our area of interest. Instead of being compressed, we had relaxation off to the west here. With this crustal relaxation and crustal thinning, we got a lot of volcanic activity. At the same time the climate was a lot wetter and so large river systems developed. It was large paleo river systems, such as those that contributed to the White Lake formation. During this time the Penticton group volcanics were also developed. So, these are interlayered formations of material deposited by volcanic eruptions covered up by paleo river deposits covered up again by volcanic eruptions.

[04:20] It was during the Oligocene 36 to 24 million years ago that the Okanagan fault finally pulled apart to create the Okanagan Valley. Two forces combined, uplift of the Okanagan metamorphic complex which created the Monashee Mountains and this continued tensional force

pulling off to the west. The result was the Penticton group volcanics, the volcanic and sedimentary formations that had been sitting on top of the metamorphics, slid off to the west leaving stranded on the east side of the lake Munson Mountain. Now I say east side of the lake because in the south Okanagan the Okanagan fault runs pretty much straight through the center of the valley, which is straight through the middle of the lake. Now the Okanagan fault is a normal fault, the foot wall rose.

[05:16] ***Words on screen:*** *Back to the view...*
Before we move on let's do a 360 tour of all the different places that we can see from here many of these you'll visit as you go through your field trip today. So starting to the north behind me we have the beautiful Naramata bench, which is some very delicious wine growing on top of some sediments deposited by glacial processes. Further into the distance, um you can see Okanagan Mountain Park. Moving around the very deep um rather large Okanagan Lake which runs all the way from north of Vernon down here to Penticton. On the west side of Okanagan Lake, you'll notice a number of features that look um smooth on one side and like little drop-offs on the other. So one of the most famous is Giant's Head. Moving further around we have Mount Nikwala. Now both of these were formed by a combination of volcanic and glacial processes. Underneath um closer down to the lake you see the silt cliffs again deposited by glacial processes. Moving around even further sitting down here on this very, very flat area we have Penticton itself in full bloom in these lovely fall colors. In the distance, you see the other lake that we have sandwiching us here in Penticton, Skaha Lake. Now once upon a time, Okanagan Lake and Skaha Lake were one lake and you'll learn in a different field stop how Penticton itself came to be where it is. Moving all the way around here to the east we have Campbell Mountain famous as a local very excellent place to go mountain biking provided you can stay on the trails. Also, home, not so much a geomorphological feature but very important to the local community is the landfill. Enjoy.