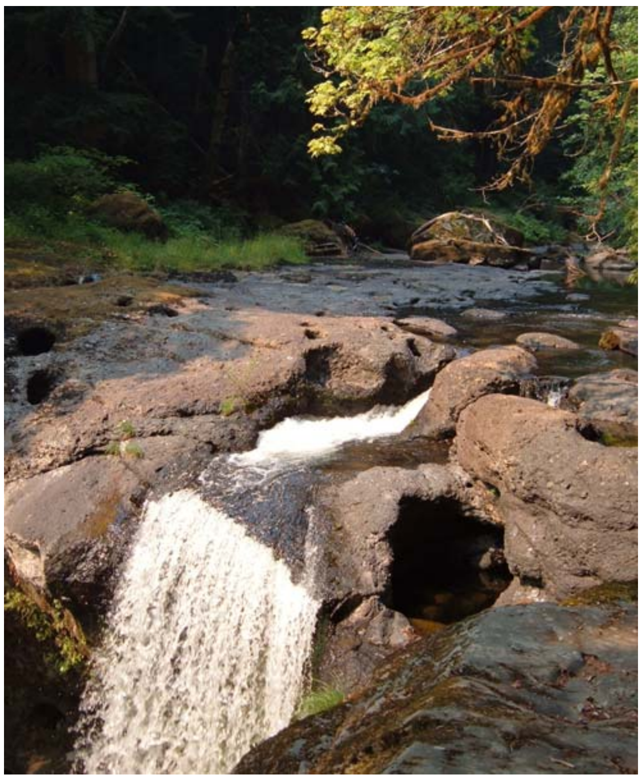
Where are the waterfalls?

Elk Creek Falls is alongside Forest Road 33 at milepost 57. Park at the Elk Creek Falls and Big Tree Trailhead. The trail to the left leads 0.1 mile to the waterfall and there is a picnic site at the end of the trail.

To reach the Coquille River Falls take Forest Service Road 33 to its junction with Road #3348. Follow this road for 1.6 miles to the Coquille River Falls Trailhead. The 0.5 mile trail goes downhill through a stand of undisturbed Douglas-firs and Port-Orford cedars. When you reach the falls be careful since the trail is steep, often wet, and footing can be insecure.

A third major waterfall on the South Fork of the Coquille River can be found by driving another 1.9 miles up Road #3348. This waterfall can be seen from the road, but be careful as there is not a designated parking space or viewing area. A short path leads to the falls, but it is very steep and should only be hiked with extreme caution. Several smaller waterfalls can be found in this general area.



Waterfall 1.6 miles above Coquille River Falls

The Geology of Waterfalls Along the Coquille River

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Lower Coquille River Falls

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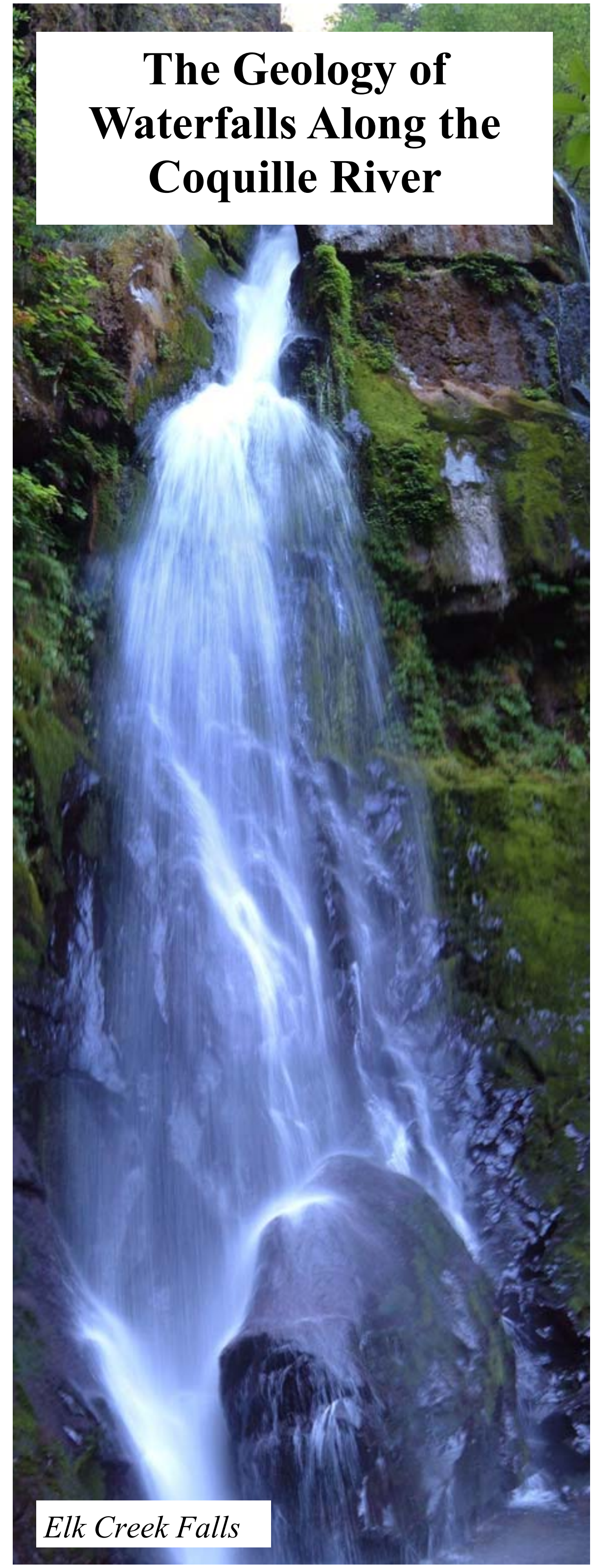
Created by Peter Douglas, August 2005

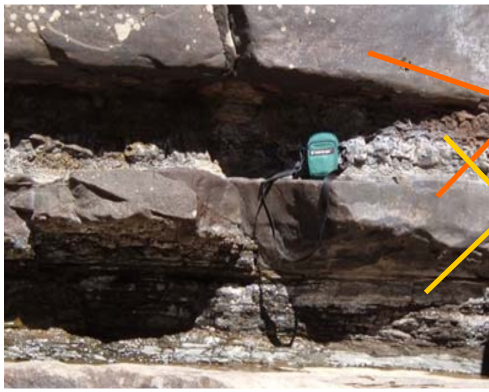
The Geology of Waterfalls Along the Coquille River



Elk Creek Falls

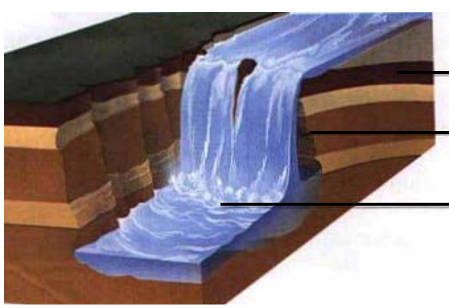
How did the waterfalls form?

The bedrock in the area where the waterfalls form is composed of layers of different types of sedimentary rocks, which together are called the Tyee Formation. These rocks include siltstone, sandstone and a rock made up of gravel and pebble size rock fragments called conglomerate. Streams can easily erode and form channels in the soft siltstone layers, but the sandstone and conglomerate layers are much more resistant to erosion. These resistant layers form a cliff over which streams drop vertically, creating a waterfall.



Example of layered rock at Coquille River

Often cliffs that form waterfalls will be made up of different types of rock. A resistant layer at the top of the cliff, called a caprock, prevents the erosion of softer layers underneath . The waterfalls along the Coquille River have a caprock of conglomerate. As the water flows over the cliff, however, it can erode the softer layers underneath the caprock. As these layers are eroded away the caprock is left as an overhang until finally it cannot support itself and falls as a large block. The waterfall above the Coquille River Falls has a particularly well developed overhang. Once the caprock ledge fails, a new waterfall forms behind it.



Cross-Section of a waterfall

As a stream plunges over a waterfall it gains kinetic energy. This increased energy allows it to erode away the rock directly below the waterfall and excavate a large basin called a plunge pool. Plunge pools are especially large at The Coquille River Falls.

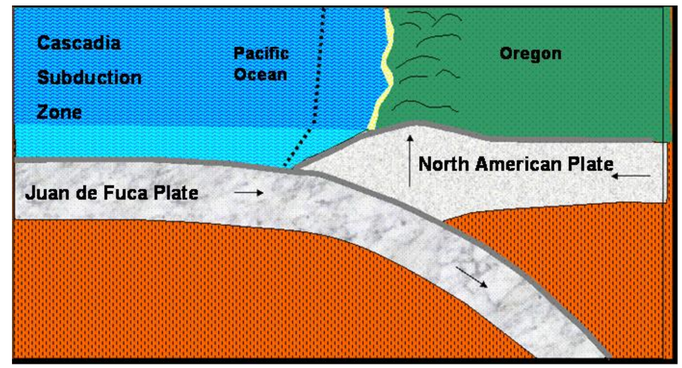
Meanwhile, waterfalls slow down erosion upstream because the stream channel cannot be incised below the level of the waterfall. This means that streams are often calmer above a waterfall. Half a mile above the second waterfall on Road #3348 the South Fork of the Coquille River becomes much flatter and flows more slowly than it does below the falls.

Pothole at Coquille River Falls– when water levels are higher the sand and gravel in the hole are spun around and erode more rock.

One unique feature that often forms around waterfalls are potholes, small circular holes within the surface of a rock. These holes form when sand and gravel is swirled around by water and drills into the rock below. The increased energy of streams near waterfalls make ideal conditions for forming potholes. During the summer when water levels are lower, many potholes are exposed and can be easily seen at Coquille River Falls.

Geologic History

The rocks of the Tyee Formation were deposited between 57 and 36 million years ago when this part of Oregon was underneath a large bay. The sediments that form the rock layers were brought to the bay by ancient rivers. Depending on changes in sea level and climate, at some times these rivers would deposit coarse sediment that formed conglomerate, and at other times they would deposit sand or silt. For instance, during large storm events the rivers would flood and bring larger sediment further into the ocean basin, while when the rivers were calmer they would deposit silt. After these sediments were deposited they were buried by other sediments and slowly compressed into rock.



Cross-section of Cascadia Subduction Zone

Southwestern Oregon is tectonically active due to the Cascadia Subduction Zone to the west. As the dense oceanic crust of the Juan de Fuca plate is pushed underneath the less dense continental crust of the North American plate, the Oregon coast is elevated at a rate of 2-5 mm/year. This regional uplift has pushed the rocks of the Tyee formation to their current elevation, which allows water to flow over them and create waterfalls.

Local uplift occurs through motion along faults where rocks slide past each other. To the west of the waterfalls there is a major active fault, the Coquille River fault, which is partly responsible for uplifting the rocks of the Tyee Formation in this area. In many places the South Fork of the Coquille River follows this fault because as the fault breaks up rocks it makes it easier for the river to erode a

Sources– Baldwin, E.M.. and Beaulieu,J.D., 1973, Geology and Mineral Resources of Coos County, Oregon: Oregon Department of Geology and Mineral Resources Bulletin 80.
Waterfalls, www.kented.org.uk.