

The IAFI Puget Lobe Chapter monthly newsreel:

Introduction to the Milankovitch Theory, Ch 12, p. 1

This month, the Newsreel continues the trip back down to FS23 where we will look at the beginning of the outwash channel(s) on the east side of “Colonnade Hill” originating from the ice sheet/glacier snout and flowing south until the South Fork of the Skokomish River bisected it. When the South Fork bisected the outwash channel near the High Steel Bridge, the South Fork “followed” the outwash channel and developed the deep gorge you see now - you will see remnants of the outwash channel on the bluffs overlooking the river. Remnants are overlaid on the Lidar image will be aerial photo images showing the current view.

If time allows, you will also see the outwash channels that formed to the east towards the North Fork. A truly amazing area.

Note: there is another high steel bridge to the south of Grisdale over Vance Creek. It is, like the High Steel Bridge on FS2340, a remnant of the logging industry, and crosses over Vance Creek. There have been injuries climbing on it (ignoring safety concerns and common sense). So don't! Just a reminder that the High Steel Bridge on FS2340 is used by area Search and Rescue for training. You wonder!

The IAFI Puget Lobe Chapter monthly newsreel:

Introduction to the Milankovitch Theory, Ch 12, p. 2

Below are some mileage and approximate driving time from the intersection of US101 and points of interest.

When you turn west off US101 at the bottom of Purdy Canyon (coming north from Shelton) or south on US101 at the George Adams Fish Hatchery (W. Skokomish Valley Road) you will be entering the Skokomish River Valley. The Skokomish River has two forks, the south and the north forks. Our travels will follow the South Fork. Interestingly, the current South Fork has cut the canyon since end of the Fraser Glaciation. The “original” south fork* has not been found.

Mileage	Time	Elevation	Location	Comments
On FS 2340 we visit			High Steel bridge Dennie Ahl Hill area	Old logging railroad bridge Remnants of Eskers and outwash channel features

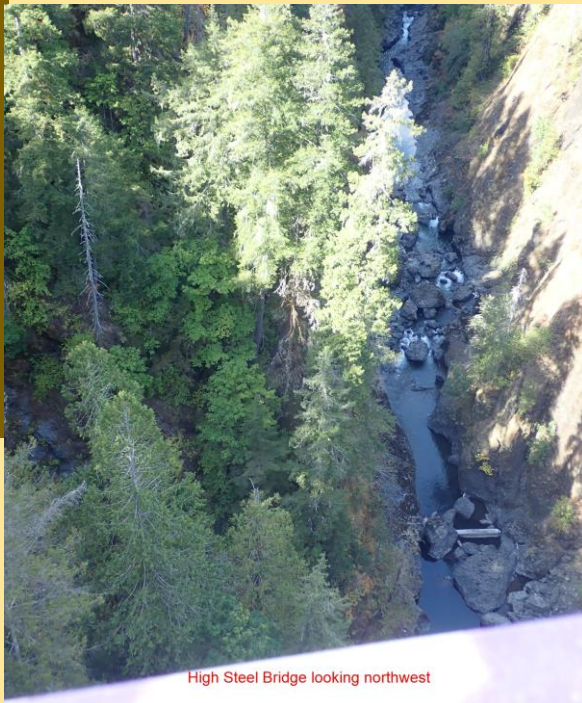
On our way back we want to point out on the Lidar image three Crag and Tail features on the east side of Colonnade Hill. And a draft approximation of Skokomish and Hood proglacial lakes shoreline.

The IAFI Puget Lobe Chapter monthly newsreel:

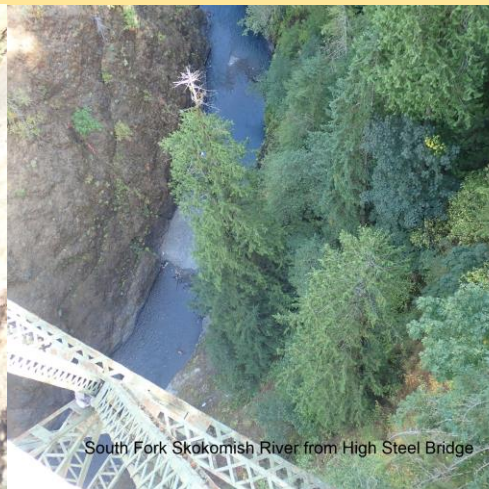
Introduction to the Milankovitch Theory, Ch 12, p. 3

We drove up FS2340 towards Dennie Ahl Hill. Along the way we paused to walk across the High Steel Bridge to appreciate the erosive power of the South Fork of the Skokomish River on the underlying basalt.

The South Fork Skokomish River has cut this canyon since the Fraser Glaciation termination.

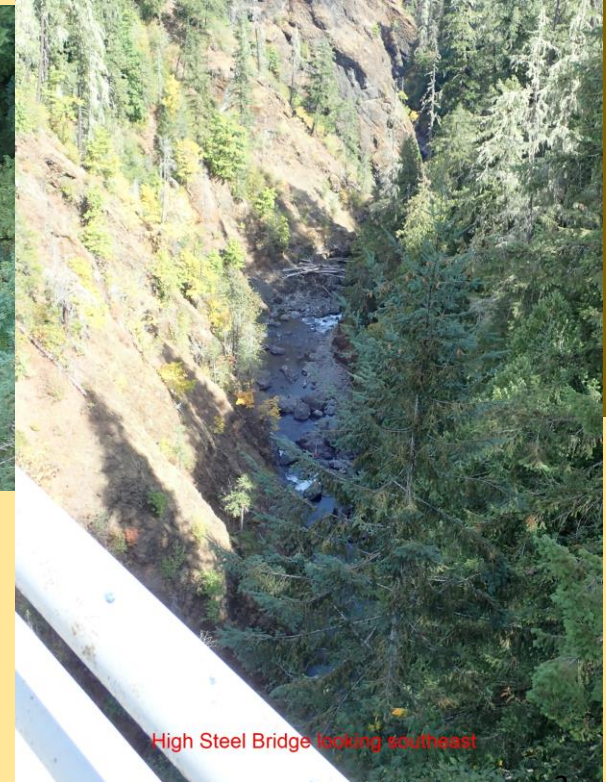


High Steel Bridge looking northwest



South Fork Skokomish River from High Steel Bridge

The canyon here is about 100+ feet deep.



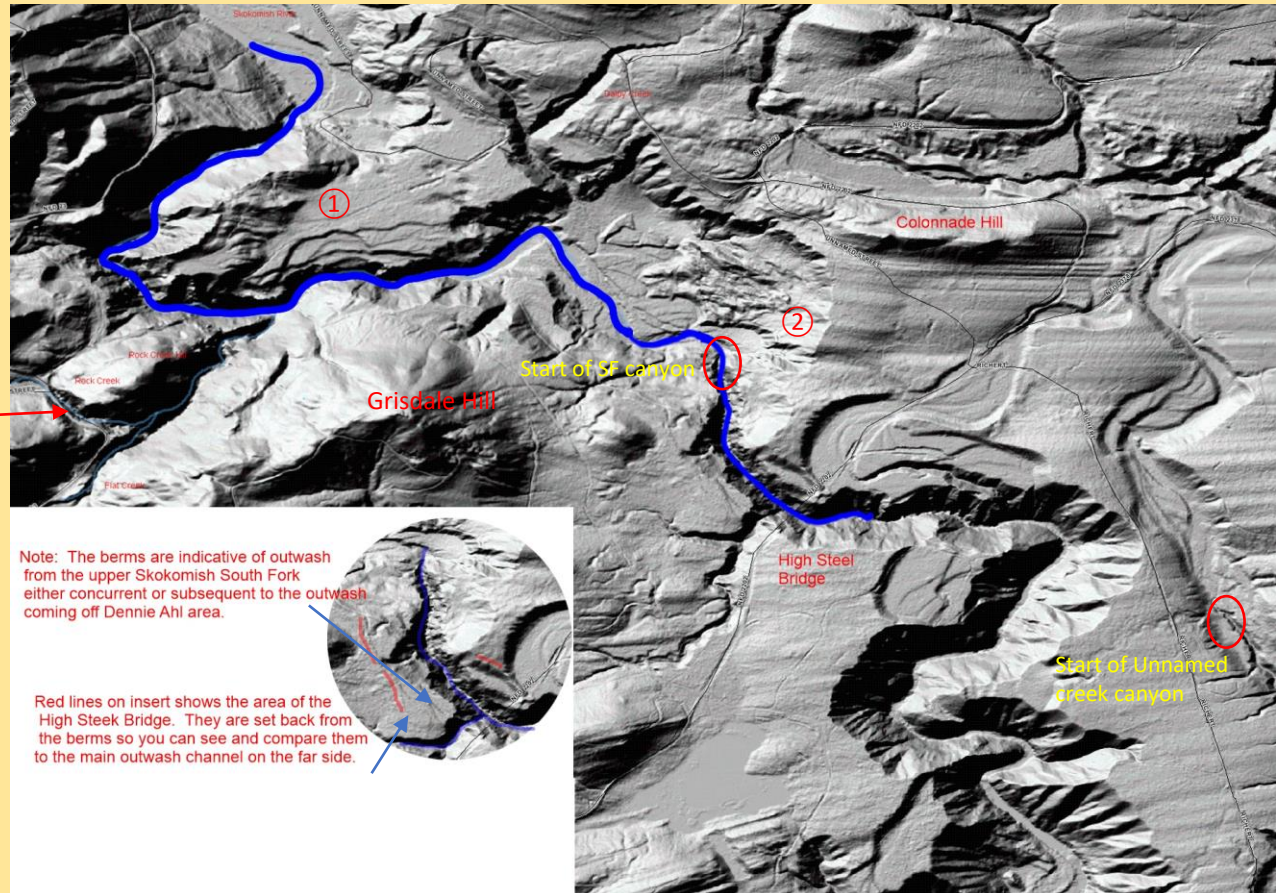
High Steel Bridge looking southeast

The IAFI Puget Lobe Chapter monthly newsreel:

Introduction to the Milankovitch Theory, Ch 12, p. 4

On FS2340 we headed towards Dennie Ahl Hill. Now we look at the origination of the South Fork from where it passes Rock Creek/Flat Creek a couple of miles above Grisdale on FS23.

The South Fork Skokomish River has cut its' canyon during / since the Fraser Glaciation termination.



FS23

This is a confusing area as shown by the twist and turns of the South Fork. As the South Fork flows north of Grisdale Hill and turns SE towards the High Steel Bridge you see remnants of outwash berms ① and possible liquefaction? ② of the hillside SW of Colonnade Hill. Another Chapter.

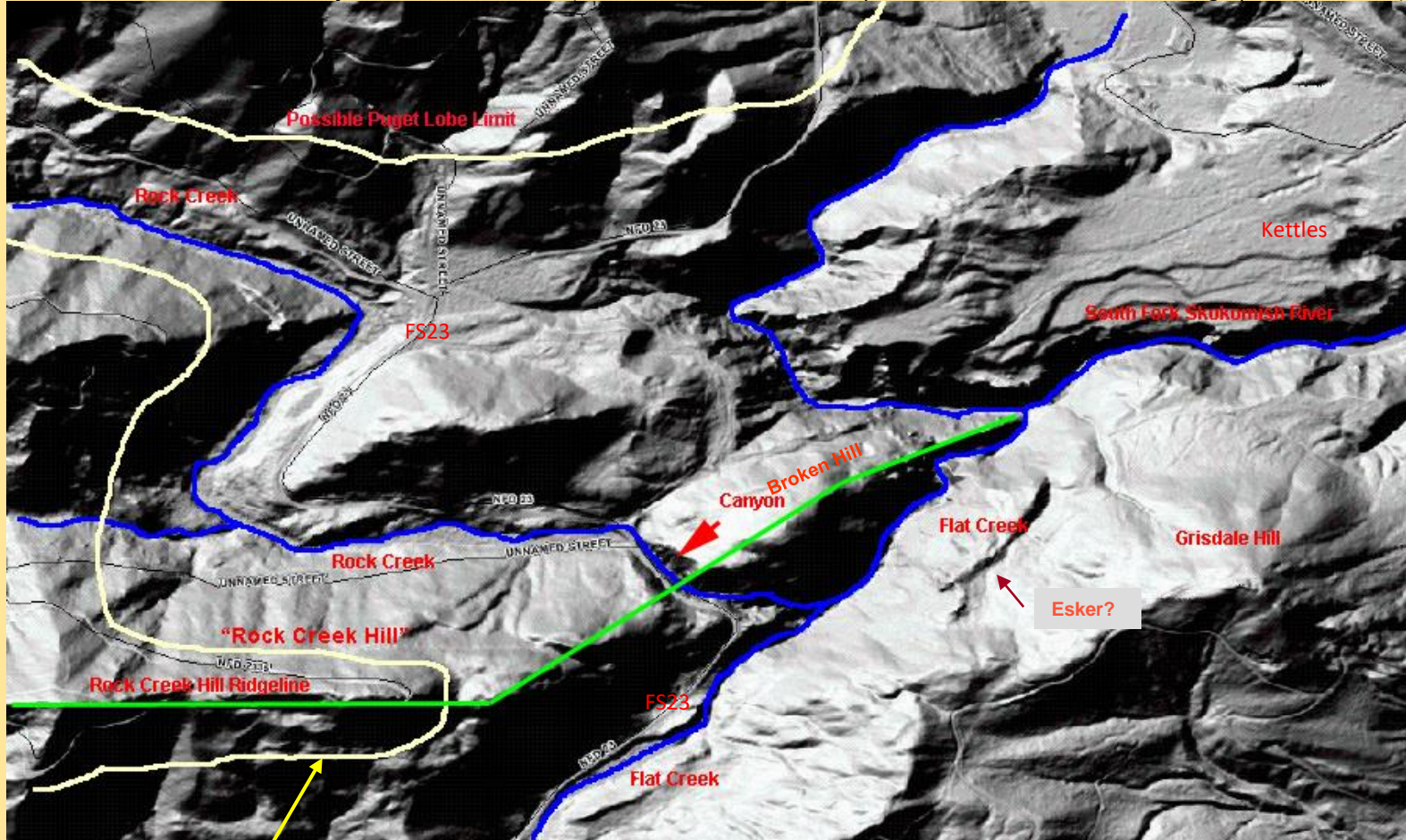
Note: The berms are indicative of outwash from the upper Skokomish South Fork either concurrent or subsequent to the outwash coming off Dennie Ahl area.

Red lines on insert shows the area of the High Steel Bridge. They are set back from the berms so you can see and compare them to the main outwash channel on the far side.

The IAFI Puget Lobe Chapter monthly newsreel:

Introduction to the Milankovitch Theory, Ch 12, p. 5

- **Rock Creek Lidar w/annotations** (in Ch 13 we will visit the "Canyon" located in the lower middle of graphic – red arrow)

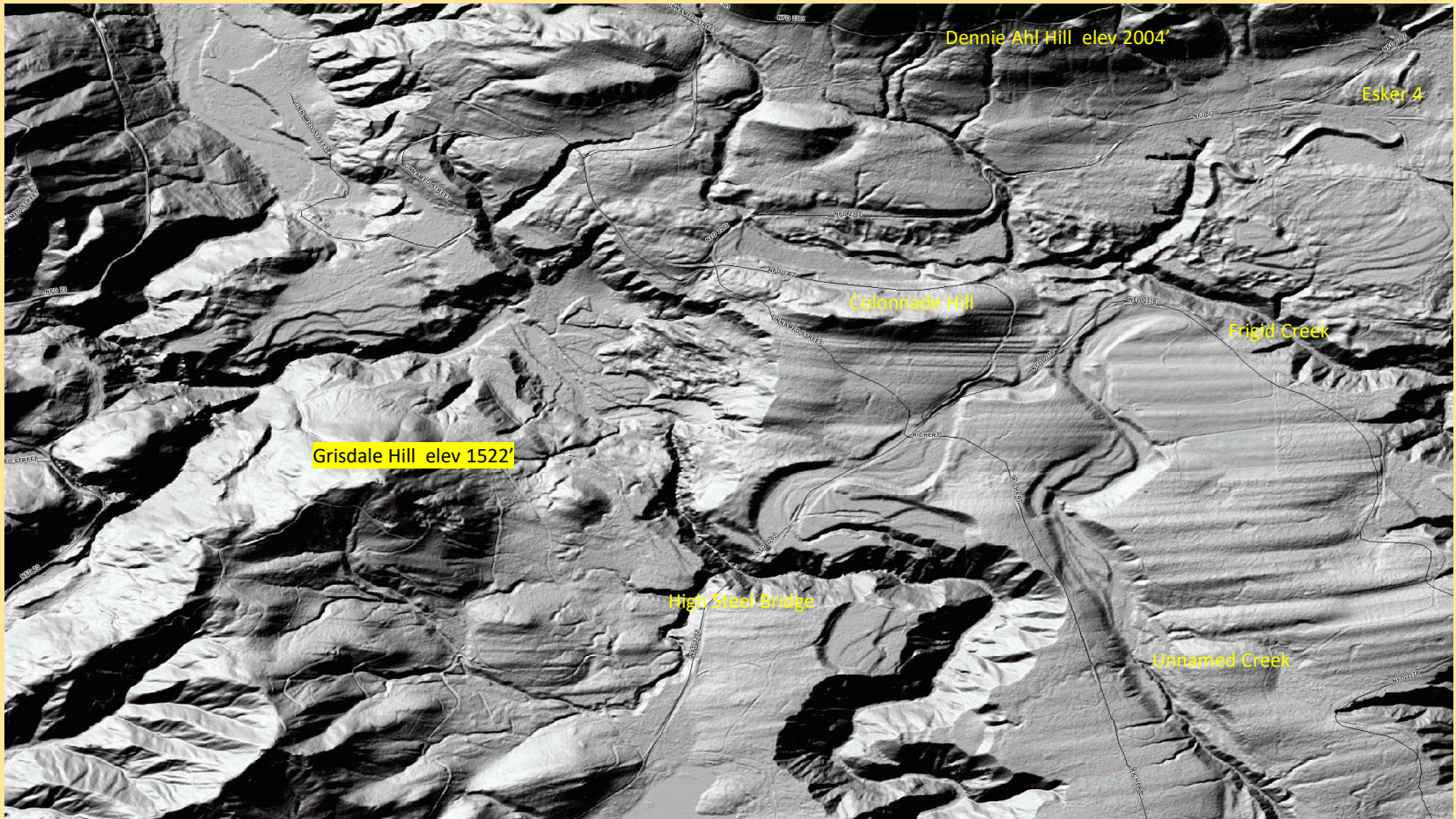


Yellow line is extent of Puget Lobe in this area.

Lidar provided by USGS

The IAFI Puget Lobe Chapter monthly newsreel:

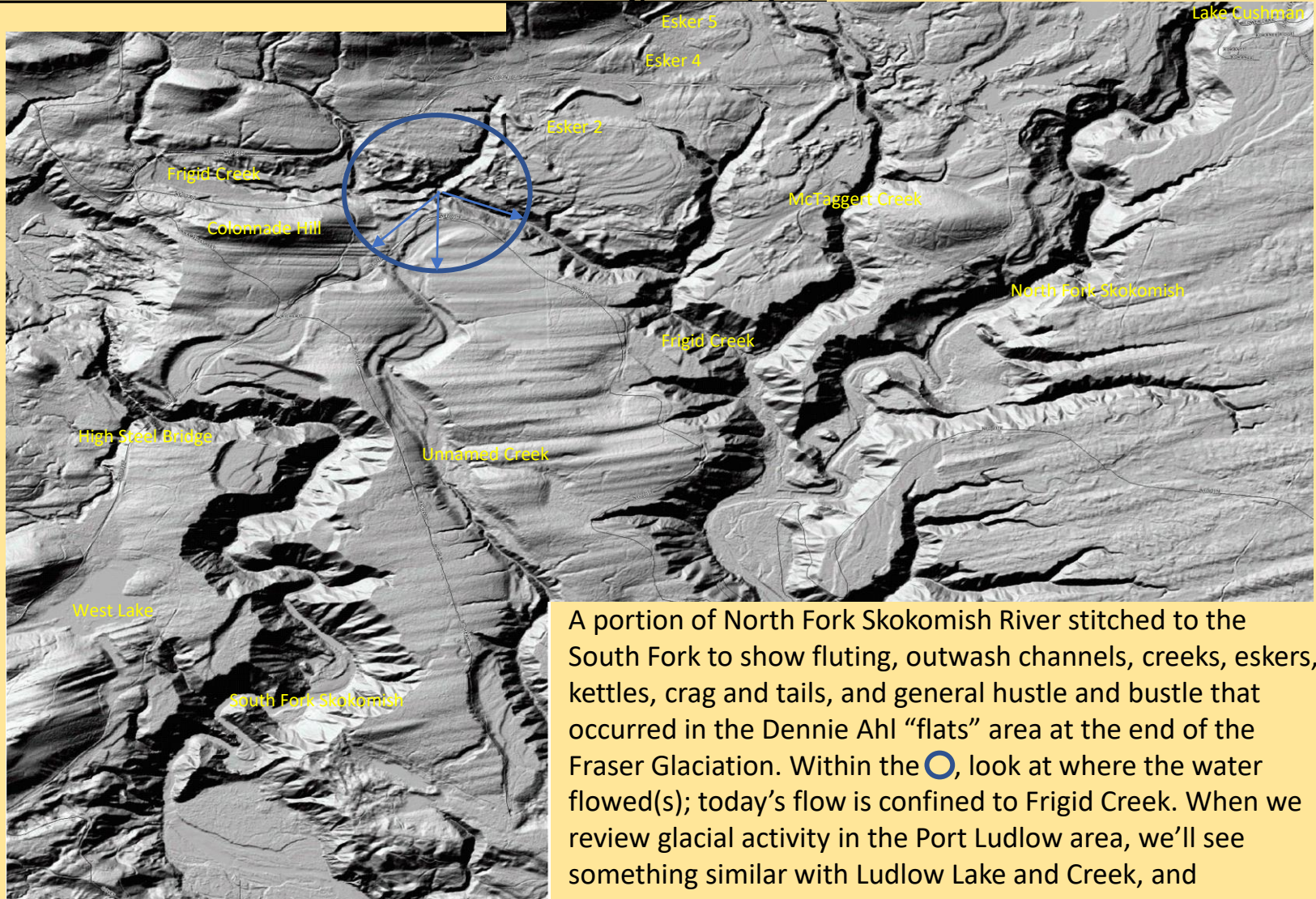
Introduction to the Milankovitch Theory, Ch 12, p. 6

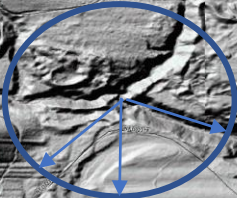


An overview of the “Dennie Ahl Esker Field West” and South Fork of the Skokomish River

The IAFI Puget Lobe Chapter monthly newsreel:

Introduction to the Milankovitch Theory, Ch 12, p. 7



A portion of North Fork Skokomish River stitched to the South Fork to show fluting, outwash channels, creeks, eskers, kettles, crag and tails, and general hustle and bustle that occurred in the Dennie Ahl “flats” area at the end of the Fraser Glaciation. Within the , look at where the water flowed(s); today’s flow is confined to Frigid Creek. When we review glacial activity in the Port Ludlow area, we’ll see something similar with Ludlow Lake and Creek, and Horseshoe Lake.

The IAFI Puget Lobe Chapter monthly newsreel:

Introduction to the Milankovitch Theory, Ch 11, p. 8

The outwash channel from “Colonnade Hill” to the High Steel Bridge shows a massive movement of water for considerable time and; then, concurrent with the outwash channel down “Unnamed Creek”. The “Unnamed Creek” looks like it scoured a deeper channel and deprived the “Colonnade Hill”/High Steel Bridge outwash channel of water. Then, the amount of water flowing down Frigid Creek cut a deeper channel and siphoned all water towards the North Fork down Frigid Creek.

Notice that “Unnamed Creek”* received enough water to build its own canyon.

We are looking at the possibility that some of these features resulted from water being backed up by Lake Skokomish and/or Lake Hood during deglaciation. See OFR081-370 (Preliminary) A comparison between OFR 81-370 and a map scaled at 1:250,000 is in work. Notice that the LGM for the Fraser Glaciation on page 5 of the Newsreel or page 11 of the Zoom meeting slide (lower right-hand corner) shows the extent of glacial ice in the upper SF Skokomish River.

* A search of USGS, DNR, and US Forest Service documents/maps has not identified the creek; however, the road next to it has had two different names (Richert/Sampson) on older maps.

The IAFI Puget Lobe Chapter monthly newsreel:

Introduction to the Milankovitch Theory, Ch 12, p. 9

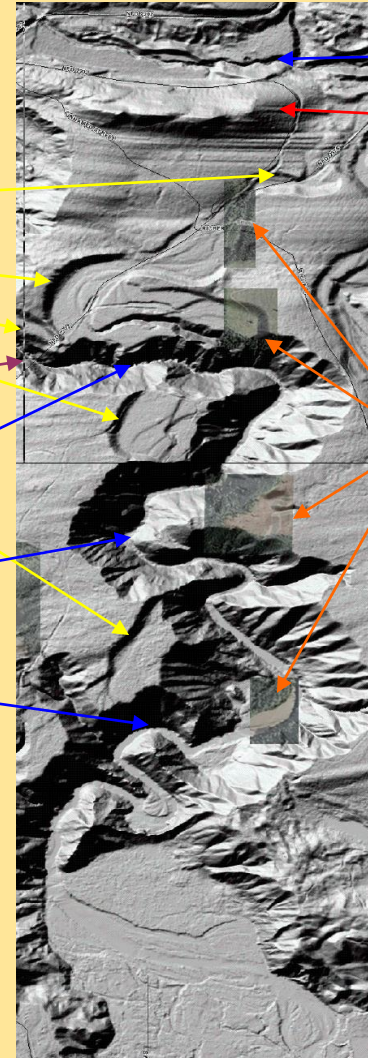
Lidar of Skokomish paleo channel and Holocene South Fork Skokomish River channel.

Course of Skokomish outwash channel (paleo channel)

The paleo outwash channel is flat, winding, and terraces are visible

High Steel Bridge Location

South Fork Skokomish River channel



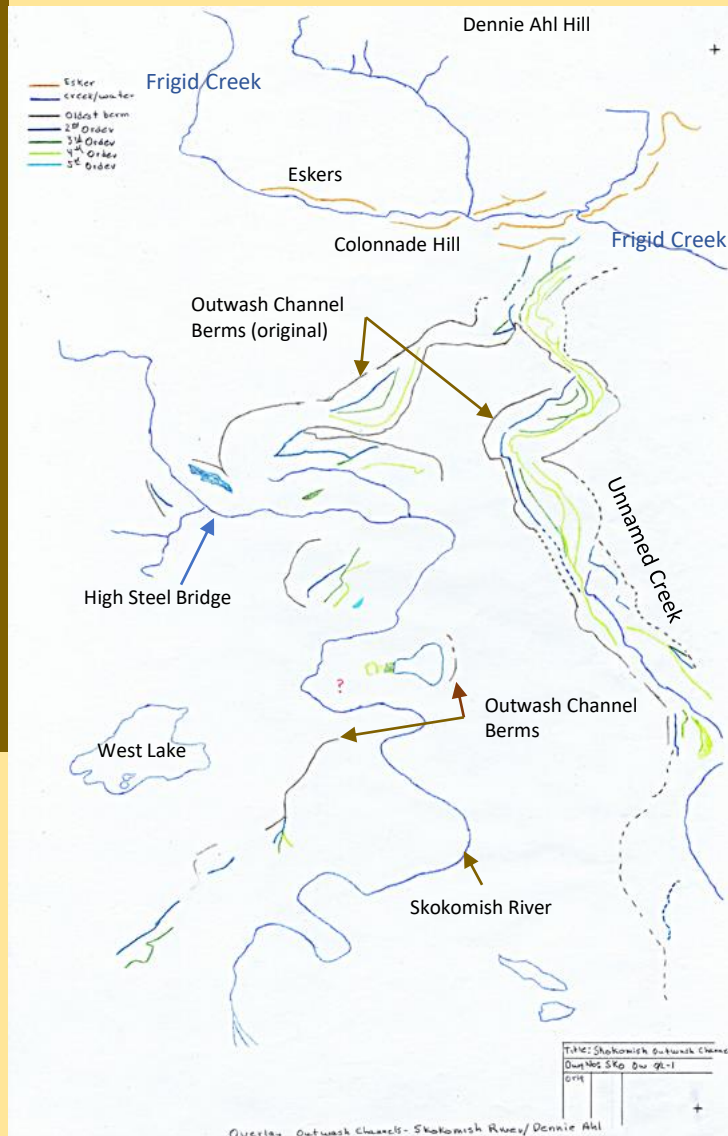
Frigid Creek

Colonnade Hill

Aerial photo superimposed upon Lidar

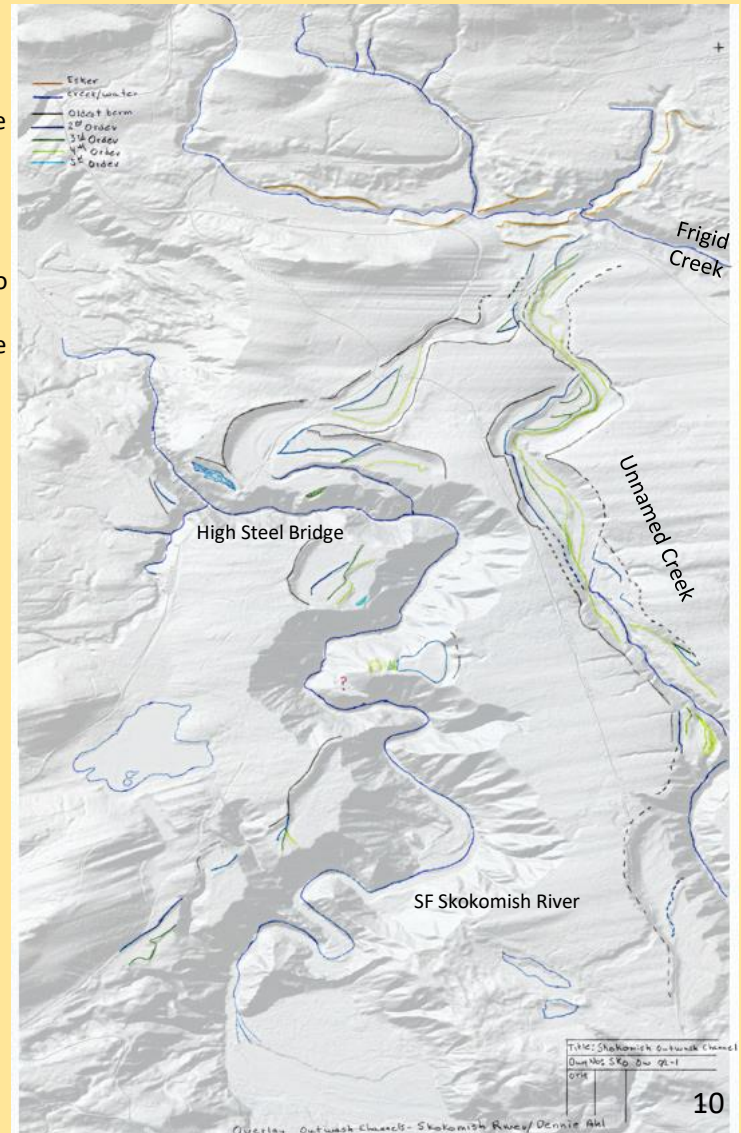
The IAFI Puget Lobe Chapter monthly newsreel:

Introduction to the Milankovitch Theory, Ch 12, p. 10



The area above High Steel Bridge is subject to further investigation to better understand the outwash process.

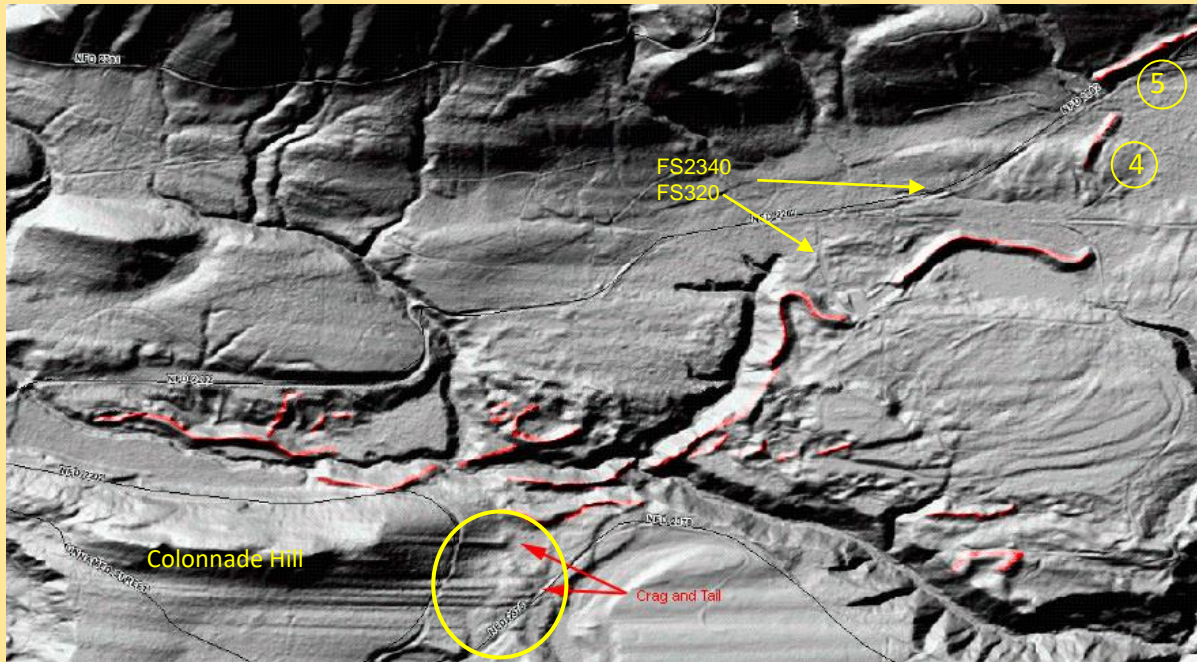
However, by tracing the berms we can get some idea of how the flow of water cut the outwash channels.



The IAFI Puget Lobe Chapter monthly newsreel:

Introduction to the Milankovitch Theory, Ch 12, p. 11

A look at the Crag and Tail and two samples where FS2340 cuts them:



A Crag and Tail is defined as a bedrock knoll or small hill with a gently abraded slope on the up-ice side (stoss) and a steeper rougher plucked slope on the down-ice side (lee)...where the ice velocity is high enough and the effective normal pressure sufficiently low to allow cavities to open. They form preferentially therefore in areas of thin and fast-flowing ice. (Bennett, p. 120.

When we get to Port Ludlow, we will find another form of stoss and lee features – a Roché moutonnée west of SR19

The craig and tail formation is noticeable in this lidar image. There are possibly four on the east side of "Colonnade". However, no pictures are available of the Crag, Just the exposure of the Tails in the roadcut along FS2340

The IAFI Puget Lobe Chapter monthly newsreel:

Introduction to the Milankovitch Theory, Ch 12, p. 12



A view looking uphill - definitely humped



Tail showing composition of material

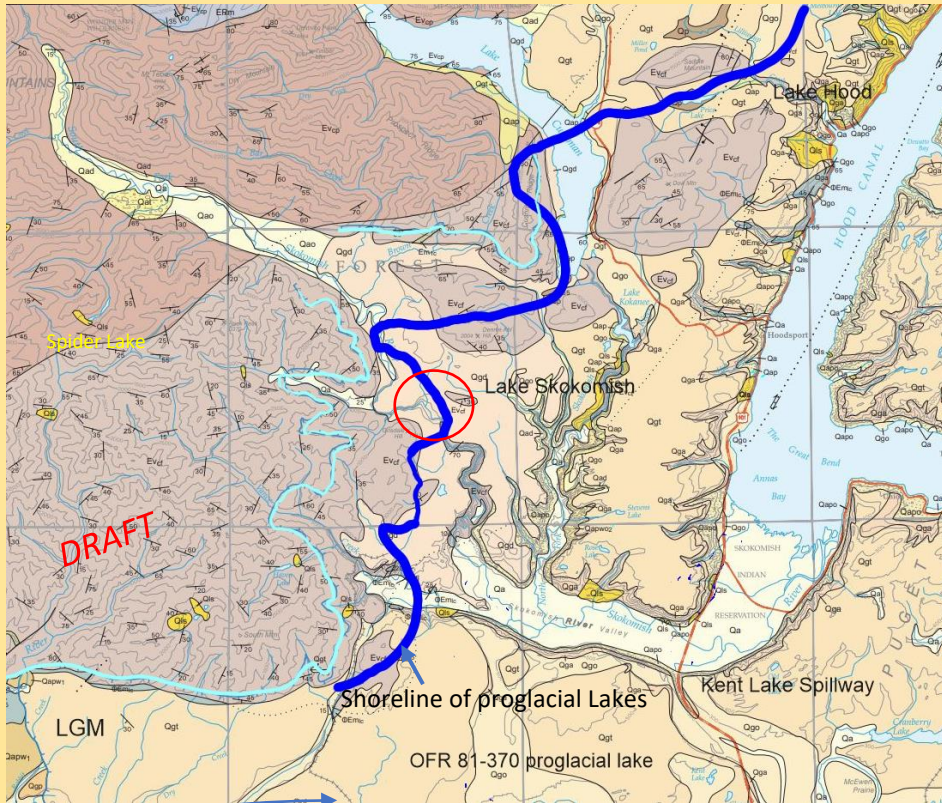
The crags have not been located; however, during the 2022 summer season a field trip is scheduled to find and photograph them



FS2340 showing location of two tails

The IAFI Puget Lobe Chapter monthly newsreel:

Introduction to the Milankovitch Theory, Ch 12, p. 13



OFR 81-370, preliminary or final releases are not found in the USGS database. However, the outline for the Lake Skokomish and Lake Hood found in the preliminary release is used here for illustration purposes only.

The presence of proglacial Lake Skokomish may explain the “odd” features above the current SF Skokomish canyon. The potential proglacial lake at the head of the Fraser ice sheet did back up water into Clear Creek prior to deglaciation (LGM). A look in a stream cut will show compression waves in the sediment. But more important will be finding of three erratic's on the hillside above the current lake that are possibly pre-Fraser.

When we visit Spider Lake in the March 2022 monthly newsreel, we can show the proglacial lake of the SF Skokomish River during LGM. (Light Blue lines are DNR location of LGM which end on the side of the valley). However, sediment from Holocene Alpine and Continental glacial deposits is a very narrow band (Qa), with Qao (gravel from Crescent Formation) and Qat (lodgement till) being present.

Notice where the interface between Qoa (Crescent Formation from Pleistocene) and Qgd (Drift from 14Kya - 12Kya) is located. Possibly where the South Fork Proglacial Lake was impounded by the Fraser Ice sheet.

We also need to look at the Clifton Channel south of Belfair (not shown) where water flowed out of Lake Skokomish and Lake Hood past Lake Devereaux towards Allyn and North Bay towards Olympia.

Also note the outwash channels along the bottom (Ogo) of the map; especially, the channel that provided a “level slope” for the railroad tracks running north to Camp Govey and beyond.

The IAFI Puget Lobe Chapter monthly newsreel:

Introduction to the Milankovitch Theory, Ch 12, p. 13

Well, we ran out of time and will continue with Chapter 13 in March. After reaching FS23 we'll turn right and follow it to the Rock Creek canyon. It very much looks like the north end the Rock Creek Hill was "undercut" by the South Fork of the Skokomish River and "broke" at Rock Creek. See Newsreel Slide 5 or this Zoom Slide 10.

From there we'll drive up to Spider Lake which in the winter provides water to Clear Creek (S. Fork Skokomish and year around to the Satsop River. (It's the earthquake \pm 1Kya that did this. And it caused another three lakes to be formed or reformed.)

Enjoy tonight's presentation and come back for the March lecture.