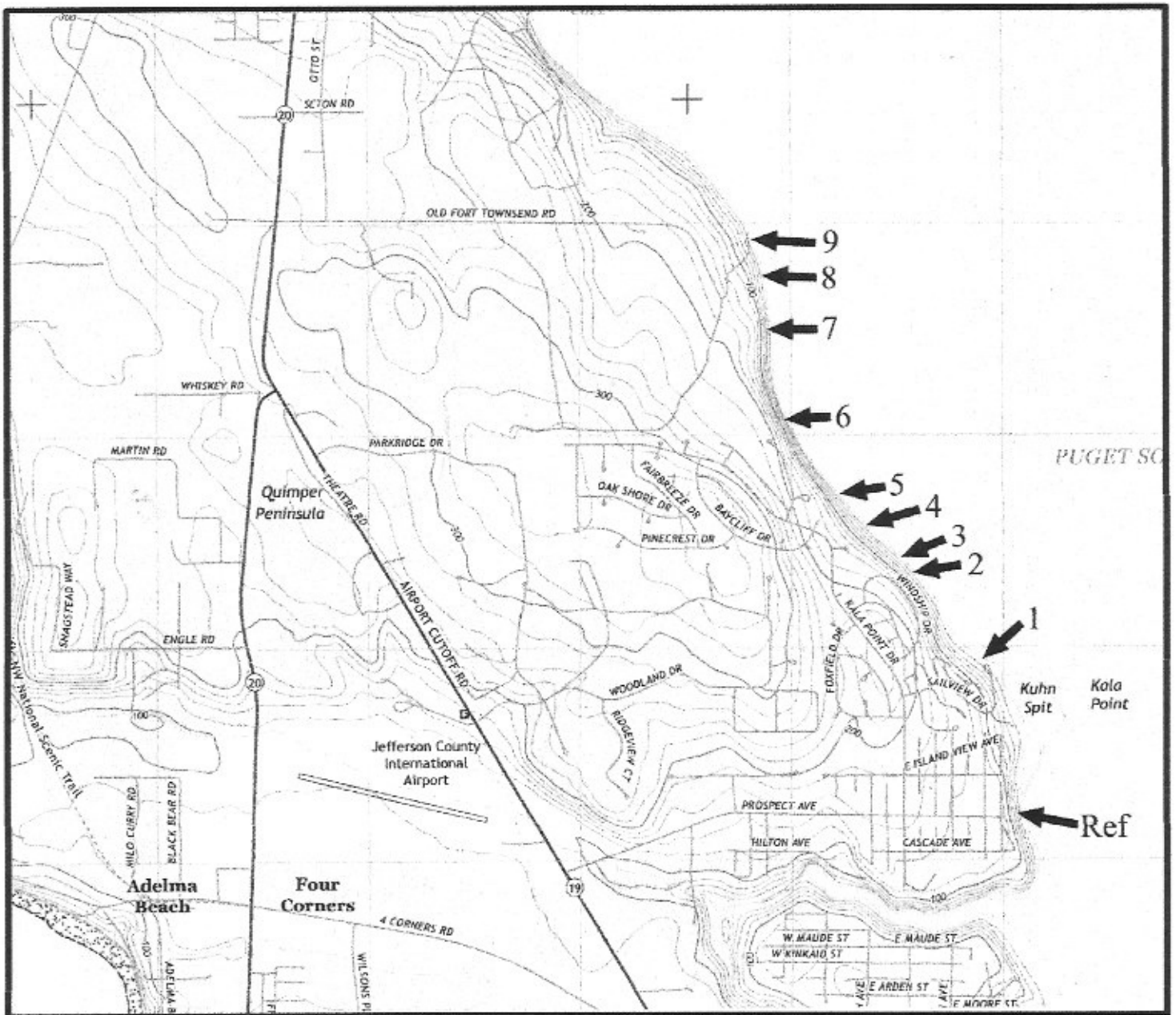


A black and white photograph of a cliff face showing distinct horizontal geological layers. The cliff is partially covered with trees and dense vegetation. The foreground shows a sandy or rocky slope leading up to the base of the cliff.

Kala Point Bluffs

**Jefferson Land Trust
Geology Group**

June 2018



Field trip Stop Locations

Location coordinates in stop descriptions

Ref = location of reference geological section south of the Kala Point spit.

Kala Point Bluffs Field Trip
June 16, 2018

Paul Loubere
Jefferson Land Trust

Locations and Talking Points:

(1) Kala Point Beach and Spit:

Questions:

Why is there a spit here?

Why isn't it curved?

Why doesn't it change, getting bigger or smaller, over time?

To talk about:

(a) Sources of material: sand, cobbles

(b) Forces – winds, set of the waves

(2) Base of bluff exposure: Location – 48 03.800'

Questions:

Why is there a bluff face here, what creates a steep edge?

There are two aspects to the bluff here, why?

To talk about:

(a) Aspects of the bluff, slopes, water

(b) Basic character of geological unit

(3) Erosion scarred bluff: Location – 48 03.822'

Questions:

Where are we relative to Kala Point?

What do we see in geological units, what differences do they have?

What aspects do the units have on the bluff face?

What does it look like is happening erosion-wise?

(4) Sedimentology of exposed units: Location – 48 03.885'

Questions:

What details can we see in the sed. characteristics of the exposed units?

What environments created these units?

What's the time frame?

What source and transport deductions can we make?

To talk about:

(a) Closer inspection of grain-size, distribution, cross-bedding, orientations

(b) Larger scale stratigraphy and bedding features

(5) *The erosion process in the bluffs below Kala Point: Location – 48 03.962'*

Questions:

What forces cause bluff erosion here?

How does erosion proceed, what is the sequence of events?

To talk about:

(a) Description of slide event and how it has proceeded over a winter season

(b) Movement of material and where it goes.

(6) *Building out the stratigraphic sequence: Location – 48 04.189'*

Questions:

What is happening to our stratigraphic units as we progress down the beach?

What is new here and where does it sit in relation to what we already know?

What characteristics does the new unit have, what environment formed it?

What are the unit boundary relations?

What does this new stratigraphy herald for the bluff erosion process?

To talk about:

(a) The characteristics which reflect a depositional environment

(b) The sequence of environments represented

(c) The significance of unit boundaries

(d) Implications of this section for the bluff erosion process

(7) *More added units: Location – 48 04.393'*

Questions:

What is new in the section we can see here?

What is happening to the units we have been following so far?

What can we see in the unit boundaries that tell us about environments over time?

To talk about:

(a) Till – types (lodgement) and features, what this represents

(b) Boundaries – disconformity and its significance

(c) Change in character of units laterally, paleo-topography and paleo-erosion

(8) *Old surfaces and changing landscape over time: Location – 48 04.549'*

Questions:

How does the sequence of strata here compare to earlier in the walk?

What sequence of events can we deduce from what we have seen?

How has the character of bluff erosion changed along our walk? Why?

To talk about:

- (a) Sequence of geologic events in time, the post-Olympia erosion surface
- (b) Topography and sediment movement in the Vashon interval
- (c) Character of bluff erosion and sediments on the beach
- (d) Character of the beach, set of the waves and sediment transport
- (e) Source of sediments – evidence for transport from the Cascades

(9) Fragmentation of the record – Location: 48 04.641'

Questions:

- What has been preserved and what removed in the geological record?
- How is time represented in the record we have seen?

To talk about:

- (a) Erosional unconformity surfaces and cross-cutting relationships
- (b) Summary of the stratigraphic/environmental story for this bluff section
- (c) Summary points about bluff erosion, forces at work, sediment transport

S

N

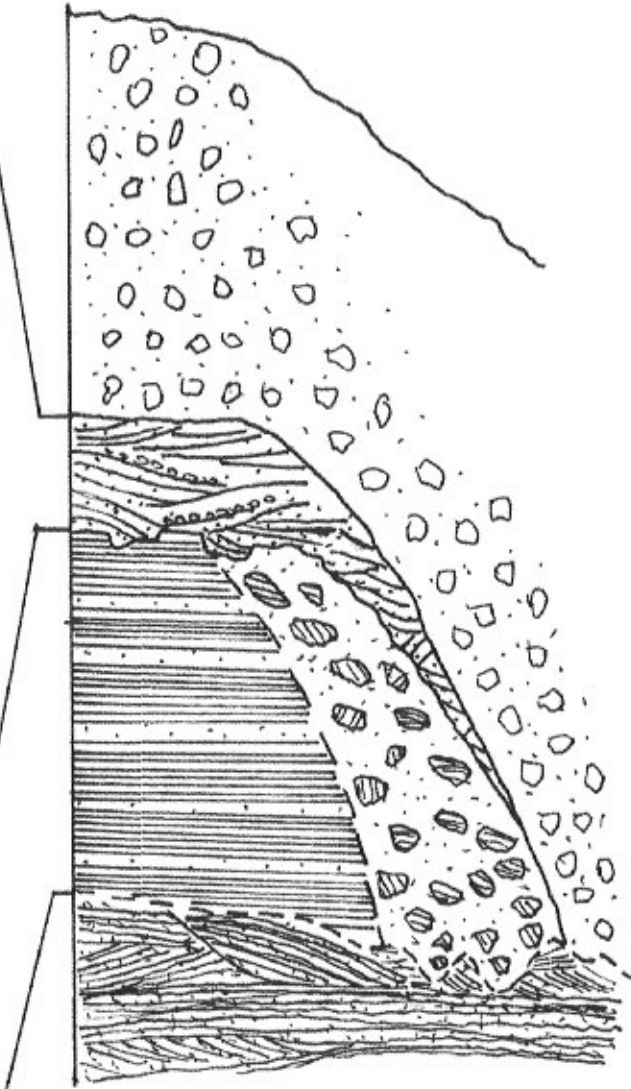
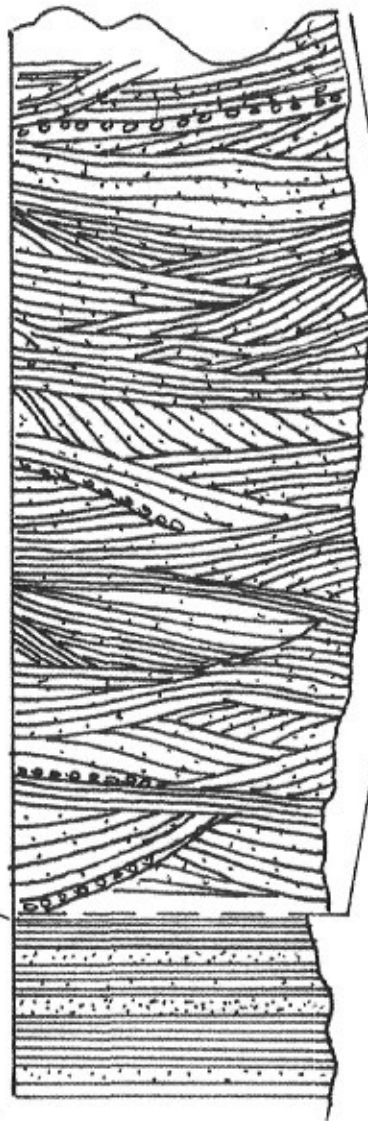
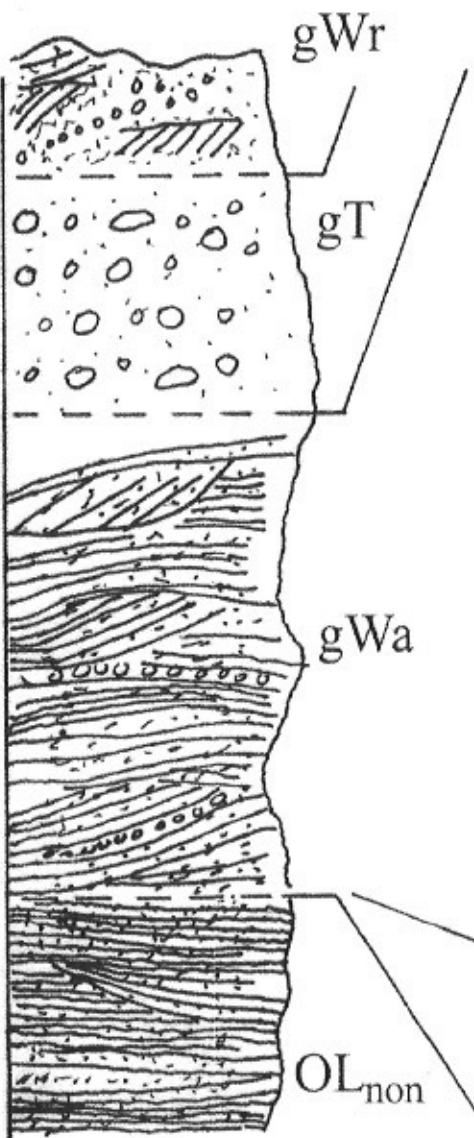
48 03.179

48 03.822

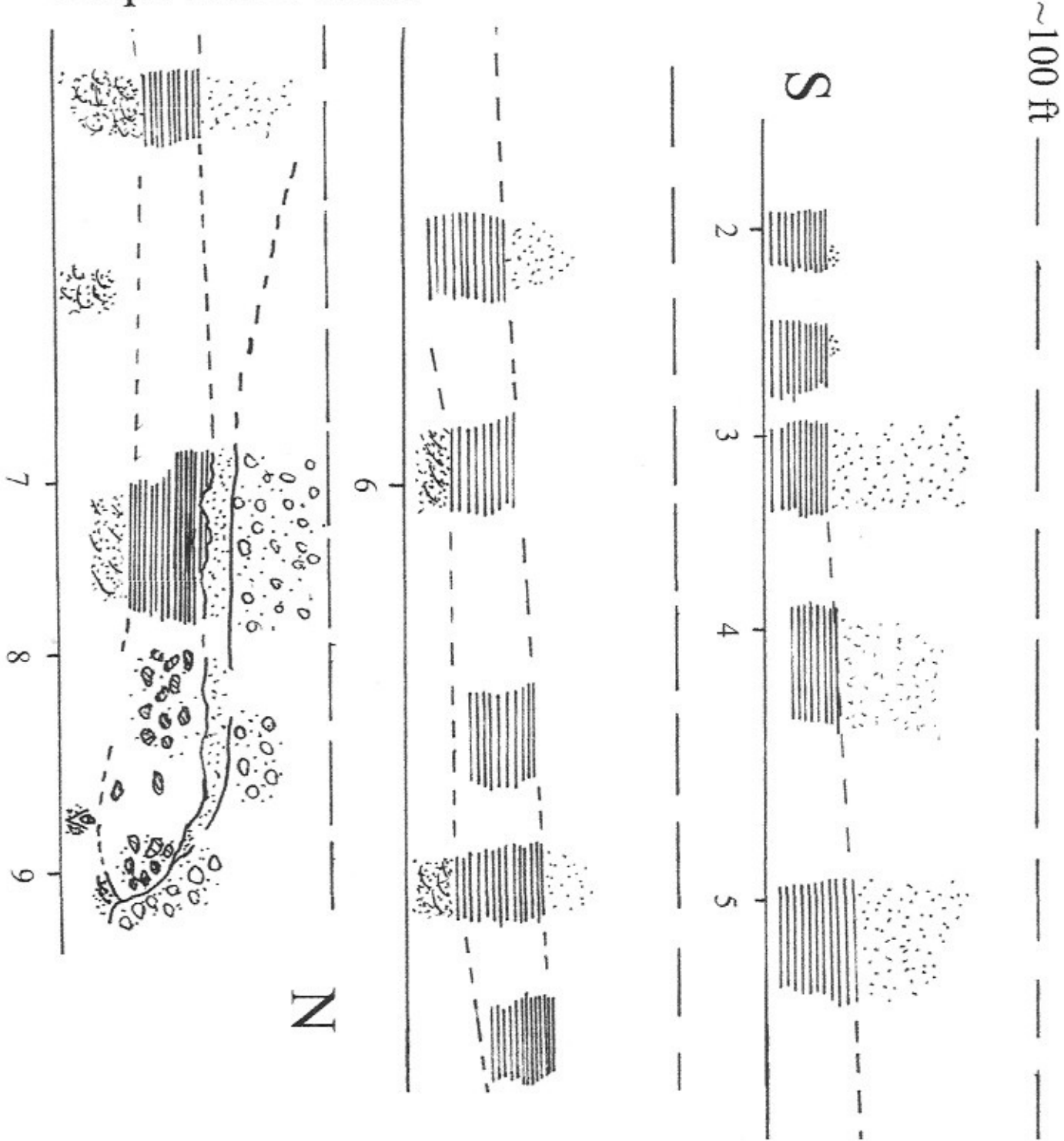
48 04.393

48 04.641

~100ft



Kala Point Bluff line showing main outcrops schematically, from S. to N. (top to bottom) Stops numbered.

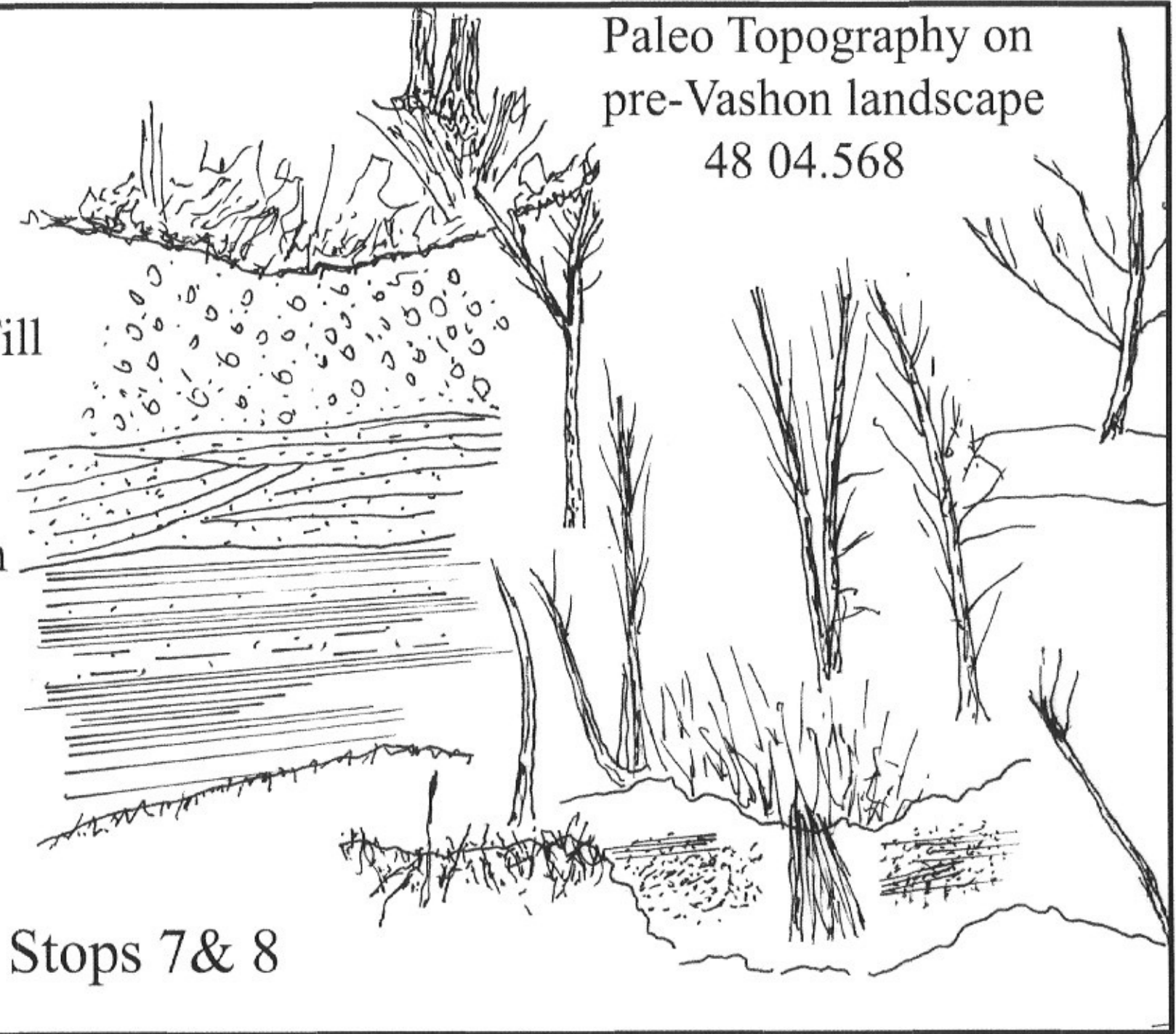


Paleo Topography on
pre-Vashon landscape
48 04.568

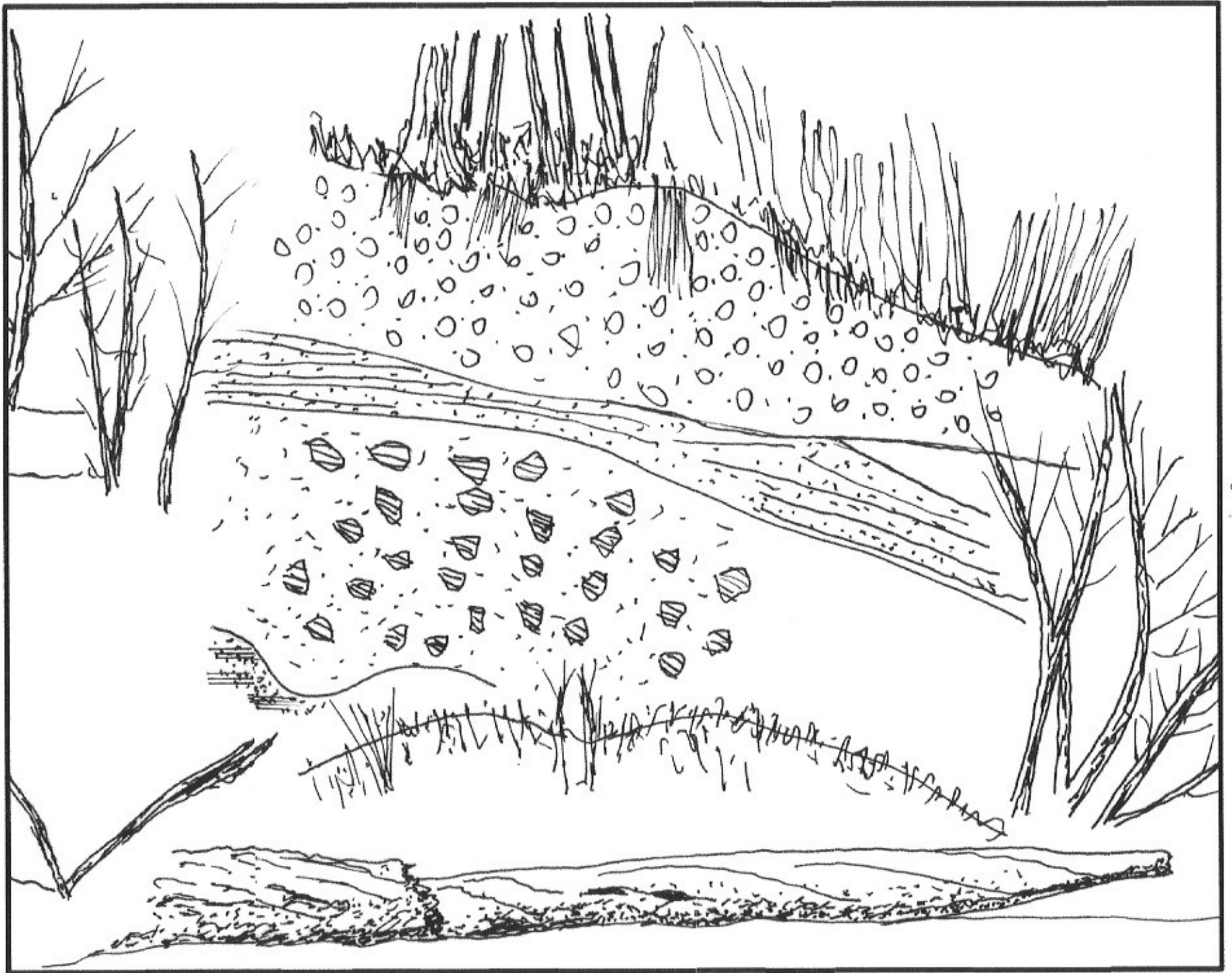
Till

Out-
wash

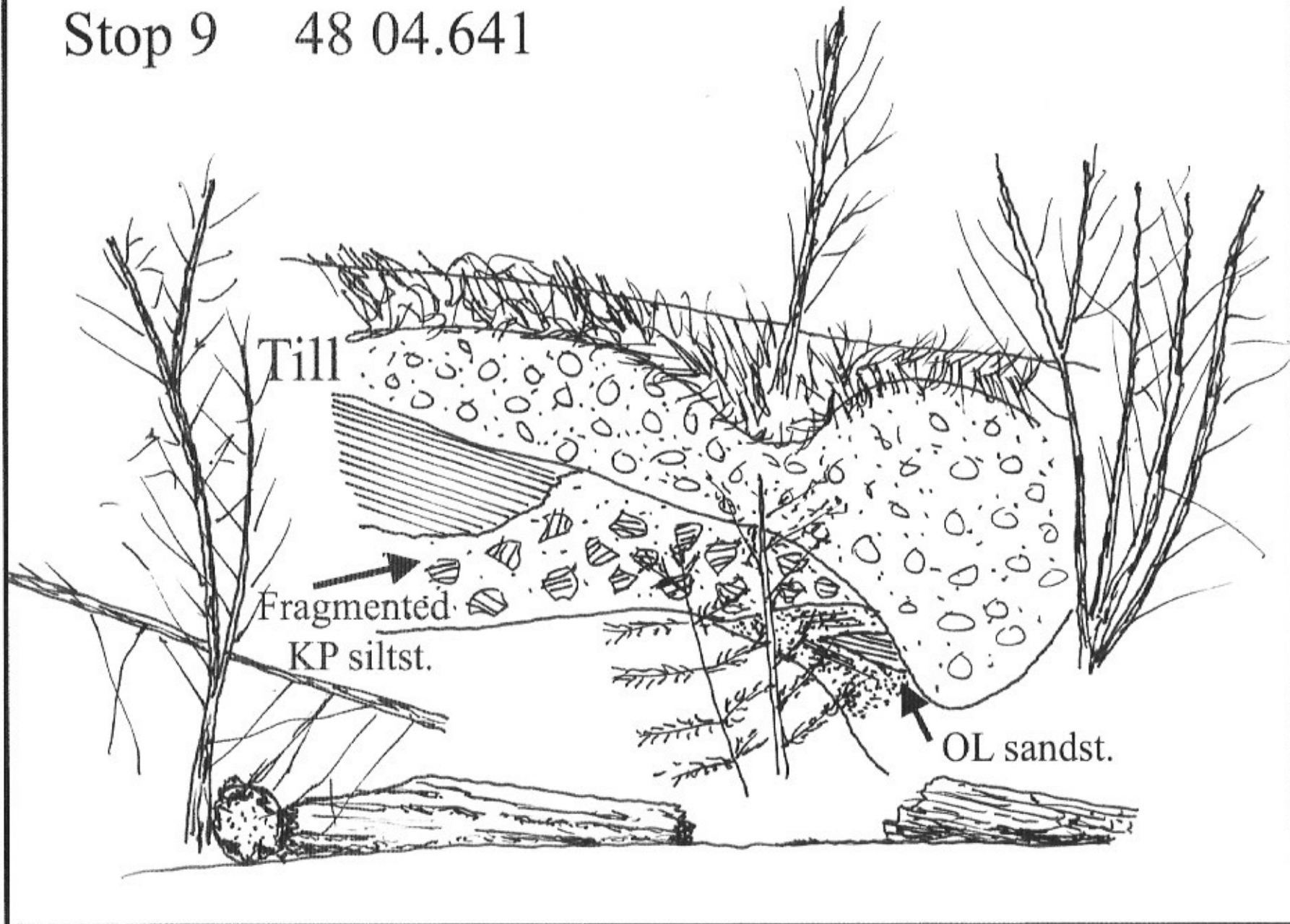
KP
silt

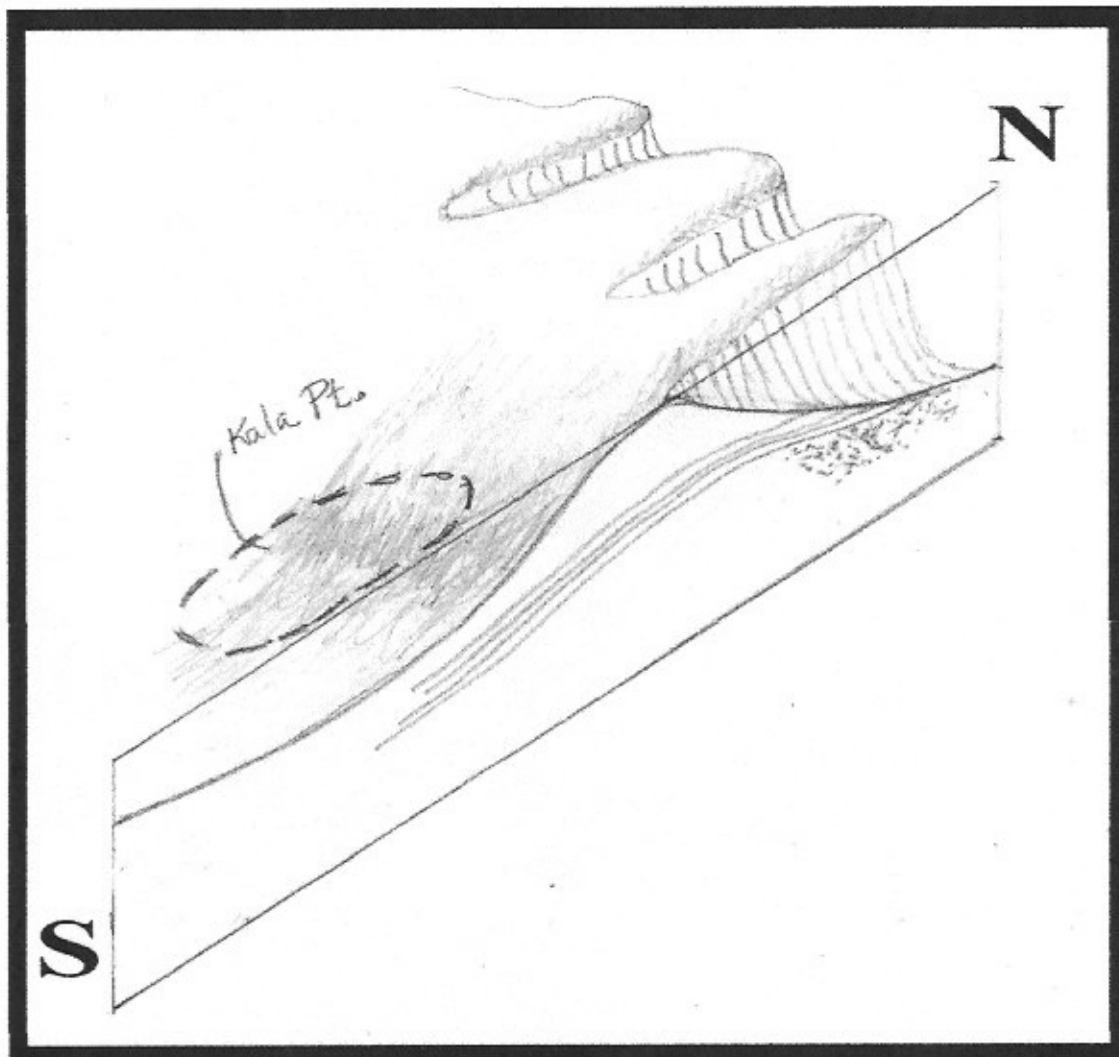


Stops 7 & 8



Stop 9 48 04.641





Hypothetical model of generalized landscape for the Kala Point Bluff Line before last glacial advance into the region.

