

Stop 1-2

Landform units:

Valley bottom, floodplain, Channel

Material

Cobbles, pebble, Sand, Some silt

poorly sorted, rounded

Mixed sand & gravel

Process:

alluvial deposit

Age:

late Holocene ( $\leq 10,000$  years old)

Tree:

eroded from alluvial deposits - most likely, caused scars

water once flooded it

$\sim 30$  ma

Stop 1-3 Detroit Dam

pg 31, 31A, 31B, 32, 270, 272

long lat

122°W 44.8°N

Rock type: mafic, silica poor, igneous, basaltic andesite

landform: dam

Climate: upslope, westerly airflow, maritime climate

anthropogenic - human impacts: highway, tree cutting, dam

$\sim 20$  ma

Stop 1-4 133C, 133F, sketch on page 312, 151, 153

latitude 44.2°N

longitude 121.9°W

$< 1$  ma active plate tectonic boundary, that's why the rocks are so young

Hillslope, volcanic rock, poorly sorted, sub rounded - sub angular  
process: volcanism, possible glaciation

At lake:  $\sim 3400$  ft elevation

SATURDAY July 26 - La pine Campsite

Soil samples

younger	→ older	clay
greyish/tan	yellowish	
smaller grains	poorly sorted	
pumice	rounded gravel	

~~landform~~

river deposits process  
 river valley landform  
 terrace  
 7,000 ya - 2ma late Pleistocene Age

Paul

PAULINA PEAK pg 145

- light colored rocks - rhyolite
- silica rich
- young rocks

PAULINA LAKE pg 149  
~6300 ft elevation

SUNDAY July 27

127-132 conversion charts

pg 132 precipitation map, 133D fig 3

long: 121.1°

lat: 47°

~16 in rainfall/yr - semiarid conditions

age Miocene middle-late

The Dalles

4900 cfs (cubic feet per second)

$$V = \frac{L}{T}$$



Station :

1	6
2	7
3	8
4	9
5	10

(meters from bank)

Station	Depth	Counts / Min
1	13cm	70 140
2	35cm	182
3	50cm	300
4	51cm	400
5	51cm	510
6	59cm	568 284
7	60cm	488 568
8	85cm	500
9	83cm	488
10	60cm	450 330
11	50cm	700 350
12	55cm	500
13	75cm	420 270
14	80cm	540 40
15	91cm	550 275
16	75cm	510 275
17	100cm	510 255

pg 54, 57, 58, 61

$$V = 0.000854(760) + 0.05 = .699$$

width: 120m (across channel)

$$V = 0.000854(y) + 0.05 \quad (y = mx + b)$$

Avg Depth .62m

Avg counts/min: 429.125

Avg Velocity .4164 m/sec

$$Q = VA$$

$$.4164 \cdot 744 = 3098$$

## Stop 3-3 Heritage Landing

pg 235

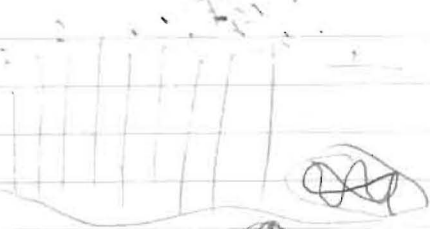
Mile-0

Missoula flood deposits

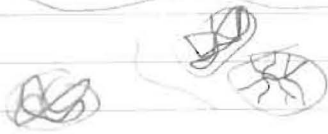
## Stop 3-4

pg B9, 133G, 133H, 133I

CBR and < 2ma sediments



columnar basalt



pillow basalts (cooled underwater), cooling fractures  
vesicles, pumice, clay, devitrified glass

pg Wanapum Basalt

## Stop 3-5

pg 103 104 206 1336

Highway 197  
Stop B

~10mya



Calcium Carbonate

pebbles

Silt

ROAD

Swallow nest  
Silt

Rite in the basin

7/27 Petersburg Bar  
Missoula flood deposits

cross beds

direction of flow: southeast - out of the Gorge

spill over delta

Monday 7/28 pg 235

~1300 ft elevation

Basalt w/ multiple lava flows

columnar jointing

material on bottom is lighter & softer



John Day formation  
river mile 87

1A  $Q_{pk} = 0.278CIA$

$$10,000 \text{ acres} \left( \frac{4.047 \times 10^{-3}}{1 \text{ acre}} \right) = 40.47 \text{ km}^2$$

1.25 cm  $Q_{pk} = 0.278C(1.25 \text{ cm})(40.47 \text{ km}^2)$

hr  
1.25 cm / 1000 = 1.25 cm (1000 mm / 1000 cm) = 1.25 mm

$$0.278((1.25 \text{ mm}) / 40.47 \text{ km}^2) = 0.278(.40)(1.25 \text{ mm})(40.47 \text{ km}^2)$$

B  $Q_{pk} = 0.278CIA$

$Q_{pk} = 0.278C(30 \text{ mm/hr})(A)$

5 in  $Q_{pk} = 0.278C(30 \text{ mm/hr})(A)$  30 in  
5 in mm = 127 mm

$$\frac{500 \text{ m}^3}{\text{sec}} = 0.278C \left( \frac{30 \text{ mm}}{\text{hr}} \right) \left( \frac{500 \text{ m}^3}{\text{sec}} \right)$$

$30 \text{ mm} \left( \frac{\text{cm}}{100 \text{ mm}} \right) \frac{\text{m}}{100 \text{ cm}}$

$$\frac{500 \text{ m}^3}{\text{sec}} = 0.278 \left( \frac{30 \text{ mm}}{\text{hr}} \right) (175 \text{ km}^2)$$

$$0.278 \left( \frac{3 \times 10^{-5} \text{ km}}{\text{hr}} \right) (175 \text{ km}^2)$$

$\frac{0.00146 \text{ km}^3}{1 \text{ hr}} C = \frac{500 \text{ m}^3}{\text{sec}}$

$\frac{0.00146 \text{ km}^3}{\text{hr}} = \frac{5 \text{ km}^3}{\text{sec}}$

5 ft<sup>3</sup>

$1 \text{ m}^3 \left( \frac{35.31 \text{ ft}^3}{\text{m}^3} \right)$

$5 \text{ ft}^3 \left( \frac{\text{m}^3}{35.31} \right)$

$125 \text{ km}^2 \left( \right)$

$$125 \text{ km}^2 \left( \frac{247.1 \text{ acre}}{\text{km}^2} \right) = 30,887.5 \text{ acre}$$

1/29 - Tuesday

$$Q = VA$$

$$Q = 120m(.62m)$$

$$Q = 74.4$$

$$Q = (.000854 \cdot 429.125) + .05 (.62m \cdot 120m)$$

$$Q = 30.98 m^3/sec$$

6. The data was not complete because we were unable to collect data across the whole channel

1. Average depth: .62m
2. Average counts/min: 429.125
3. Average velocity: .42 m/sec

Near Whiskey Dick

Angular boulders - colluvium from gravity, landslide

Whitehorse rapids landslide  
- possible earthquake?

MILE 67 ft/mi pg 238, 239, 241, 250

20 ft decline - 400

$$\frac{20 \text{ ft}}{400 \text{ ft}} = \frac{2}{40} \text{ } \frac{1 \text{ ft}}{20 \text{ mi}}$$

20 ft/mi gradient

400 ft/mi

Clarno formation

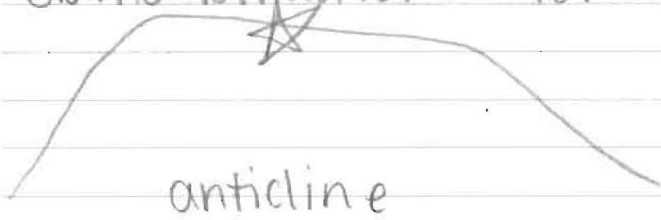
2500 fish/mi  
15% river shore 93.75 fish/mi



# Wednesday

pg 235, 133C, 173

- angular colluvium environment
- silica rich, felsic
- Clarno formation ~ 40ma



• horizontal part of anticline

## River Mile 62

- valley expanded
- large alluvial bar
- meteorological or geological floods could wipe out the bar
- meteorological: ex: snowfall
- geological: ex: dam

pg 173A, 243, 244, 244A, 245