

Site 1: Roundberry Quarry

Parish: Polesworth (Warton)

District: North Warwickshire

County: Warwickshire

National Grid Reference: SK 2765 0382

Ordnance Survey Sheets 1:50000 140

1:10000 SK 20 SE

Lat Long: 52.37150 N. -1.75377 E

Ray Pratt 11/9/2020

From Ian Fenwick

- The source of the material (cobbles etc.) in the glacial till of the Midlands is generally believed to be what is now called the Chester Formation of the basal Trias i.e. below the Bromsgrove.
- As for exposures, in Warks. We have a small area in the far north of the county near Austrey with an excellent exposure in **Roundberry Quarry** (now abandoned and could have overgrown since I was last there (c. 10 years). This is LGS no. 1 (see attachment).
- More extensive outcrops are to be found in Staffs and the Black Country - Hints Quarry (near Tamworth), Cannock Chase, esp. near Shugborough (NT) and Walsall (Barr Beacon).
- Clearly, S. Staffs could have been a major source for glacial reworking and the Quaternary models suggest that, during the Anglian cold stage, the ice which crossed this area distributed the "Bunter" clasts (largely quartzite) into Warwickshire (& I'm sure other Midland counties) as far south as Moreton in Marsh where there is a not very obvious end moraine. From there the melt carried the pebbles via the Windrush into the Thames drainage system. Hence you find these wretched pebbles on all the terraces of the Thames below, I think, c. 30m above river level.
- As for the Triassic palaeogeography, it is widely supposed that the pebbles were derived from the Brittany area (i.e. post Armorican) although I am not aware of any definitive association of clasts with that source. However, I would suppose that by now someone has nailed this down. The model generally put forward is of a HUGE river, the Budleighensis River, flowing north out of Armorica and depositing its load from Budleigh Salterton (hence the pebble cliffs), northward to Cannock Chase etc. Date obviously lowest Triassic. All the usual suspects seem to have worked on it!!

From Ian Fenwick

- **Location**

- A disused gravel quarry 1.6km north east of Polesworth. The east and south faces have 80% exposure, while the rest are overgrown (2009). The quarry can be reached 500m down a track which is to the south west of the road from Warton to Austrey, the turning being at GR SK 282 043.
- There is a sewage treatment plant on the left of the lane. The quarry lies at the end of the lane on just on the sharp right bend that leads to a farm. There is a locked gate with a barbed wire protection on it and the fence. However, this is primarily to stop fly tippers getting access. Simply follow the fence to the left and walk around it to get access.

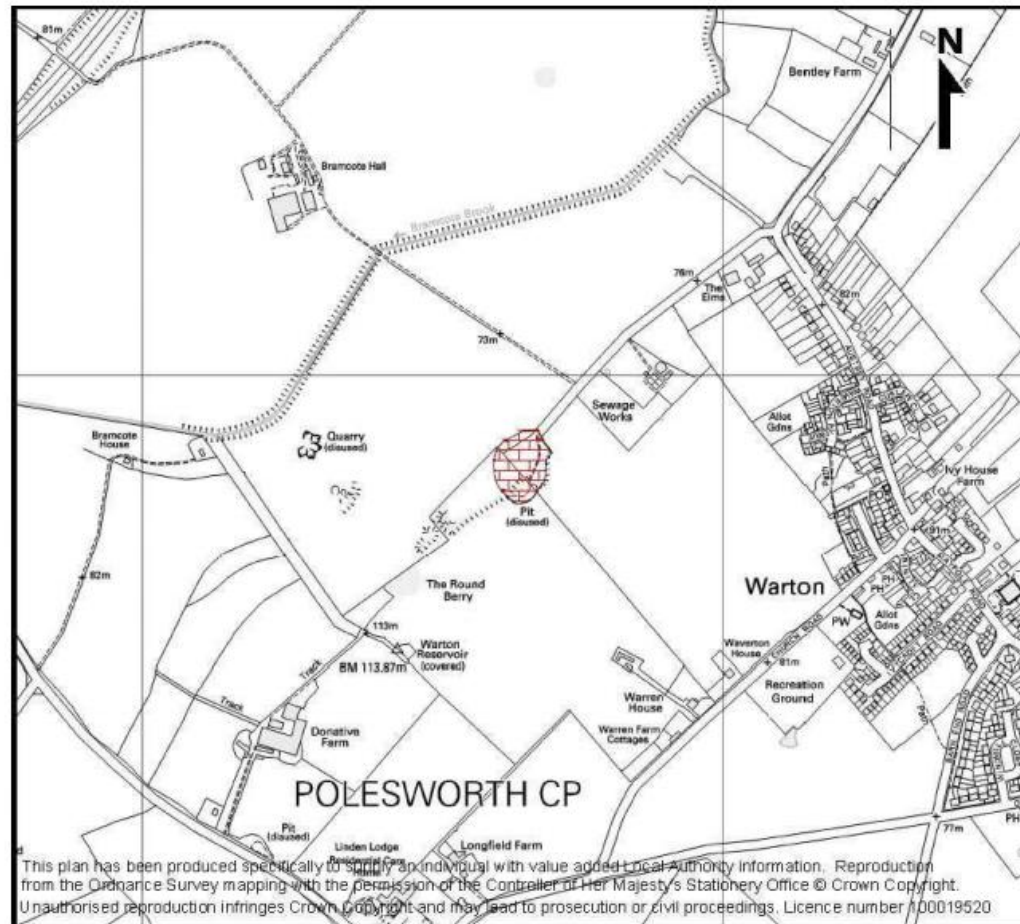
-

- **Summary of Interest**

- The only good exposure in Warwickshire of the Triassic Polesworth Formation, formerly known as the "Bunter Pebble Beds". This site is suitable to use as a type locality for this formation although it has not been formally designated as such. The quarry face exposes a cumulative section of 10m in height. The vertical faces show soft, pale buff, current-bedded sandstones overlying well bedded, coarse conglomerates with sandstone lenses. The gravels are dominated by brown ortho-quartzites with substantial amounts of vein quartz and subsidiary amounts of ?Carboniferous chert. Significant quantities of siliceous meta-sedimentary pebbles can also be found. In places, the gravel clasts display imbrication. The site is of considerable educational value at all levels.

-

Location of the quarry in Red



Ray Pratt 4/8/20

- Quarry had recently been cleaned up by owner. Rock faces in great condition. All scrub removed.
- Standing at the entrance on the north side of the quarry. The right (west) side of quarry constructed 2 terraces. At top see a red conglomerate overlying a buff yellow sand & conglomerate. Clear evidence for a change in depositional environment.
- Ahead we see concrete steps going upward to the field above the quarry. These overlay an exposure of yellow sands and gravels
- In the main quarry there are cliffs of yellow sands and gravels beds with an apparent **SW** dip.
- The south face cliffs give a view of the beds along strike. Here we see channel sedimentary structures.
- A fluvial channel could be seen at the SE end of the quarry, but cross bedding was not readily noticeable.
- Most of quarry consists of yellow, grey brownish conglomerate & sands

Entry to the quarry

Walk around the fence to the left. No need to climb the gate.



View to the south of the quarry from the entrance at the north end 4/8/20



Same view 10/9/20



View to westside of the quarry from entrance



First exposure to right of entrance (west side). 4 measurements taken from bottom to top

Dip is 26 deg to ESE (104 deg azimuth). Strike is 194 degrees

22 deg dip East (88 deg azimuth), 178 strike

20 deg dip East (84 deg azimuth) 174 strike

17 deg dip East (100 deg azimuth), 190 deg strike



Yellow sandstone, friable, some rounded pebbles, but mostly quartz sand, dominantly fine grained, some medium grains, yellow clay minerals from degradation of feldspar ? Pebble layers seen above & below

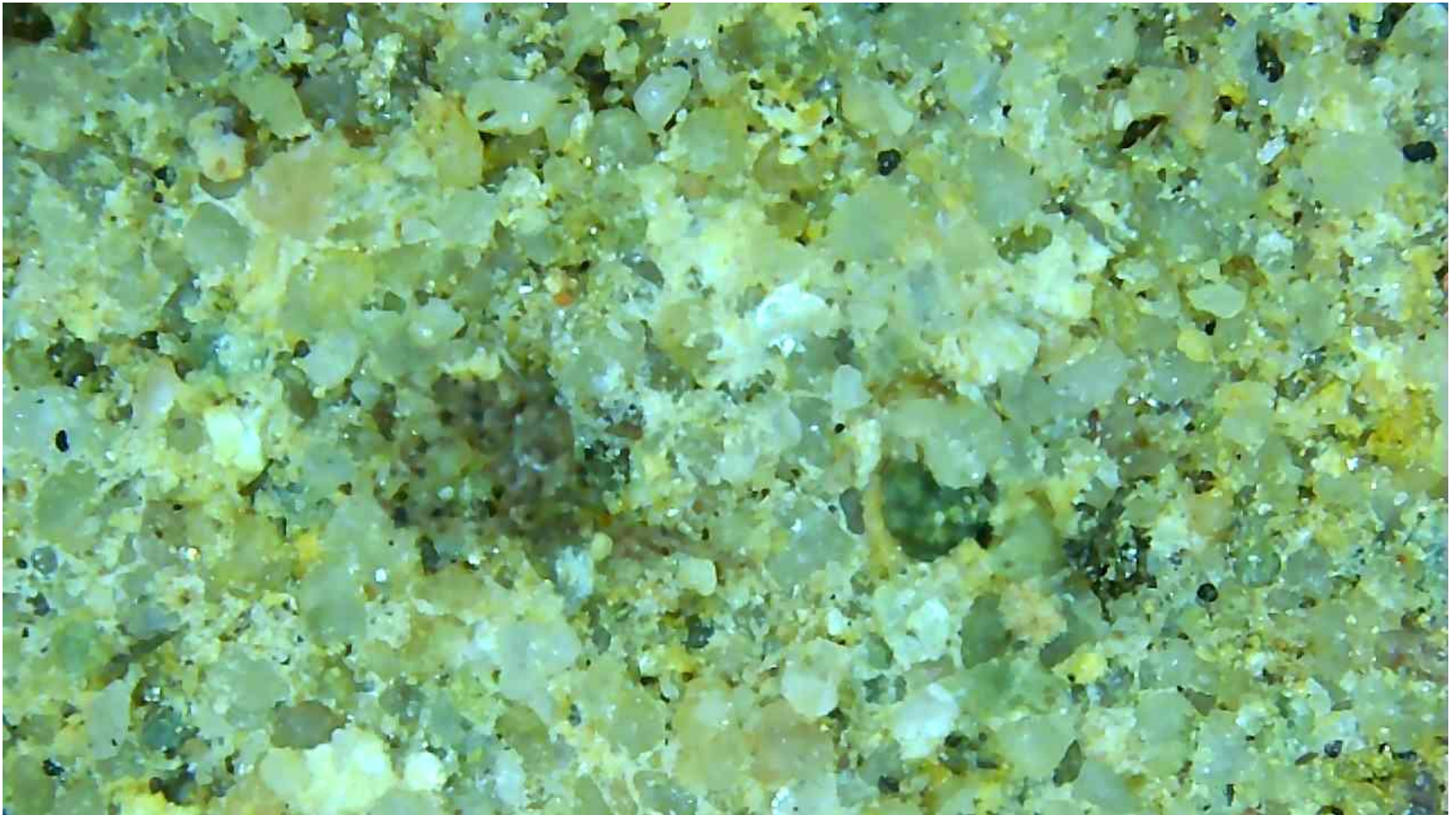
Pebble beds below the sand



Clean sand. Note pebbles in sand bed
above



* 500 magnification of the yellow sand. Dominantly fine grained subround to subangular quartz. Yellow & white clay matrix, pos degraded feldspar, trace very fine mafic



Same sandstone. Mostly fine grained quartz, some mafics, possible cream white feldspar crystal



Same Sandstone



Apparent sedimentary 25 degree dip to ESE (95 deg azimuth) 195 degree strike



NW side of quarry



North West side of quarry: Glacial till overlying red conglomerates





North west side of quarry. Base of Red conglomerates



Within the red beds we see some variations of colour, some pink some yellow suggesting a changing / oscillating depositional environment, not a sudden swap from one to the other. Angular chunks of yellow sandstone seen to be breaking off the bed.





The red bed matrix tends to be siltstone and clay rich. Red brown in colour, silt – clay size, trace mica,



Red bed matrix *500



Red bed matrix *500



Red bed matrix *500



Red bed matrix *500



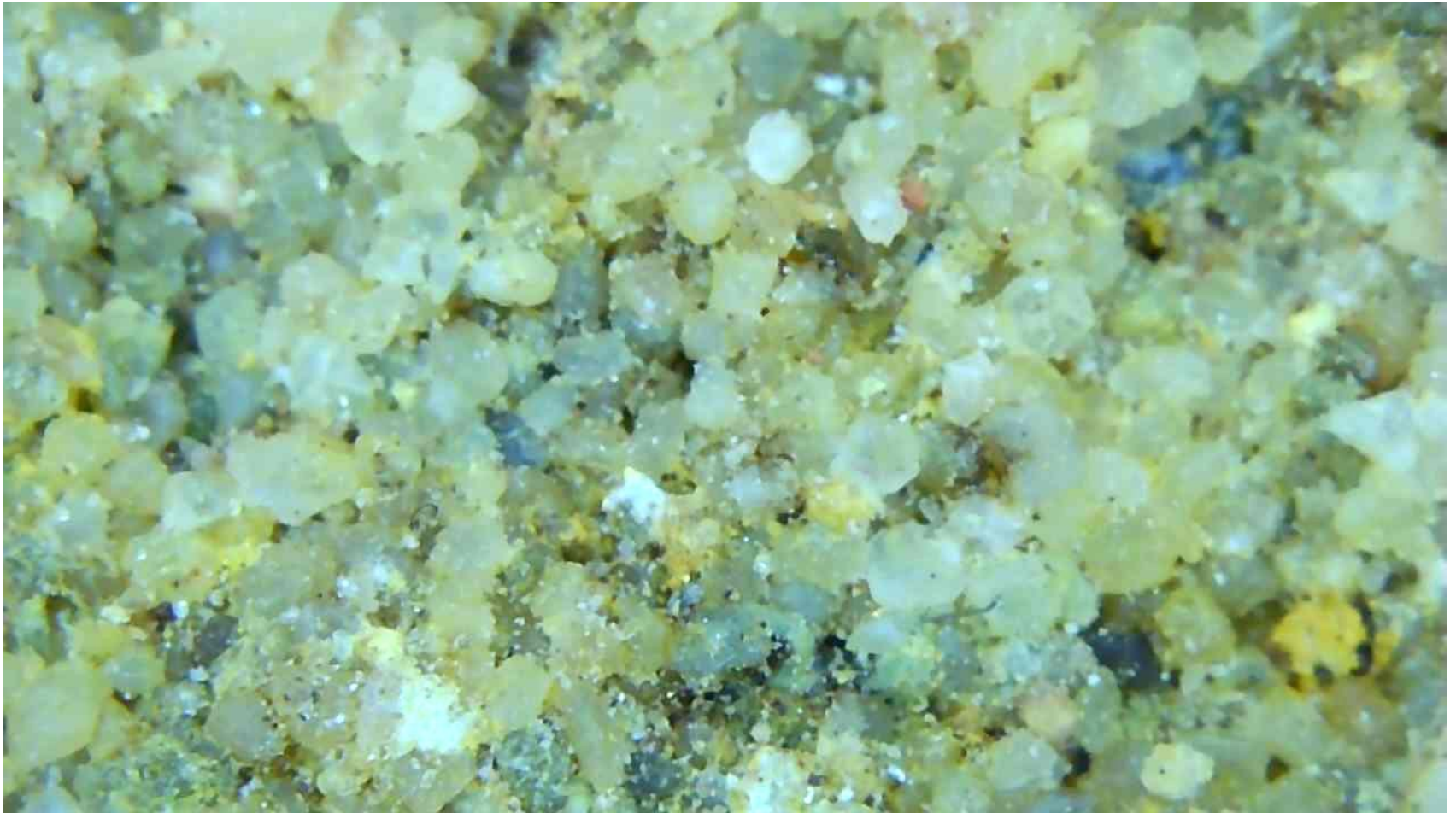
Sandstone

- Siltstone: Red matrix, silt, argillaceous, possibly a playa lake with wind blown clays and seasonal storms bringing in pebbles & cobbles
- Sandstone: Yellow colour, friable, medium grained, dominantly subangular, Clear quartz, yellow weathered feldspar ? Excellent porosity, poor cement. Fluvial
- Under the yellow sand is a conglomerate – flash floods common.

Yellow sand matrix under the red conglomerate



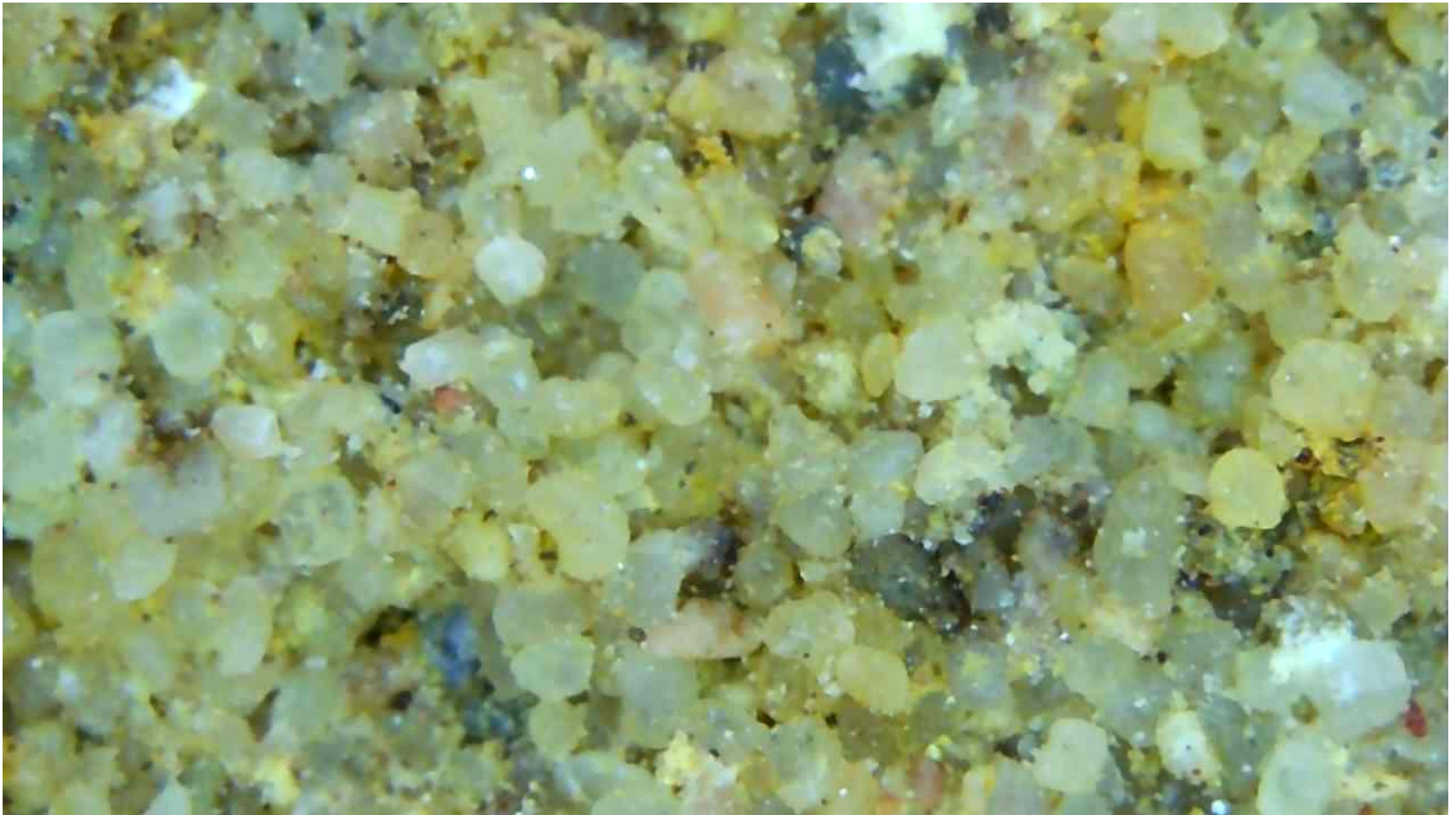
Sandstone *500



Sandstone *500



Quartz shows good alignment



Nodule clast with black outer surface and silty clay centre, surrounded by quartz sand.
Sandstone: Medium grained, frosted subround – subangular, firm (not loose)



10/9/20. Vegetation coming back. Hard red grit layer close to base of glacial till west side of quarry

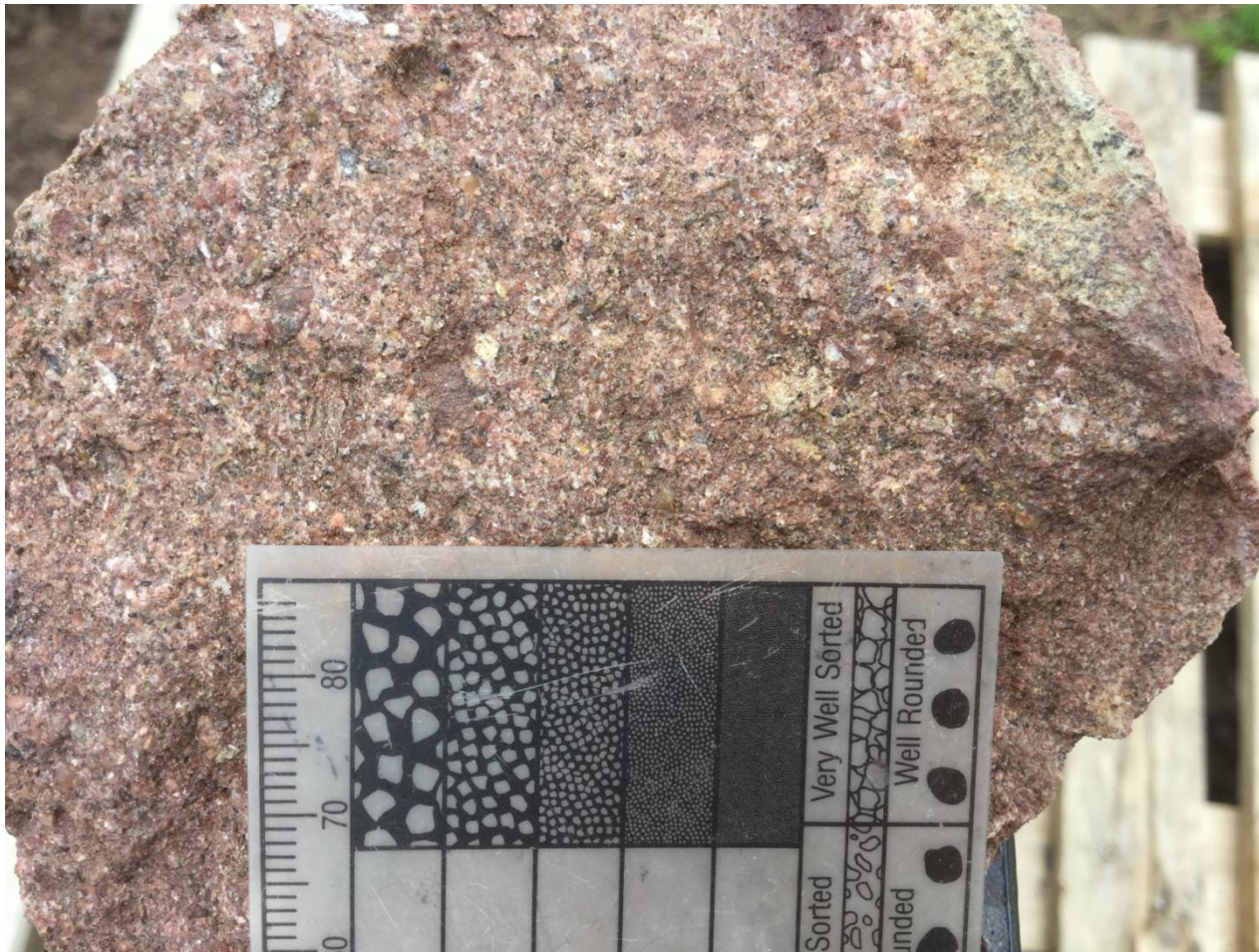




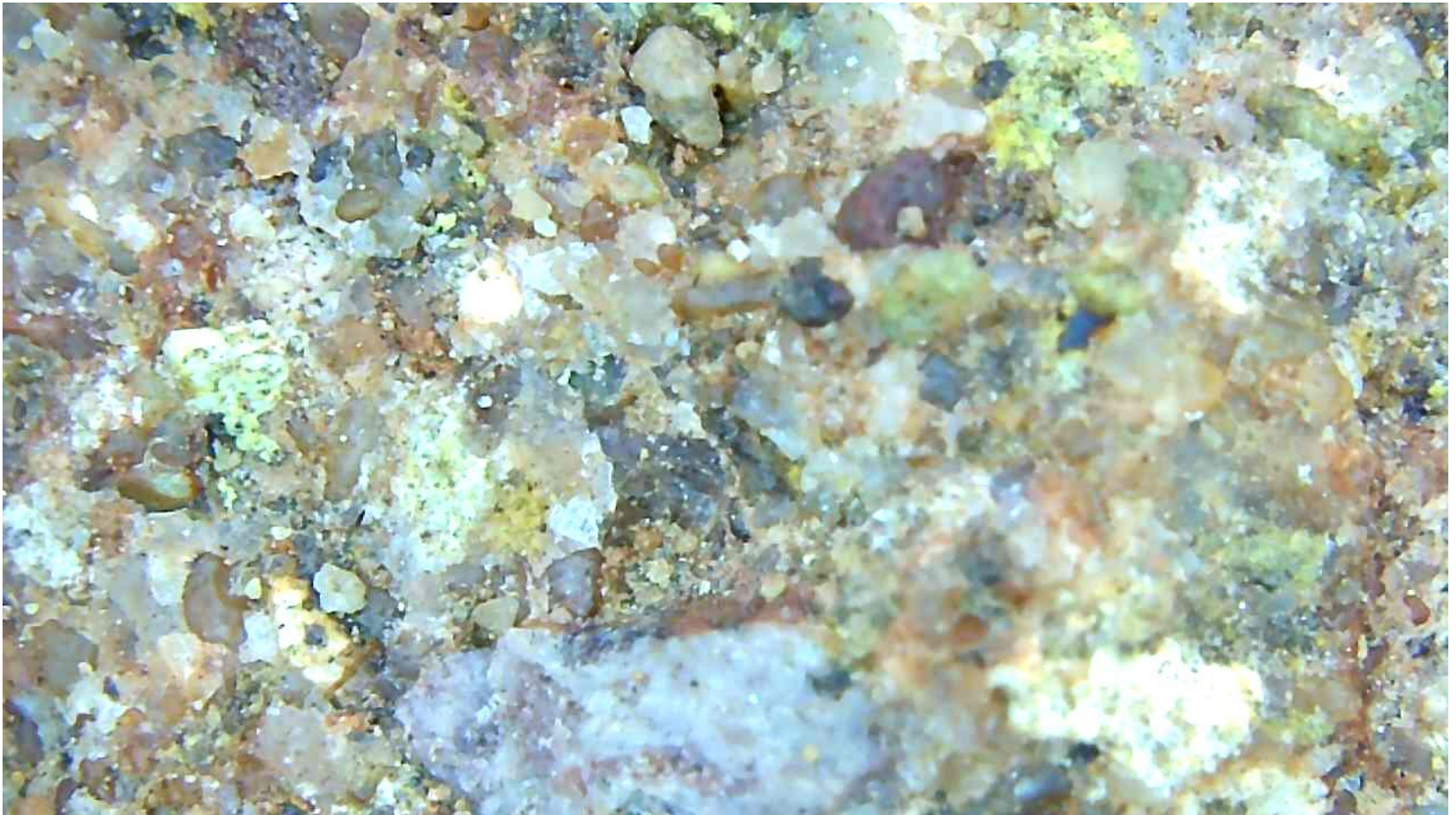
Beds on upper west terrace. Dip 10 deg to SSW (198 azimuth) Strike 108
Dip 13 SSW (197 azimuth), 107 deg strike

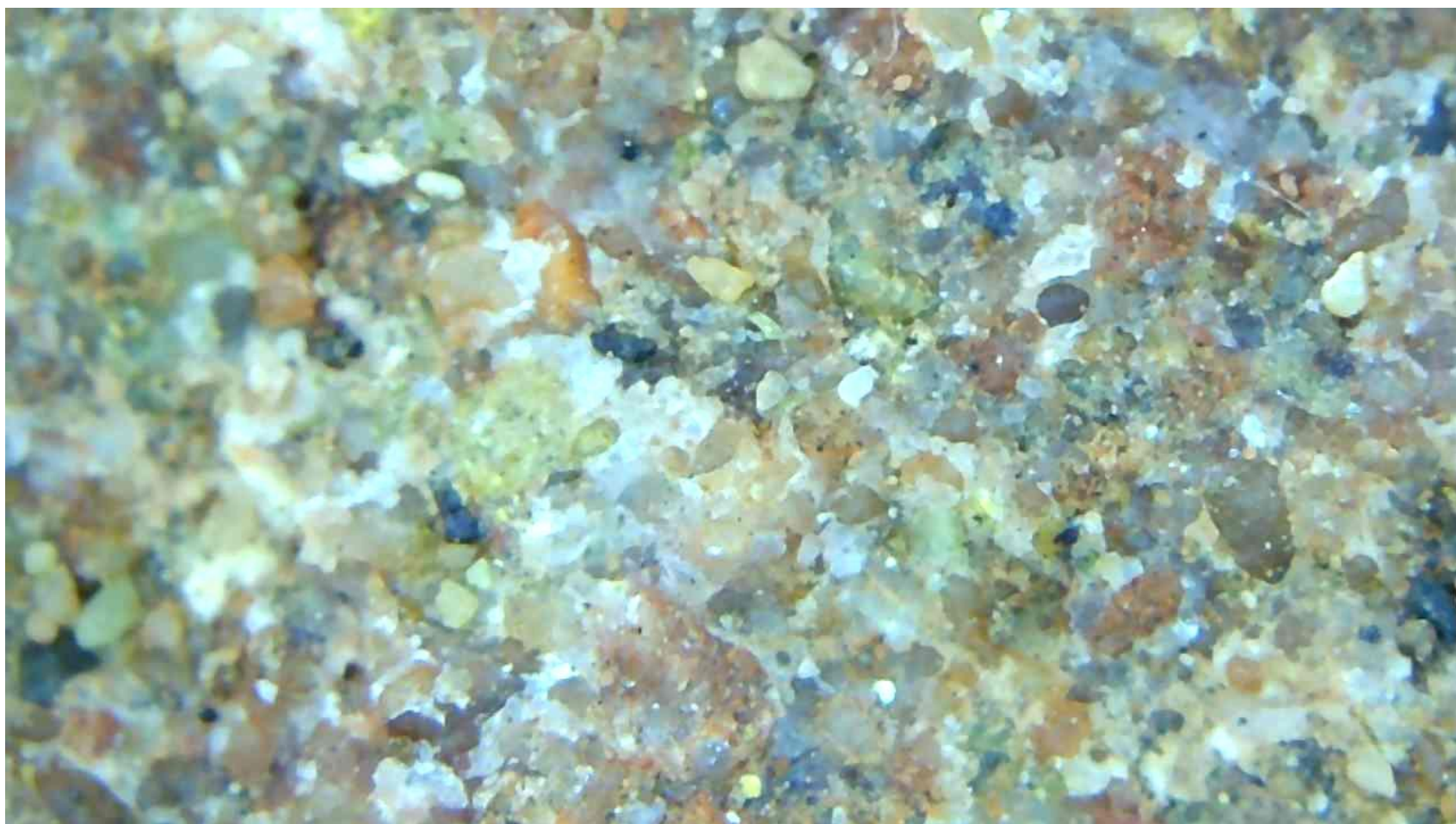


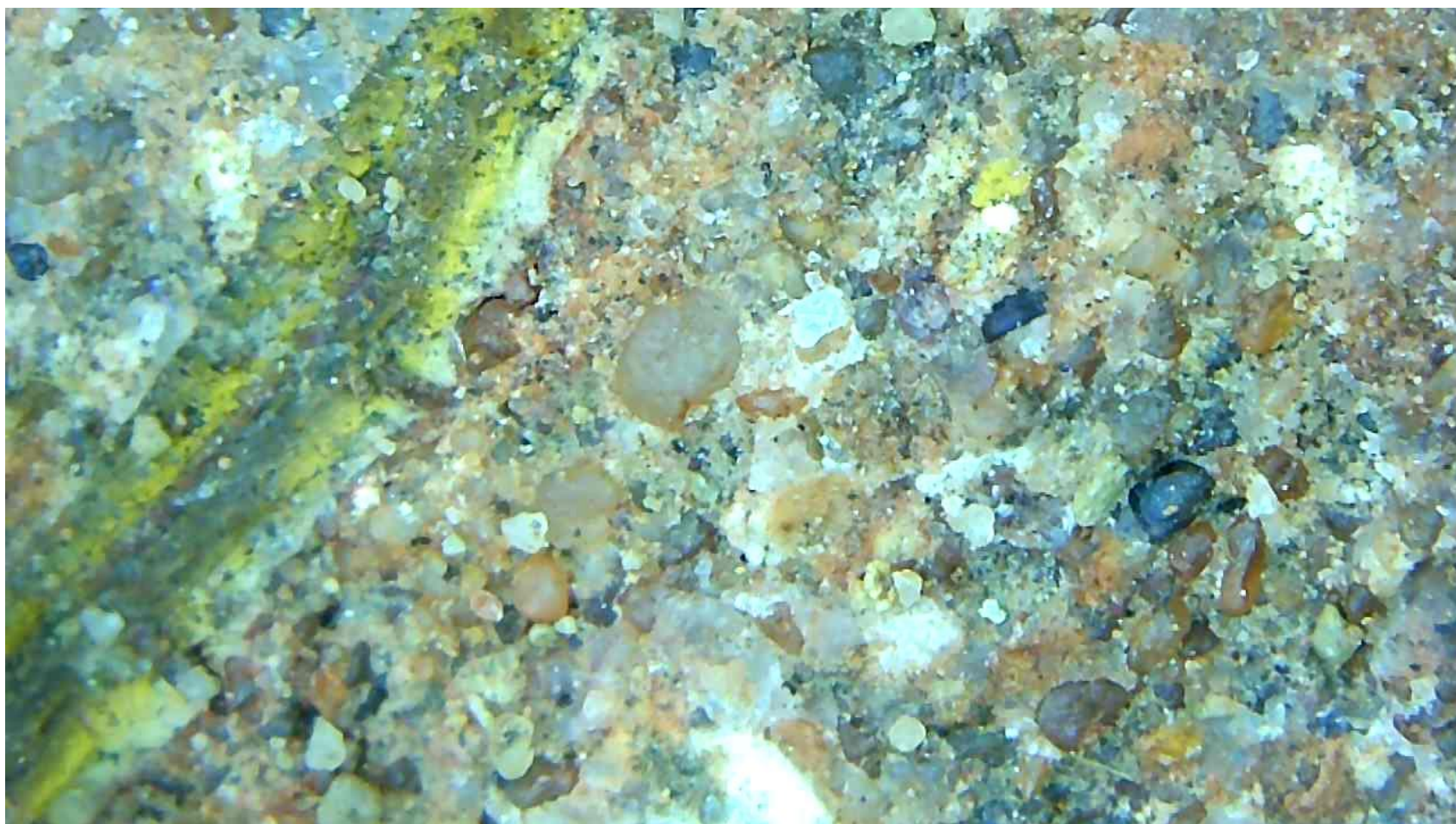
Well cemented grit from NW side of quarry. Contains lots of coloured rounded quartzite, lots of lithic fragments, poorly sorted, fine to coarse grained



Assortment of lithic fragments and coloured quartz in a strong silica cement











Exposure below the concrete steps



Interbedded yellow sands and conglomerate lenses from flash floods.
Beds here show an apparent 23 degree dip to east, 1 degree strike





Top sands by steps are very fissile and easily split.
On bedding plane by steps we see variations in the dip of the beds
9 deg dip ESE (101 Azim), strike 11
29-31 dip due East
33 degree dip ESE, strike 338



Fluvial feature dips from channels can be seen as well the overall structural dip
Sands mostly light yellow to olive grey, some pink staining from oxidation indicating sub-aerial exposure

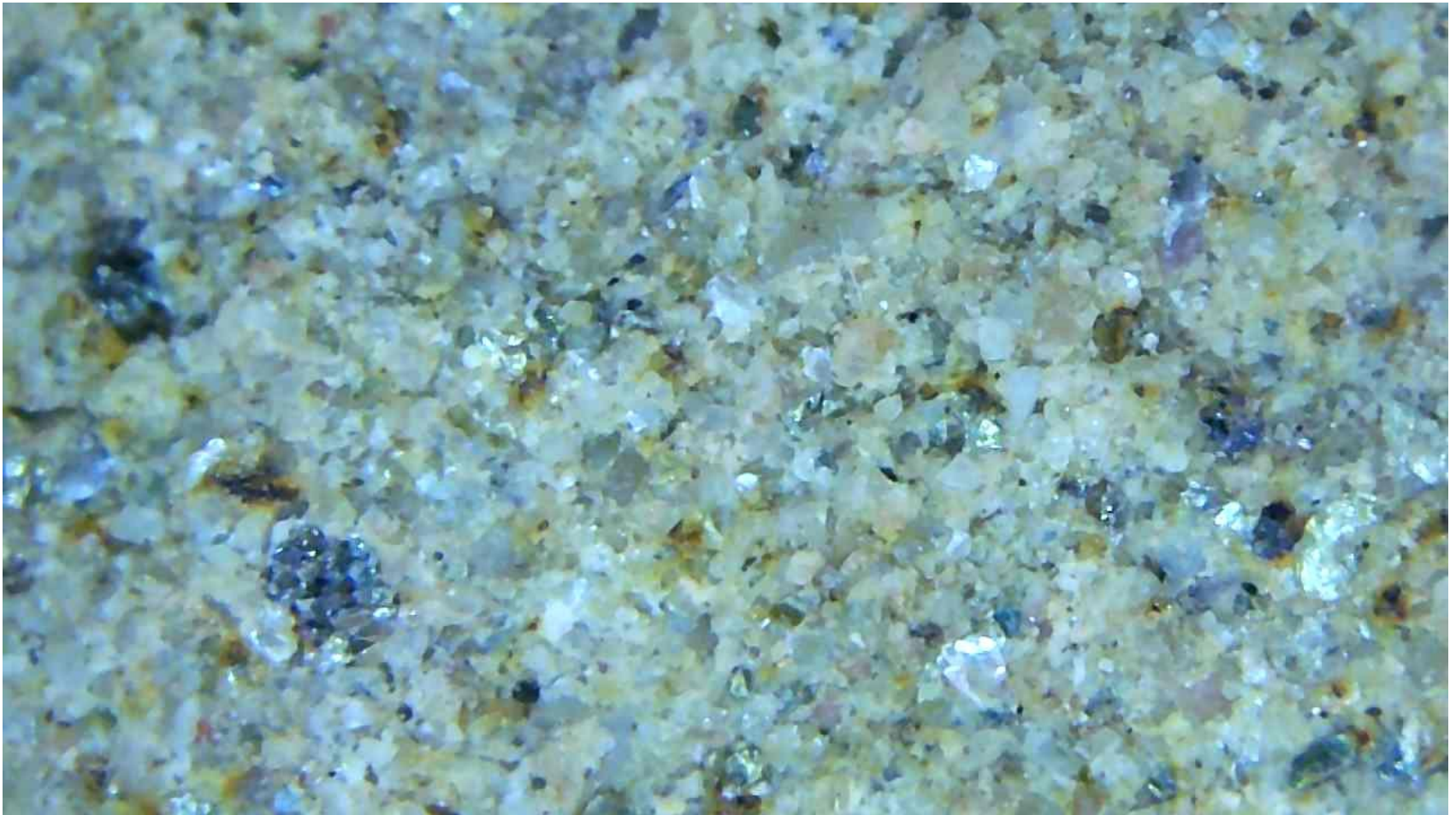


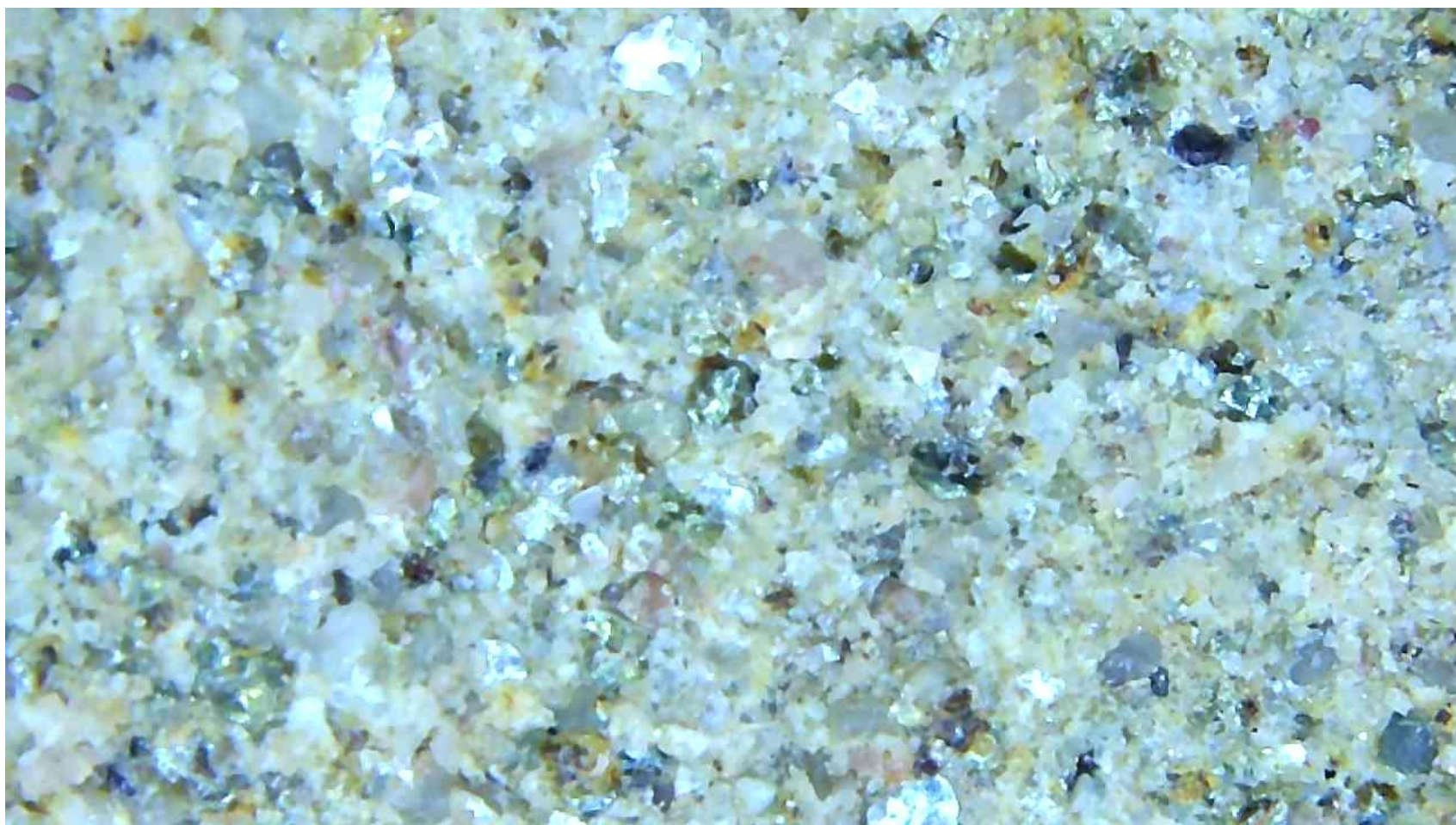


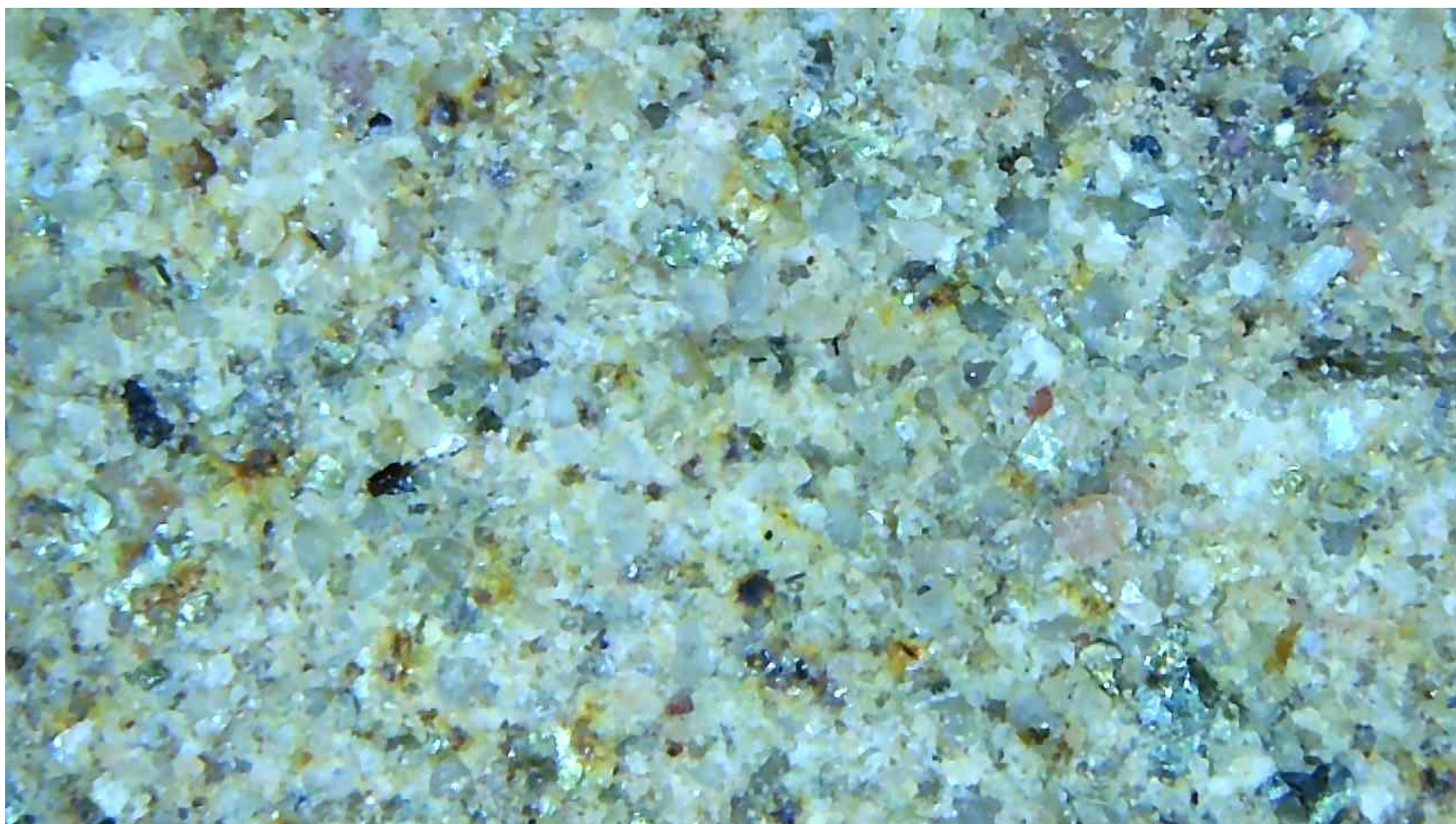




Thin platy iridescent mica, clear & blue. Very fine grained quartz, silty matrix



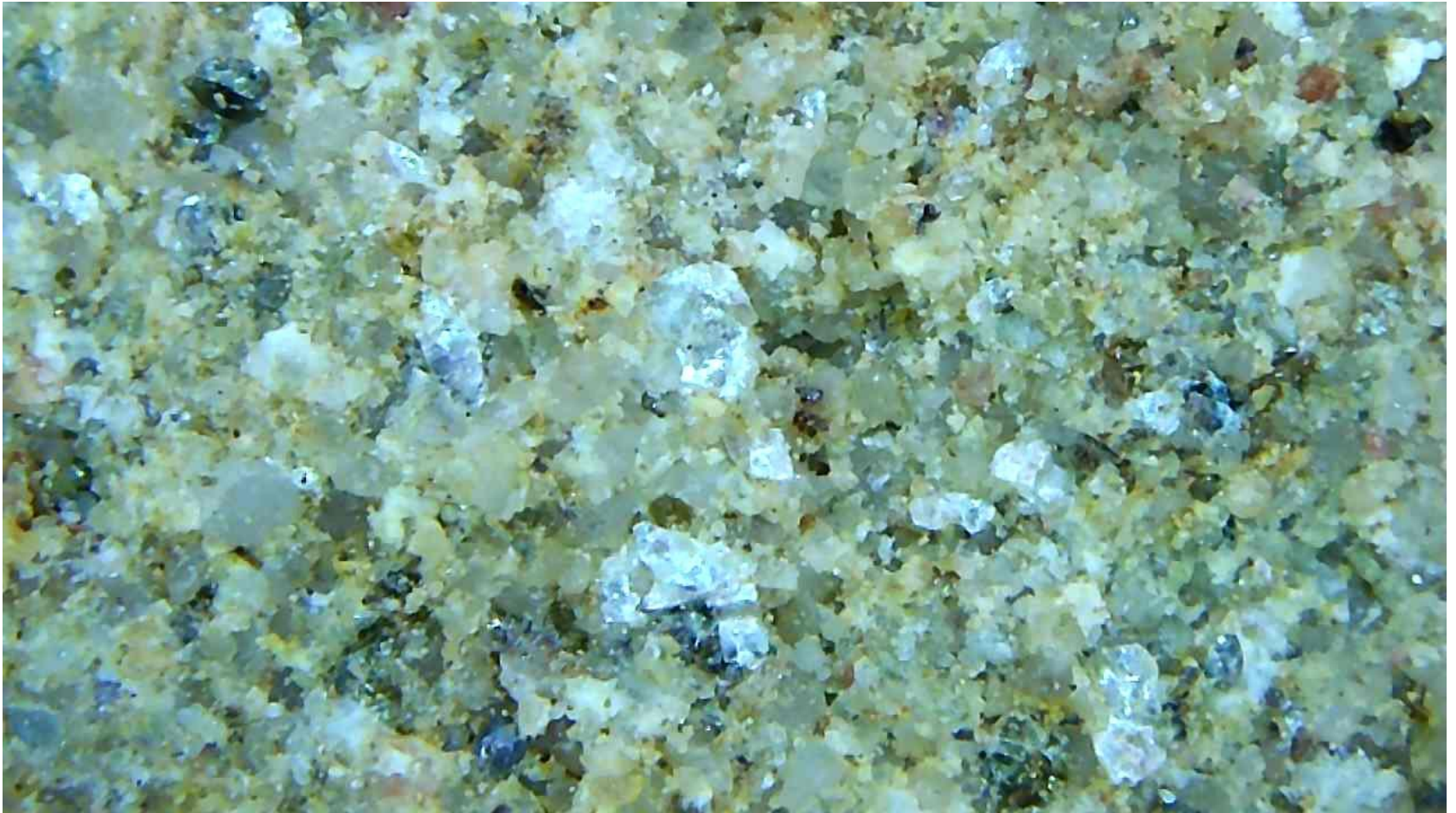




Sandstone *500



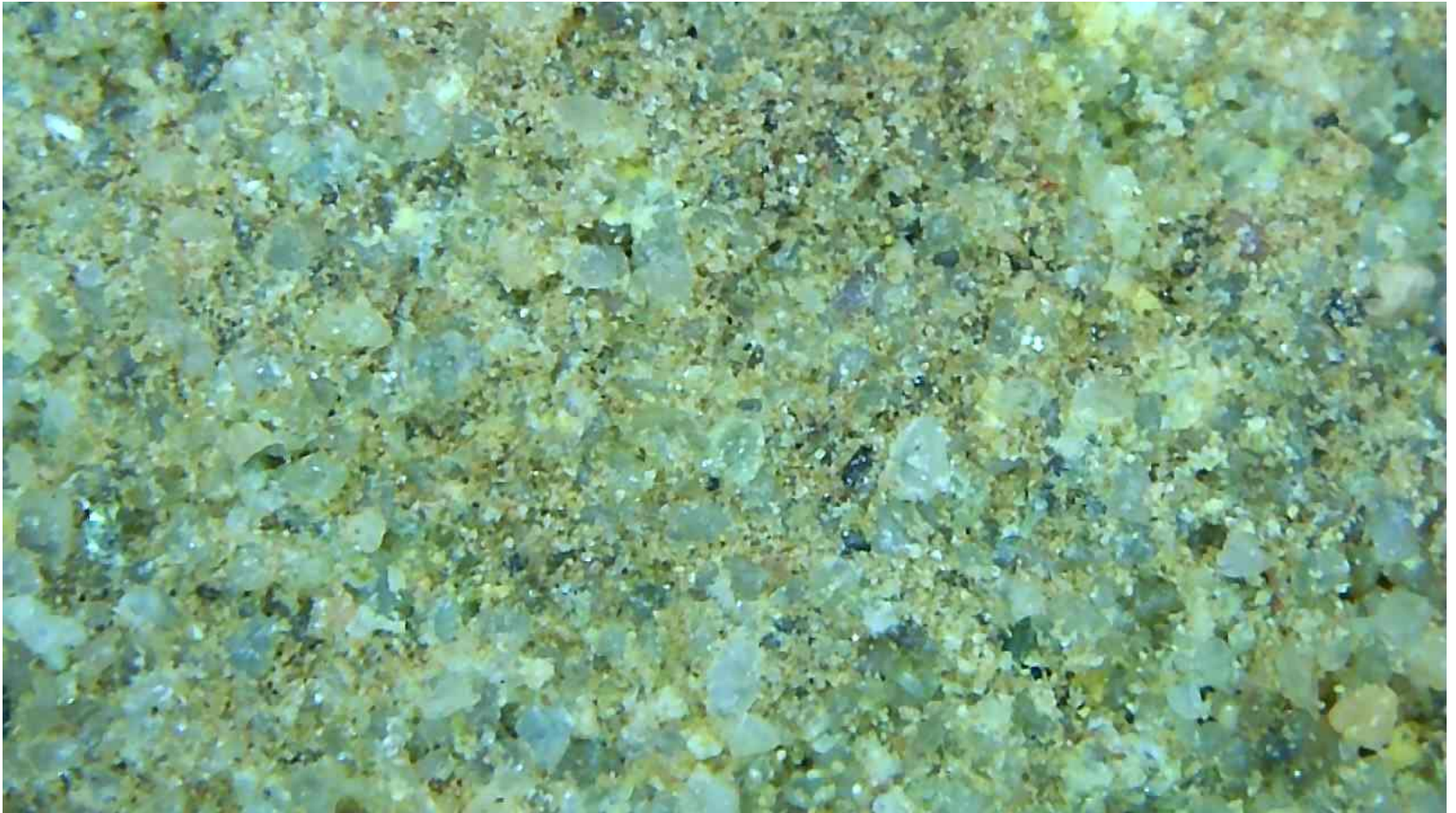
Sandstone *500



Sandstone *500



Sandstone *500



Sandstone *500

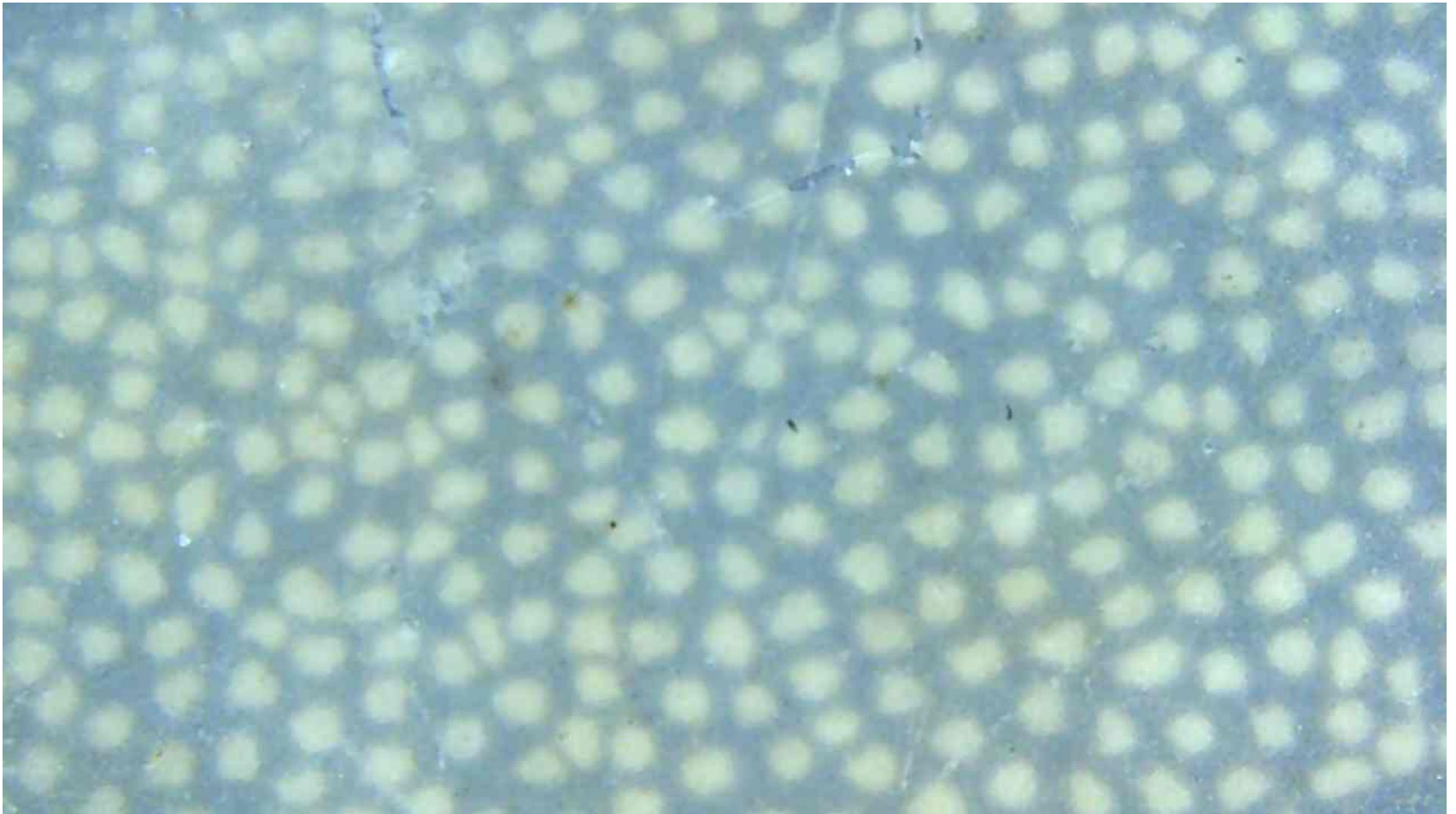


Sandstone *500

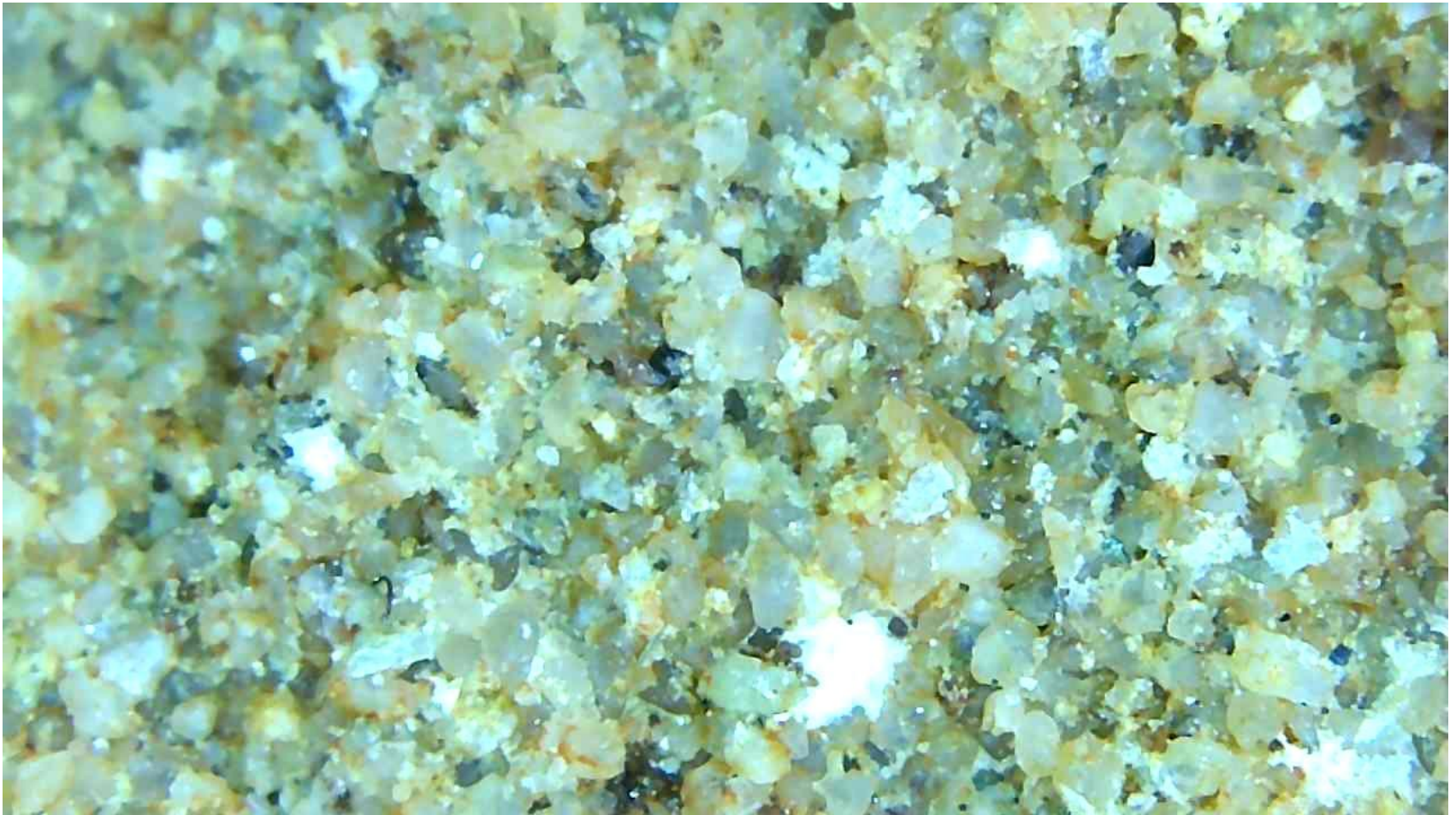




Fine Grained



Fine to medium grained sandstone, subround to subangular quartz, occasionally medium-coarse, moderately sorted, ferruginous mafics, moderately good porosity



















View of South end of quarry from concrete steps



View of SW end of quarry from concrete steps



SW end of quarry. Massive (3m ish) thick conglomerate sandwiched between sandstones.
Lineation's & orientations of the pebbles show an apparent 23 deg SSE dip



The apparent dips range; 27 degrees SSE (158 azim), 68 deg strike).

25 deg dip SSE

The pebble beds have a large range in grain size from sand to cobbles



Pebble imbrications suggests transport in a ESE direction





The conglomerate cement is very hard – see zoom in photos below



Conglomerate martix & cement. Quartz solution cement lines the cavity created by PEBBLE.

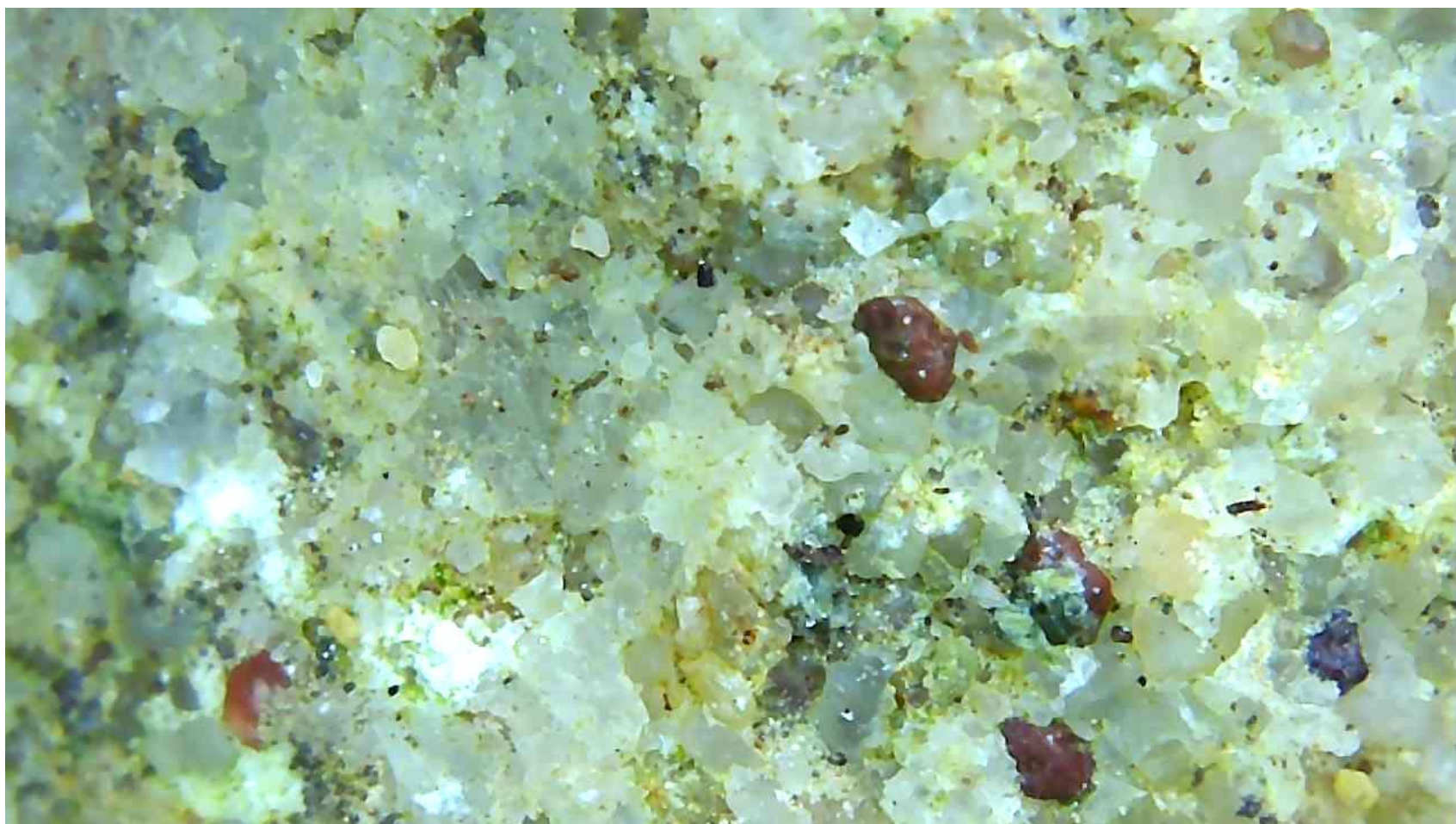


Quartz cement in pebble cavity









Underlying sand. Dominantly yellow, patchy discolouration to reddish brown , fine to medium grained, friable,



Pebble variations and imbrications. Some pebbles lying on thick deposits of sand others lying in neat rows. Sandstone matrix in the conglomerate dominantly yellow with hints of red, dominantly fine grained (would expect coarser stuff). Where the matrix is more brown it is finer and more clay rich. The matrix is firmer / cemented and more competent than the sandstone beds.





Moving from the west face of the main quarry to the south face we are looking at a section along strike.
Because of this the beds appear to be sub horizontal, as seen in the following photos





Lineation's are wavy, not straight. This is a consequence of the depositional features such as channels.









The massive bed of conglomerate pinches out to the east and is overlain by a thick sandstone with some pebbles



Lense of pebbles



Pebble imbrications











Sands and gravels at SE end of quarry. Channel deposit

Sands and gravels at SE end of quarry





Sandstone: Yellow colour, friable, medium grained, occasionally coarse, dominantly subangular - subround, clear frosted quartz, yellow weathered feldspar ? Excellent porosity, poor cement. Fluvial



Sandstone *500



Sandstone *500



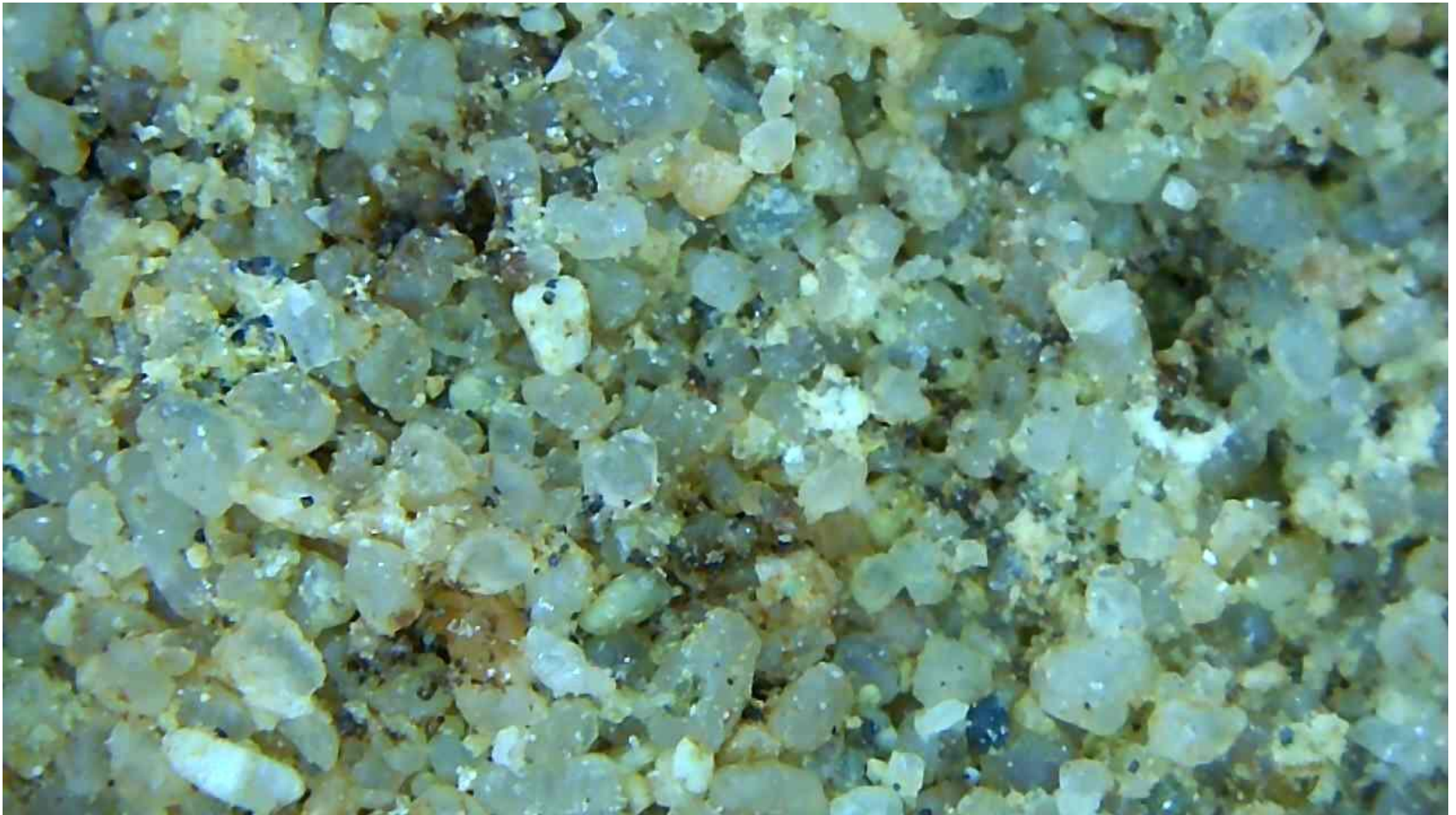
Sandstone *500



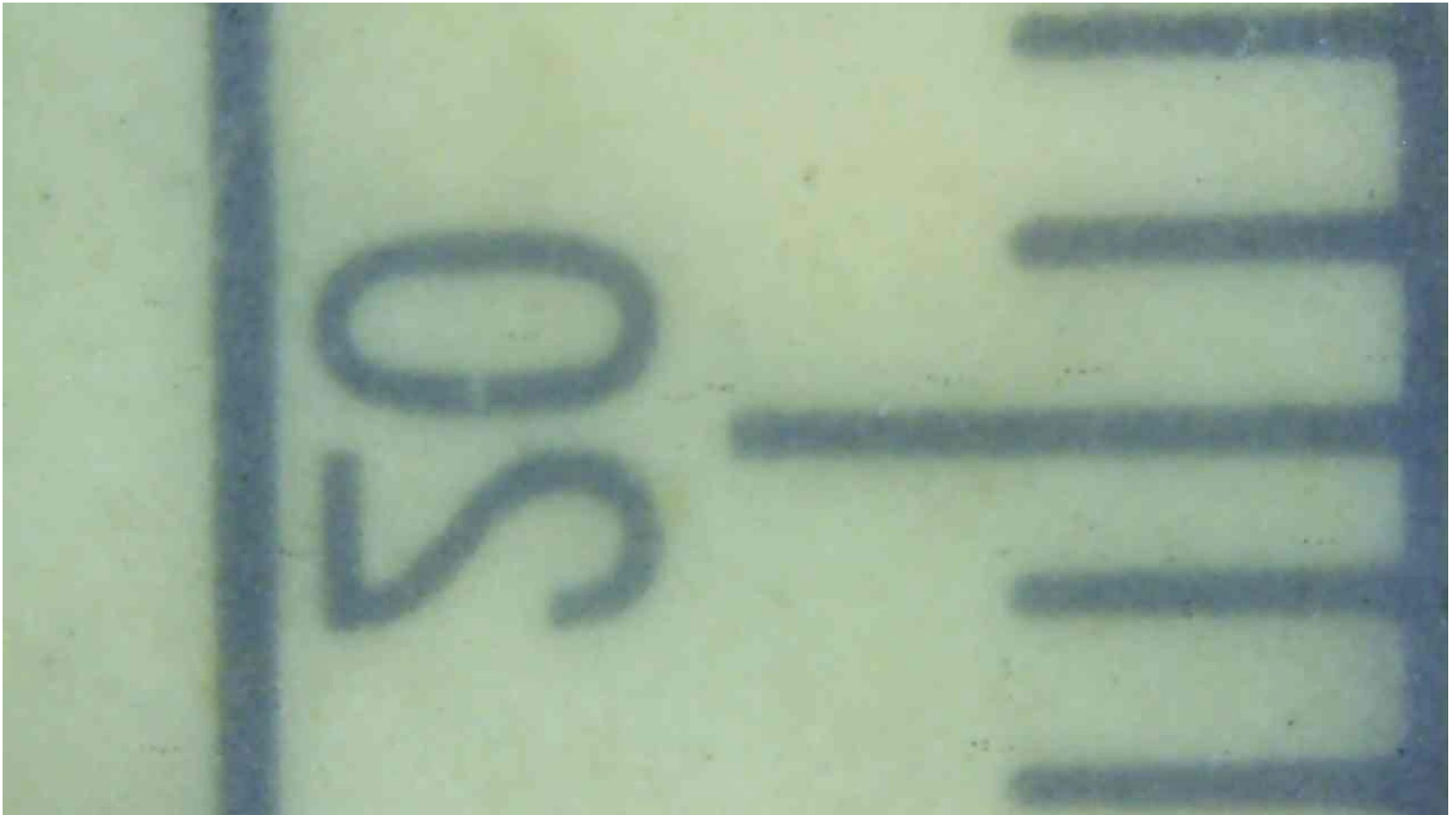
Sandstone *500



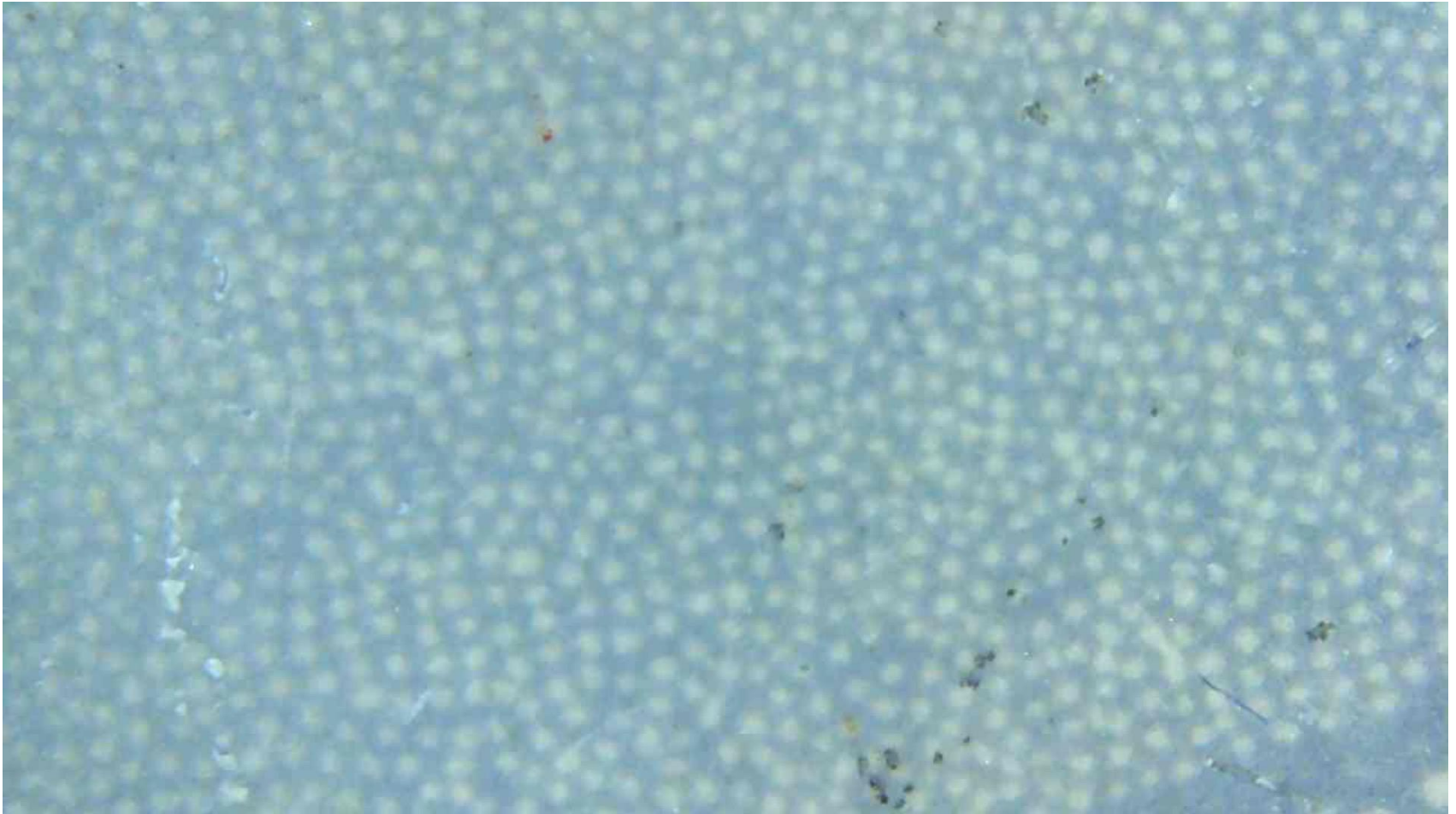
Quartz shows good alignment
(F-M grained)



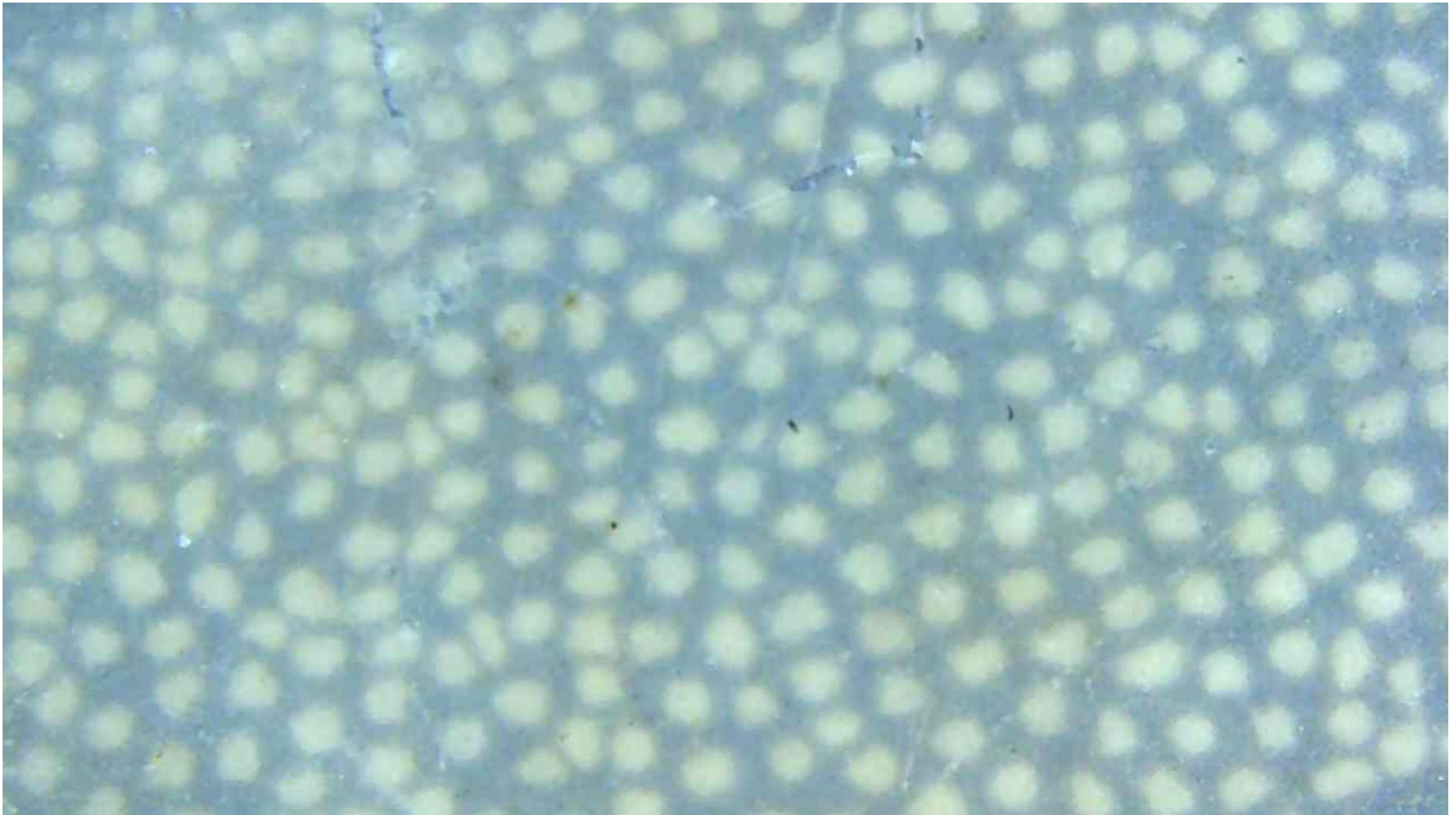
* 40 magnification (mm divisions)



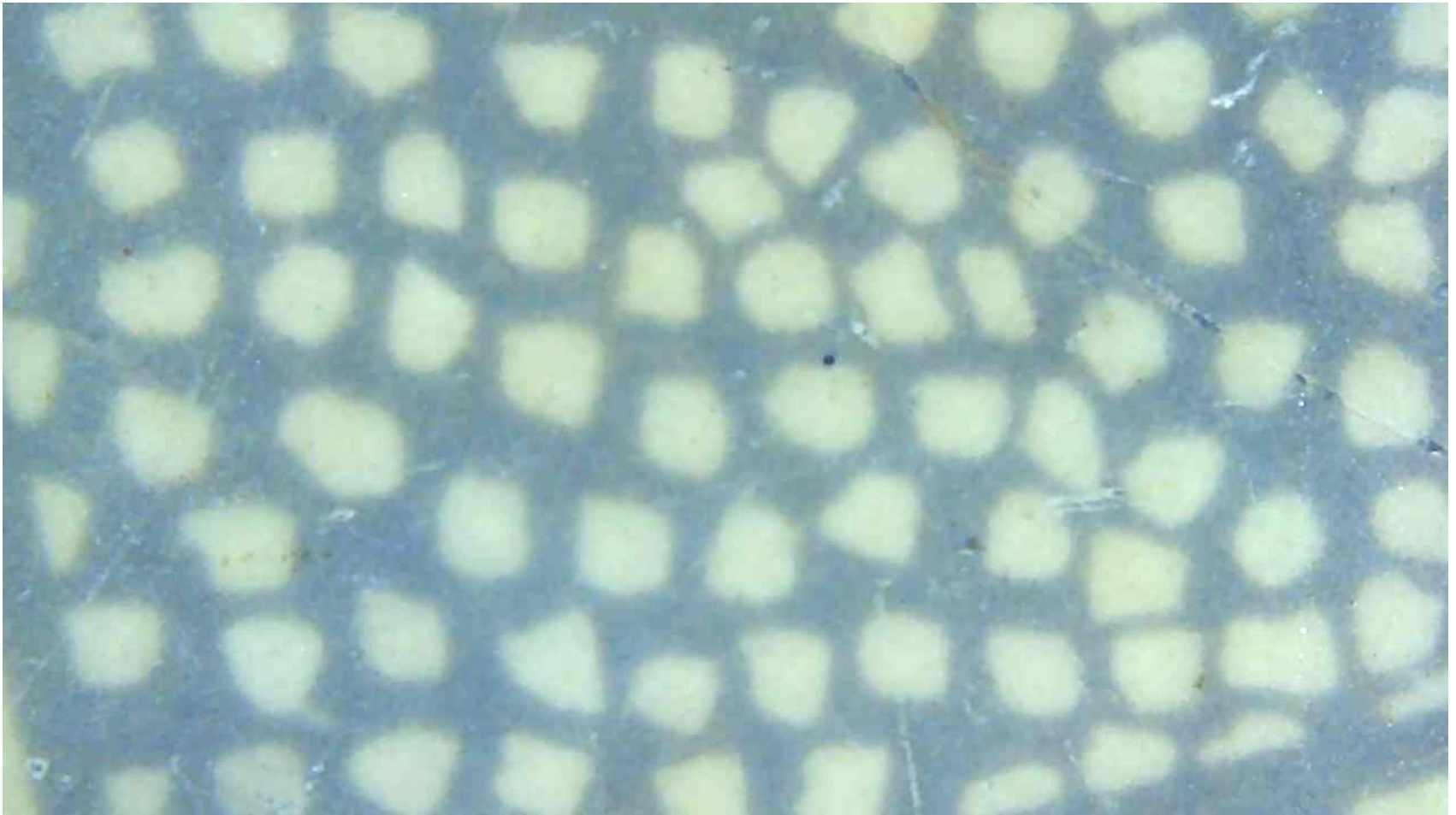
Very Fine Grained 0.062-0.125 mm
* 70 magnification



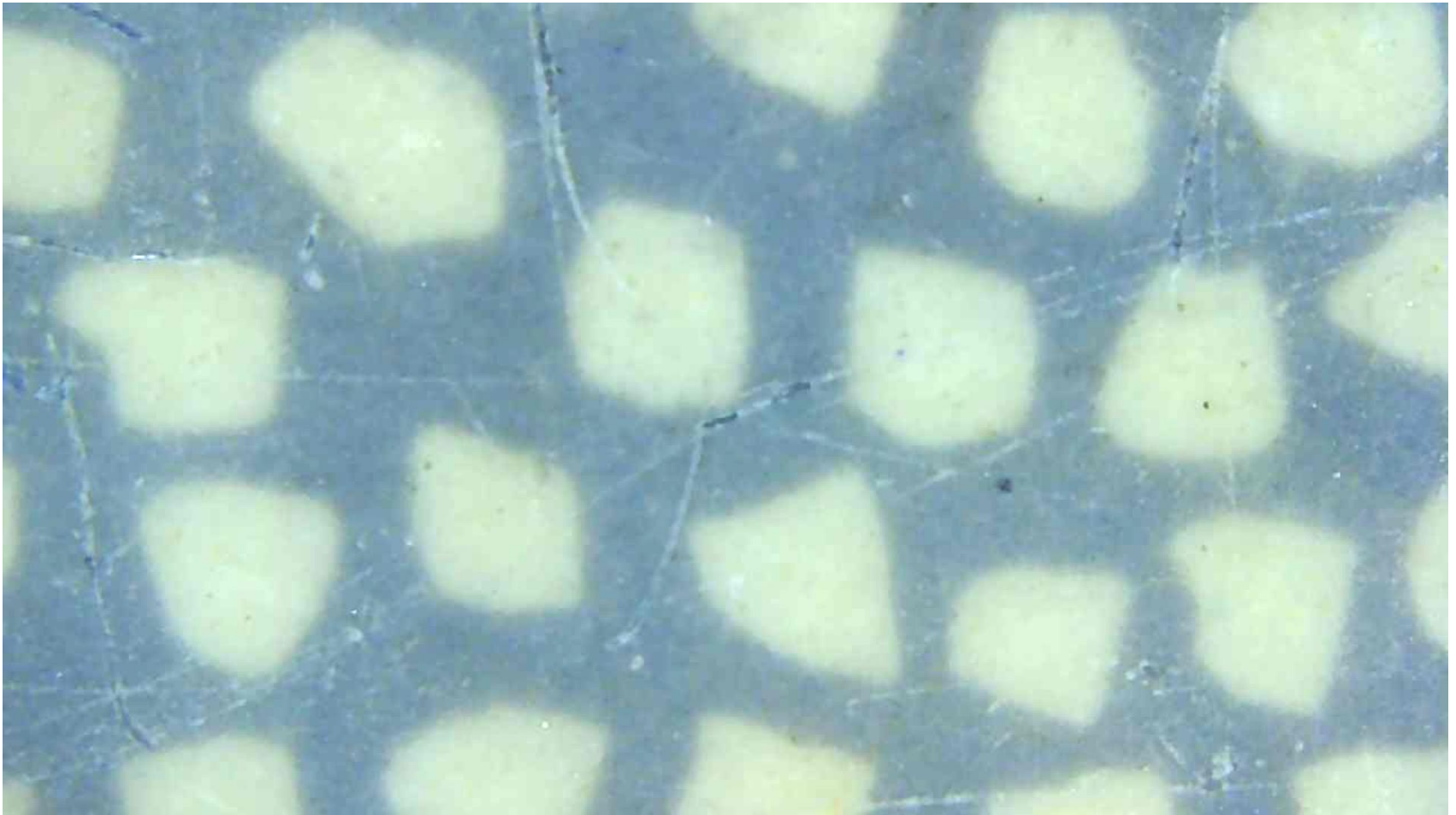
Fine Grained 0.125 – 0.25 mm
* 70 magnification



Medium Grained 0.25 – 0.5 mm
* 70 magnification



Coarse Grained 0.5 – 1.0 m
* 70 magnification



Very Coarse 1.0 – 2.0 mm
* 70 magnification

