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#### ABSTRACT

A new and exceptional sand injectite complex has been identified within the Casselman Formation (Upper Pennsylvanian) near Pittsburgh, Pennsylvania. The injectites are displayed prominently on the northern highwall of the parking lot for the Mt Nebo Pointe shopping center, near the Camp Horne Road interchange on I-279. This previously undocumented locality is extremely well-exposed, easily accessible and contains dozens of meters-scale injectites.

The wall is 320 m long and up to 13 m high. Exposure includes flat-lying strata of Casselman Formation (Conemaugh Group). We studied the undisrupted stratigraphic interval of sandstone, siltstone, claystone and coal at a nearby roadcut on I-279. We then applied our expectation of the stratigraphic interval to the Mt Nebo Pointe highwall. At the base of the wall is the uppermost Birmingham Sandstone overlain by laterally displaced and sheared Wellersburg Coal and claystone.

Sand dikes ranging from a few cm to 1.0 m wide intrude these lower strata. Smaller dikes tend to cut horizontally while the largest dikes intrude vertically. About 20 clear vertical dikes can be identified, with approximately 80% being concentrated in the western half of the wall. Dikes are strongly bedded parallel to orientation, melding into bedding of cross-cutting dikes at intersections. Dike shapes resemble pillars rather than V's. Clasts are common and oriented either concurrent with the host rock or parallel to injectite direction and displaced upwards. These indicate vertical sediment flow coupled with rapid brecciation.

The upper highwall is typical Morgantown Sandstone (cross-bedded, feldspathic and comparatively well-sorted) interstratified with slurry-flow sandstone (massive, lithic and poorly sorted). This slurried lithic sand was intruded upward from the Birmingham Sandstone interval beneath the parking lot level. The overall depth of the injectites is unknown, however, a Birmingham source would imply a minimum of 6 m.

This exposure presents a unique opportunity to study sand injectites directly. It is our hope that this exceptional injectite complex will provide valuable insights into injectite formation and associated processes.



# SAND INJECTITE COMPLEX WITHIN THE UPPER CASSELMAN FORMATION AT MT NEBO POINTE, PITTSBURGH, PA

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# FIGURES

The highwall contains approximately 20 sand injectites, with at least 15 occuring within the first 100 meters (from west to east). For clarity, only a few sections are displayed here. Refer to the index figure below for their locations in outcrop. The dikes and sills are both strongly bedded parallel to their orientation. A good deal of the host rock is "stained," presumably by fluid flow, and it is sometimes difficult to distinguish the host rock from the injected material (see the red square at right).

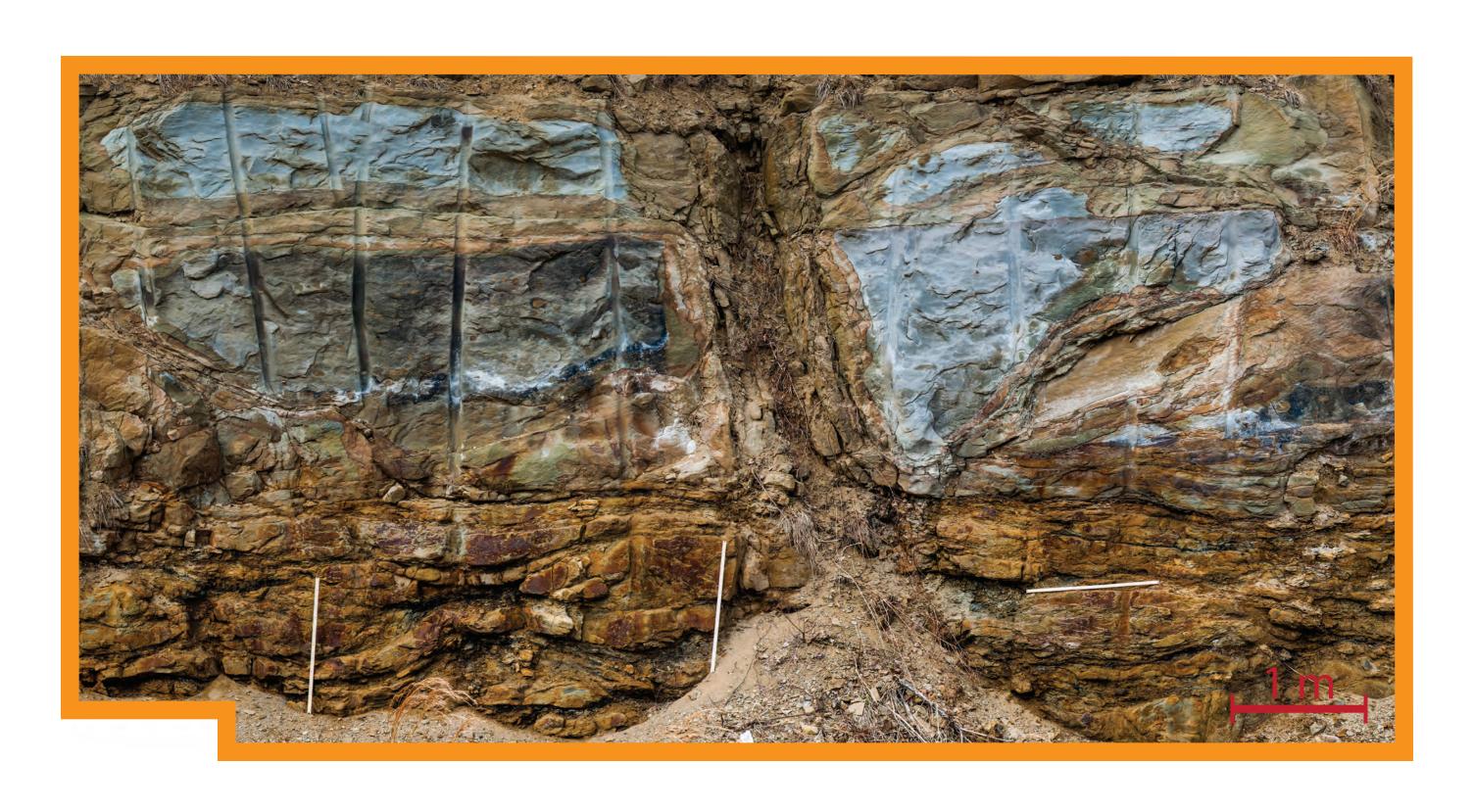
# Mt Nebo Pointe Sand Injectite Complex



Morgantown Sandstone interstratified with slurryflow sandstone

slurry-flow sandstone massive, lithic, poorly sorted

Birmingham Sandstone with sandstone filled dikes and sills



(Above)This injectite is 0.8 m wide and hasstained a significant portion of thehost rock. Some minor seams of

coal can be seen in the lower left.

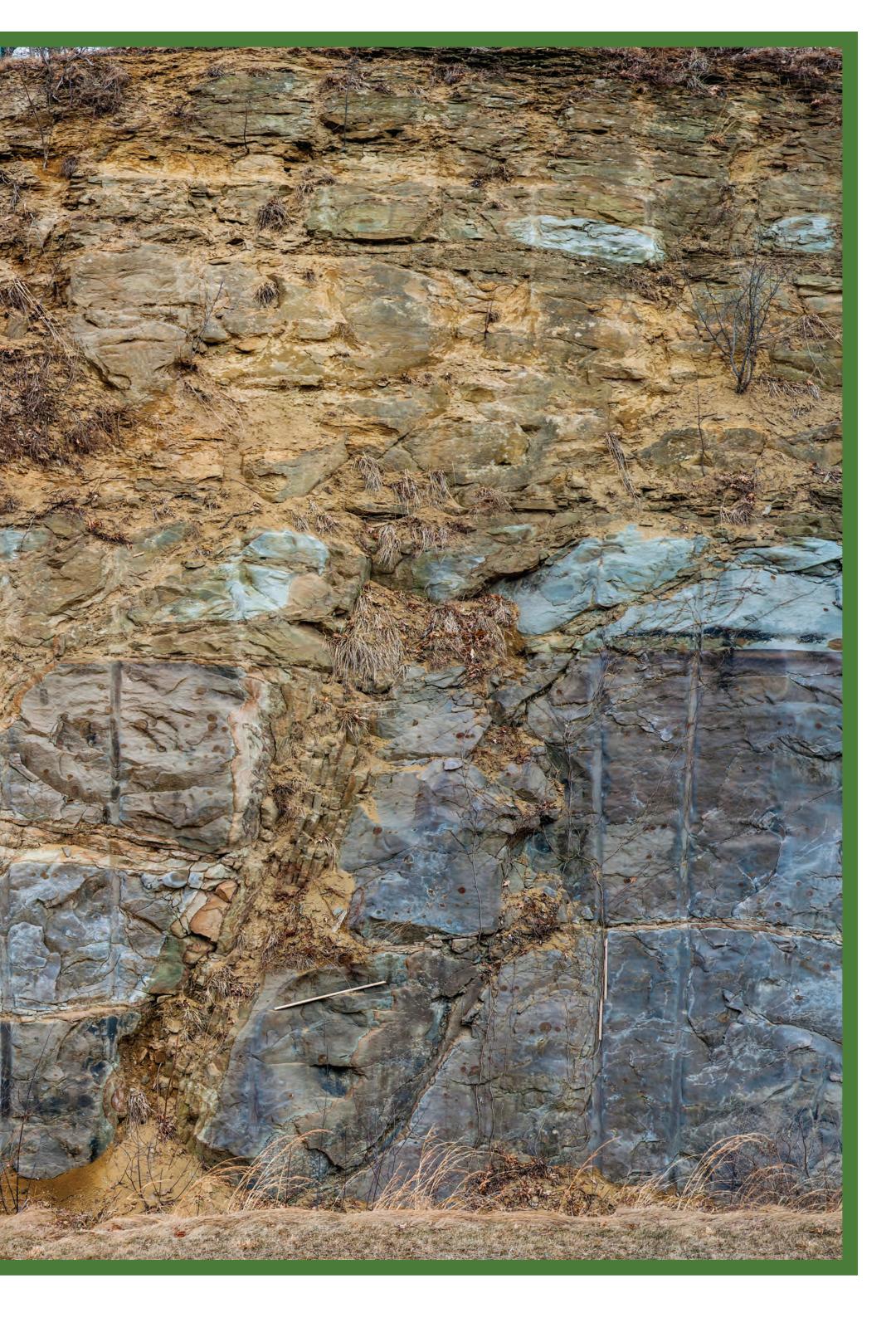
(Right)

Fragmented and deformed coal. Also note the conglomerate lens near the base of the wall.

host rock stained injectite slurry







## METHODS

We systematically photographed the highwall with a Nikon D90 camera. Climbing an A-frame ladder, we were able to shoot straight-on as high as five meters off the ground. Photos of the upper portion were taken at a slight upwards angle. We then processed the images in Photoshop and stitched them together using Autopano Pro. The accuracy of both the photography and the final composite image could be greatly improved by using a motorized panoramic camera mount.

### FUTURE RESEARCH

We intend to continue study of the Mt Nebo Pointe highwall and to use this initial photo documentation to plan future research. Detailed thin section analysis will be conducted to 1) confirm the stratigraphy has been correctly inferred, 2) determine whether the dikes indeed posses the tightly packed texture characteristic of injectites, and 3) observe what flow-indicative microfeatures might be found, particularly at the dike/sill interface. We also plan to reshoot the highwall using a gigapan mount, upgraded software and improved photography techniques. It is our hope that these lines of research may shed light on the overall geometry and genesis of the injectite complex.

#### SIGNIFICANCE

The Mt Nebo Pointe highwall contains some of the best sand injectites on record. It is well exposed, easily accessible and provides an exceptional opportunity to study injectites and associated features.

#### ACKNOWLEDGEMENTS

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