

COMMENTS ON AN AGATE BASIN FIND SPOT IN THE WESTERN LAKE AGASSIZ BASIN OF MANITOBA

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In 2009, A.K. Peach of FMA Heritage Inc drew to my attention a unifacially-patinated Agate Basin point of Knife River Flint (Fig. 1). The artifact was found atop the backfill of a pipeline trench that ran through a cultivated field northeast of Morden, MB. The find-spot is located in a section of the main offshore basin of Glacial Lake Agassiz, and has been assigned the Borden number DhLl-7.



Fig. 1. The DhLl-7 Agate Basin point. Photographs courtesy of A.K. Peach, FMA Heritage Inc; layout courtesy of Gary Wowchuk.

The recovery is potentially significant by virtue of its discovery below the elevation of the western margin of the Lake Agassiz basin. Agate Basin points are dated to between 10,500 and 10,000 RCYBP on the northern plains. This time frame coincides with the Moorhead phase of Lake Agassiz that was characterized by depressed lake levels. The lowest level reached by the water plane during Moorhead time was somewhat below the elevation of the Ojata water plane (Fig. 2, 3). Thus, there is a “goodness of fit” between the geographic location of the DhLl-7 Agate Basin find spot and the Lake Agassiz chronology as it is currently (and variously) defined by the geologists.

The DhLl-7 recovery is noteworthy in the sense that it may represent human occupation of the western sector of the Agassiz basin when the latter was temporarily drained and open to the sky during the Moorhead low-water phase. This conclusion is



Fig. 2. Location of DhLI-7 relative to Lake Agassiz (black area) during the Moorhead water-level low-point prior to the Moorhead transgression. Base map after J.T. Teller 1985.

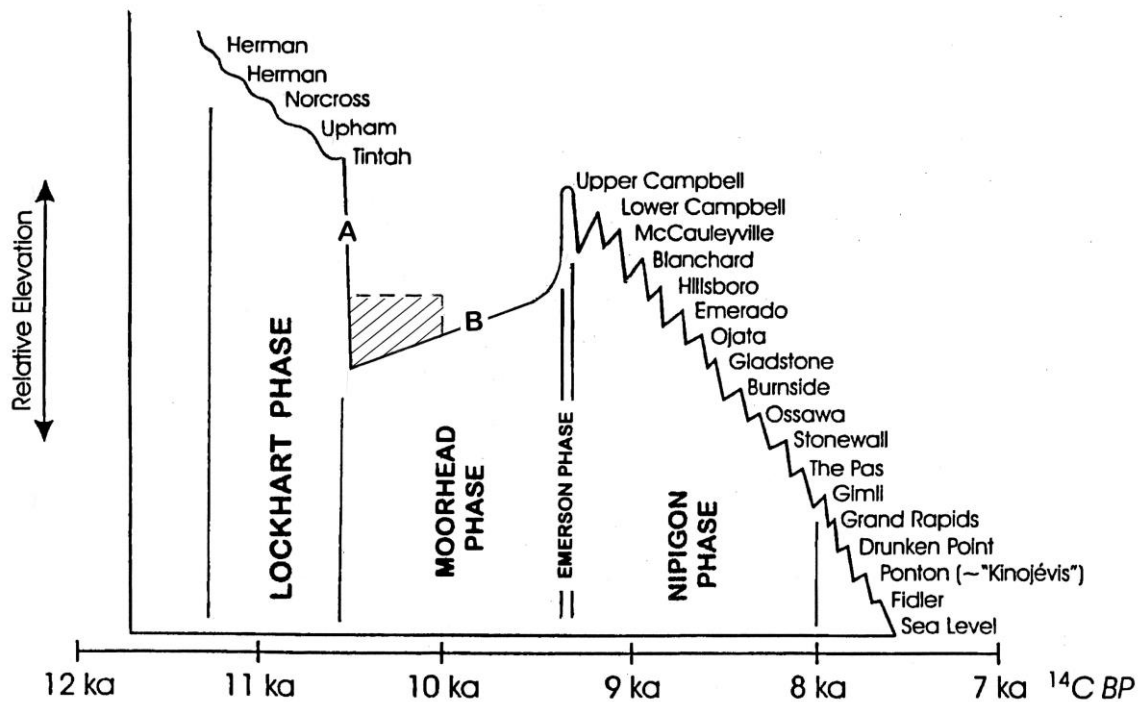


Fig. 3. Glacial Lake Agassiz chronology, with approximate geographic and temporal position of DhLI-7 (somewhere within the area of the diagonal lines). A = Moorhead regression, B = Moorhead transgression.

guarded, however, because of several complicating factors. The ensuing Moorhead transgression (Fig. 3) culminated in the Emerson high-water phase that occasioned considerable sedimentation within much of the Agassiz basin. This sedimentation would have deeply buried the DhLl-7 cultural deposit (Fig. 4).

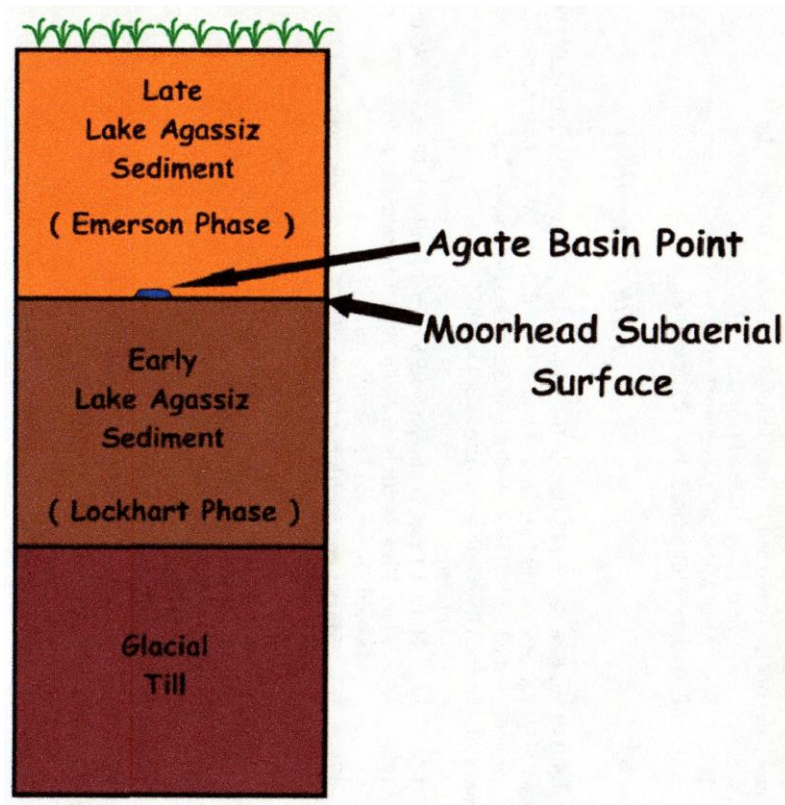


Fig. 4. Generalized stratigraphy of DhLl-7, assuming deposition of the Agate Basin point during the Moorhead phase of Lake Agassiz. Courtesy of Gary Wowchuk.

At first blush, the re-deposition of the artifact on top of the backfill where it was discovered archaeologically can be explained simply as the outcome of disturbance by the trenching machinery. It must be remembered, however, that the site is located in an area that has been intensively cultivated as well.

The patinated face of the DhLl-7 projectile point displays faint traces of rust. Under the circumstances, these rust marks could have arisen through contact with either a piece of cultivation equipment, or else with the trenching machinery. If the latter, the artifact could have been dredged up from as far below the present ground surface as 3 metres (9 feet), the depth of the trench.

On the other hand, if the rust spots resulted from contact with cultivation machinery, the artifact would have come from the recent plough zone that could in no way have extended to a depth of 3m or anywhere near it. Rather, the plough zone would have been

relatively shallow, implying that the artifact would have come from a post-Emerson (i.e., Nipigon phase) ground surface dating to no earlier than 9,200 BP. A maximum age of 9,200 BP is entirely too late for a projectile point find of the Agate Basin type. There arises the question, then, of how this discrepancy might be resolved.

The answer may lie in the nature of the soil type that typifies the DhLl-7 locale. The local soil belongs to the Altona association, a chernozem developed on sandy to silty parent material. As such it is subject to deflation under drought conditions. Furthermore, the Altona soils are characterized by rodent burrowing activity (bioturbation), whereby subsoil material is re-deposited vertically onto the existing ground surface.

Theoretically, then, since the site became subaerial around 9,200 years ago, the local ground surface may have been physically lowered close to the underlying Agate Basin living floor due to wind deflation. Added to that is the possibility that the artifact itself may have been displaced upwards and re-deposited onto the ground surface by rodent-generated bioturbation before eventually being impacted by farm machinery.

In sum, regardless of how the artifact received the rust stains, it can be argued that it was originally associated with a portion of Moorhead-era land surface.

There are two other problematic issues surrounding the DhLl-7 Agate Basin point that must be acknowledged here. The artifact, in its original depositional setting, lay in the path of a transgressing shoreline that culminated in the formation of the massive Upper Campbell strandline several kilometres to the west. That notwithstanding, there is no visual evidence of water-wear on the point, nor is there any obvious explanation for this absence.

Likewise, one would expect the existence of an unconformity¹ in the Moorhead-era land surface that would correspond to the Agate Basin living floor. A borehole in the near vicinity of DhLl-7, and other such probes conducted across the basin in Manitoba in the early 1970s, produced no trace of such an unconformity or stream-deposited (fluvial) unit. This stands in marked contrast to conspicuous evidence for a biologically productive wetland that existed farther to the south in the Fargo area during Moorhead time. Again, there is no explanation for the absence of comparable evidence in the core taken near the DhLl-7 locality.

Clearly, there are some significant problems accruing to the geoarchaeological interpretation of the DhLl-7 Agate Basin point. That said, the following speculative history is offered:

(1) The artifact was deposited by its original maker/user on the exposed western floor of Lake Agassiz sometime between 10,500 and 10,000 years ago during the Moorhead low-water phase.

¹ An unconformity is an erosional, former ground surface separating two strata of different ages, indicating that geological deposition was interrupted and hence discontinuous.

- (2) It was then buried beneath lacustrine sand and silt laid down late in the Moorhead transgression, the Emerson high-water phase, and the early Nipigon regression phase (Fig. 3), all of which cumulatively ran from 9,800 to 9,000 BP.
- (3) Sometime between ~9,000 BP and 3,000 BP, the post-Agassiz ground surface was lowered and brought closer to the Agate Basin occupation level due to wind deflation.
- (4) During the same time period, bioturbation displaced the artifact upward to the ground surface.
- (5) During the modern era, the artifact, now located on or very near the ground surface, was incorporated into the plough zone by farm machinery.
- (6) Alternatively, the artifact was brought to the modern ground surface from below deep lacustrine deposits by pipeline construction machinery.
- (7) In 2009 the artifact was re-deposited on top of the trench back fill by pipeline construction that ran through the cultivated field, and was subsequently recovered and documented archaeologically by FMA Heritage Inc.