

ANNUAL PERMIT REPORT

Archaeological annual research excavation

Archaeological excavations at Lovedale, Free State Province: the 2019 season.

Permit number: 2862

SAHRIS Case ID: 13324

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Date: 23 January 2020

SAHRA permit officers: Ragna Redelstorff and Philip Hine

Date of permit issue: 4 February 2019

Expiry date of permit: 28 February 2022

Permit holder: Dr. Lloyd Rossouw, National Museum Bloemfontein

Permit to: Dr. Michael Toffolo (Bordeaux Montaigne University, France), Dr. Britt Bousman (Texas State University, USA), Dr. Daryl Codron (University of the Free State, South Africa), Dr. Christopher Miller (University of Tübingen, Germany), Dr. Lloyd Rossouw (National Museum Bloemfontein)

Site name: Lovedale

Object ID: 129110

Executive summary

The site was excavated from 2 to 29 July 2019. Ten excavation units, each of 1 m² surface area, were laid out on top of two ‘mesas’ of preserved alluvial terrace within the donga (henceforth Area A and Area B), south of the Modder River. An additional unit (Unit 9), 2 m² in surface area, was laid out at the foot of Area A. Locales were selected based on the occurrence of lithics in situ in eroded sections of the donga, and units were laid out using a total station according to an excavation grid anchored to two permanent landmarks (concrete blocks), whose exact coordinates were measured using a GPS device and corrected. Units 1-2-3, 6-7-8 and 10-11 are located in Area A, whereas Units 4-5 are located in Area B. The edges of Area A and B were plotted with the total station to obtain a reference contour map of the site. Unit 4 was not excavated. All other units were excavated by arbitrary levels 10 cm thick using pointing trowels, patches and small picks due to the hardness of clay-rich layers. Units 5 and 8 were excavated to the surface of Level 2. Unit 11 was excavated to the surface of Level 4. Unit 6 was excavated to the surface of Level 5. Other units were excavated to the surface of Level 6 (i.e. 50 cm below surface). Unit 9 was excavated in a single level 20 cm thick. All levels were photographed and plotted. Artifacts, bones and sediment samples were 3D-plotted using a total station and labeled using progressive numbers, whereas excavated sediments were sieved through a 4-mm mesh to recover small lithic flakes and bone chips. Faunal remains and diagnostic artifacts were 3D-plotted and collected out of context at the bottom of the donga and in the excavation areas. At the end of the season, trenches were backfilled with sandbags. Three sedimentary units were identified and described in excavation trenches. Most artifacts recovered were concentrated in Level 3-4 and show characteristic features of Middle Stone Age technology. Unit 9 is comprised of fluvial gravel rich in bone and teeth fragments and devoid of artifacts. This gravel layer is not in physical connection with Area A but it likely predates it. A dating profile was prepared by cutting back a one-meter wide portion of the exposed south donga section of Area A. Here the stratigraphic sequence reaches 3 m in depth and includes four additional sedimentary units. Variations in calcium carbonate nodule concentrations and bioturbation were observed throughout the dating profile. Bulk sediment samples were collected for luminescence dating, infrared spectroscopy and phytolith analysis. Intact blocks of sediment were collected for micromorphological analysis. Sediment samples cover all of the excavated levels and transitions between sedimentary units.

SAHRIS object links

Lovedale: <https://sahris.sahra.org.za/sites/lovedale>

OSL samples: <https://sahris.sahra.org.za/objects/lov-dmv2019osl>

Sediment samples: <https://sahris.sahra.org.za/objects/lov-dmv2019sediment>

Bone samples: <https://sahris.sahra.org.za/objects/lov-dmv2019bones>

Export permit for OSL samples: <https://sahris.sahra.org.za/cases/export-permit-2019-osl-samples-lovedale-and-damvlei>

Export permit for bone and sediment samples: <https://sahris.sahra.org.za/cases/export-permit-2019-sediment-and-bone-samples-lovedale-and-damvlei>

Location details

Location name: Farm Lovedale 1844

GPS coordinates: 28°54'2.34"S 25°41'7.50"E

Nearest town: Dealesville

Local District: Petrusburg

Magisterial District: Petrusburg

Province: Free State

Approximate age of materials: the last 200,000 years (based on relative chronology of artifacts and dated alluvial terraces at other sites along the Modder River)

List of all participating researchers

- Dr. Michael Toffolo, Bordeaux Montaigne University (France): director of fieldwork, infrared spectroscopy analysis of sediments and bones.
- Dr. Kristen Wroth, University of Tübingen (Germany): fieldwork, registrar, phytolith analysis, sediment analysis using infrared spectroscopy and micromorphology.
- Dr. Britt Bousman, Texas State University (USA): fieldwork, site survey, lithics analysis.
- Dr. Chantal Tribolo, Centre National de la Recherche Scientifique (France): fieldwork, optically stimulated luminescence dating.
- Dr. Lloyd Rossouw, National Museum Bloemfontein: fieldwork, phytolith analysis, curation of artifacts and bones.
- Mr. Isaac Thapo, National Museum Bloemfontein: fieldwork.
- Mr. Jacob Maine, National Museum Bloemfontein: fieldwork.
- Mr. Abel Dichakane, National Museum Bloemfontein: fieldwork.
- Dr. Daryl Codron, University of the Free State: carbon and oxygen stable isotope analysis of teeth.
- Dr. Liora Kolska Horwitz, Hebrew University of Jerusalem (Israel): faunal analysis.
- Dr. Maïlys Richard, Centre National de la Recherche Scientifique (France): electron spin resonance dating.
- Dr. Christopher Miller, University of Tübingen (Germany): micromorphology analysis of sediments.

Curation of materials

Name of institution: Florisbad Quaternary Research Department, National Museum Bloemfontein

Name of curator: Dr. Lloyd Rossouw

Phone number of curator: 0842505992

Email address of curator: lloyd@nasmus.co.za

Institutional address: 36 Aliwal Street, 9300 Bloemfontein

Storage: lithics and bones are stored in ziplock plastic bags labeled with progressive numbers, which are kept in labeled carton boxes (three boxes for lithics and one box for bones). Each number corresponds to specific spatial coordinates and Unit/Level numbers. Bulk sediment samples are stored in plastic vials. A comprehensive list of all materials extracted from the excavation and their spatial coordinates is available in an Excel worksheet at the National Museum, as well as fieldwork photos.

Specific information

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| Responsible person 1 <i>Full name:</i> <i>Position/academic level:</i> | Dr. Michael Toffolo Junior Research Chair Bordeaux Montaigne University, France |
| Responsible person 2 <i>Full name:</i> <i>Position/academic level:</i> | Dr. Kristen Wroth Postdoc University of Tübingen, Germany |
| Responsible person 3 <i>Full name:</i> <i>Position/academic level:</i> | Dr. Lloyd Rossouw Head of the Florisbad Quaternary Research Department National Museum Bloemfontein |
| Number of participants | 8 |
| Duration of field work | 2-29 July 2019 |
| Excavation equipment used (e.g., trowels, picks, chisels, total station, screen mesh sizes) | Pointing trowels, patches and small picks were used for excavation; dentistry tools were used to uncover stone tools; pickaxes and shovels were used to clean dating profiles along exposed donga sections. All sediments were sieved through a 4 mm mesh. Excavation grid and units, artifacts, bones, sediment samples and off-excavation surface finds were 3D-plotted using a total station. |
| Indication of volume excavated numbers or names of stratigraphic units removed, approximate volume excavated (estimated bucket count) | Eleven excavation units were laid out and excavated by arbitrary levels 10 cm thick. Unit 4 was not excavated. Units 5 and 8 were excavated to the surface of Level 2. Unit 11 was excavated to the surface of Level 4. Unit 6 was excavated to the surface of Level 5. Other units were excavated to the surface of Level 6. Unit 9 was excavated in a single level 20 cm thick. |
| Samples provide a list of all samples taken and what analysis is planned to be carried out. (e.g. charcoal samples taken for radio-carbon dating, samples and placement of scimitars for TL dating) | List of optically stimulated luminescence dating samples: LOV-OSL-1 sediment LOV-OSL-2 sediment LOV-OSL-3 sediment LOV-OSL-4 sediment LOV-OSL-5 sediment LOV-OSL-6 sediment LOV-OSL-7 sediment List of bulk sediment samples for phytolith analysis and infrared spectroscopy: LOV-MM-1-bulk LOV-MM-2-bulk LOV-MM-3-bulk LOV-MM-4-bulk LOV-MM-5-bulk LOV-MM-6-bulk LOV-MM-7-bulk LOV-MM-9-bulk LOV-MM-10-bulk LOV-MM-11-bulk LOV-MM-12-bulk LOV-MM-13-bulk |

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|--|--|
| | <p>LOV-SED-1 LOV-SED-2 LOV-SED-3 LOV-SED-4 LOV-SED-5 LOV-SED-6 LOV-SED-7 LOV-SED-8 LOV-SED-9 LOV-SED-10 LOV-SED-11 LOV-SED-12 LOV-SED-13 LOV-SED-14 LOV-UNIT 3 LOV-UNIT 9b</p> <p>List of intact sediment blocks for micromorphology analysis: LOV-MM-1 LOV-MM-2 LOV-MM-3 LOV-MM-4 LOV-MM-5 LOV-MM-6 LOV-MM-7 LOV-MM-9 LOV-MM-10 LOV-MM-11 LOV-MM-12 LOV-MM-13</p> <p>List of undiagnostic bone and tooth fragments for infrared spectroscopy: LOV-1197 LOV-1200 LOV-1201 LOV-1205 LOV-1236/1238 LOV-1189 LOV-1192 LOV-1193 LOV-1180 LOV-1188 LOV-1210 LOV-1202 LOV-1199 LOV-1196 LOV-1179 LOV-1187 LOV-UNIT 9</p> |
| <p>Description of work/methodology excavation strategy, recording techniques used etc.</p> | <p>Units were excavated by arbitrary levels 10 cm thick. All level surfaces, artifacts and sediment samples were 3D-plotted using a total station. Level surfaces and sediment sample locations were photographed. All sediments were described according to texture, structure, inclusions and color.</p> |

List of excavated artifacts and bones by Unit/Level. All artifacts are made of hornfels. Classification by type is not yet available, although artifacts from Level 1 can be classified as pertaining to the Later Stone Age, whereas artifacts from lower levels show characteristic features of Middle Stone Age technology.

| | Unit 1 | Unit 2 | Unit 3 | Unit 5 | Unit 6 | Unit 7 | Unit 8 | Unit 10 | Unit 11 |
|---------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
| Level 1 | 4 | 6 | 1 | 3 | 6 | 5 | 13 | 2 | 21 |
| Level 2 | 0 | 5 | 1 | - | 22 | 0 | - | 2 | 26 |
| Level 3 | 5 | 13 | 12 | - | 33 | 10 | - | 11 | 8 |
| Level 4 | 1 | 18 | 40 | - | 20 | 2 | - | 13 | - |
| Level 5 | 5 | 9 | 13 | - | - | 11 | - | 2 | - |

Unit 9 was excavated in one single level 20 cm thick and did not contain artifacts. However, teeth and bones were recovered for a total number of 15 items.

Off-excavation surface lithics: 306

Off-excavation surface bones and teeth: 8

Off-excavation surface shells (*Unio caffer*): 3

Additional information

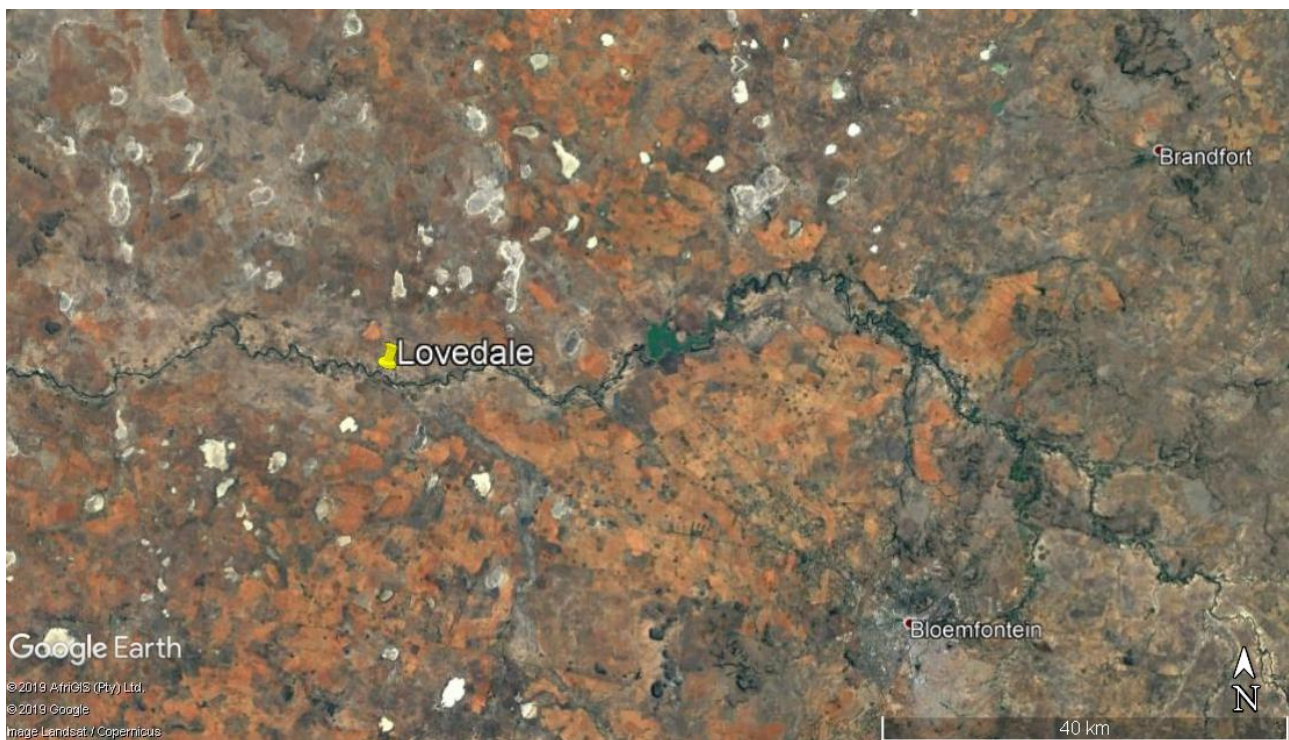


Figure 1. Map showing the location of Lovedale in the western Free State. The meandering green line running east-west is the Modder River.



Figure 2. Aerial photo showing the location of the excavation site in the Lovedale donga. The grey line in the top-right corner is the Modder River.

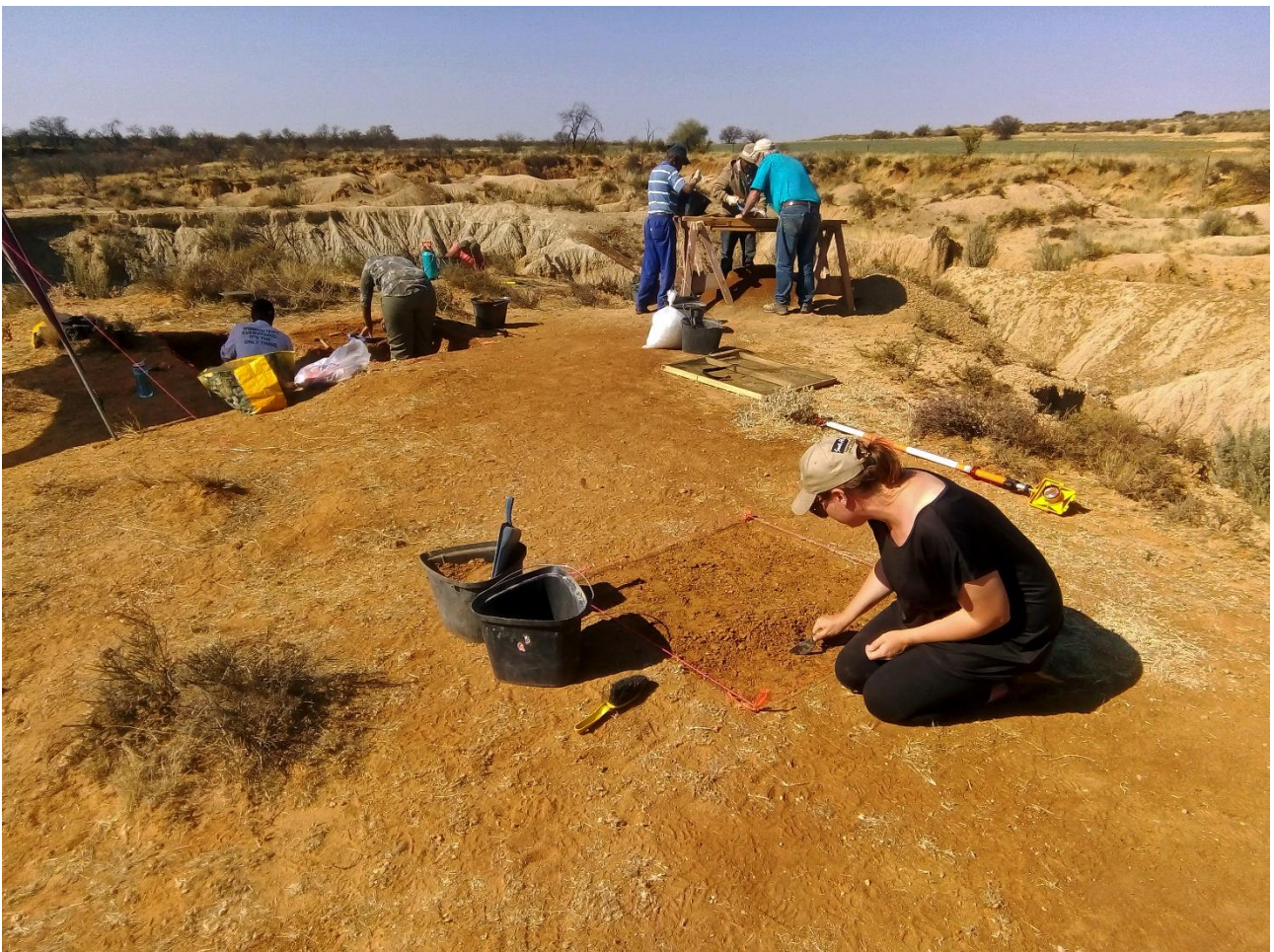


Figure 3. Area A during excavation.



Figure 4. Unit 9 after excavation. Note Area A in the top-left corner.

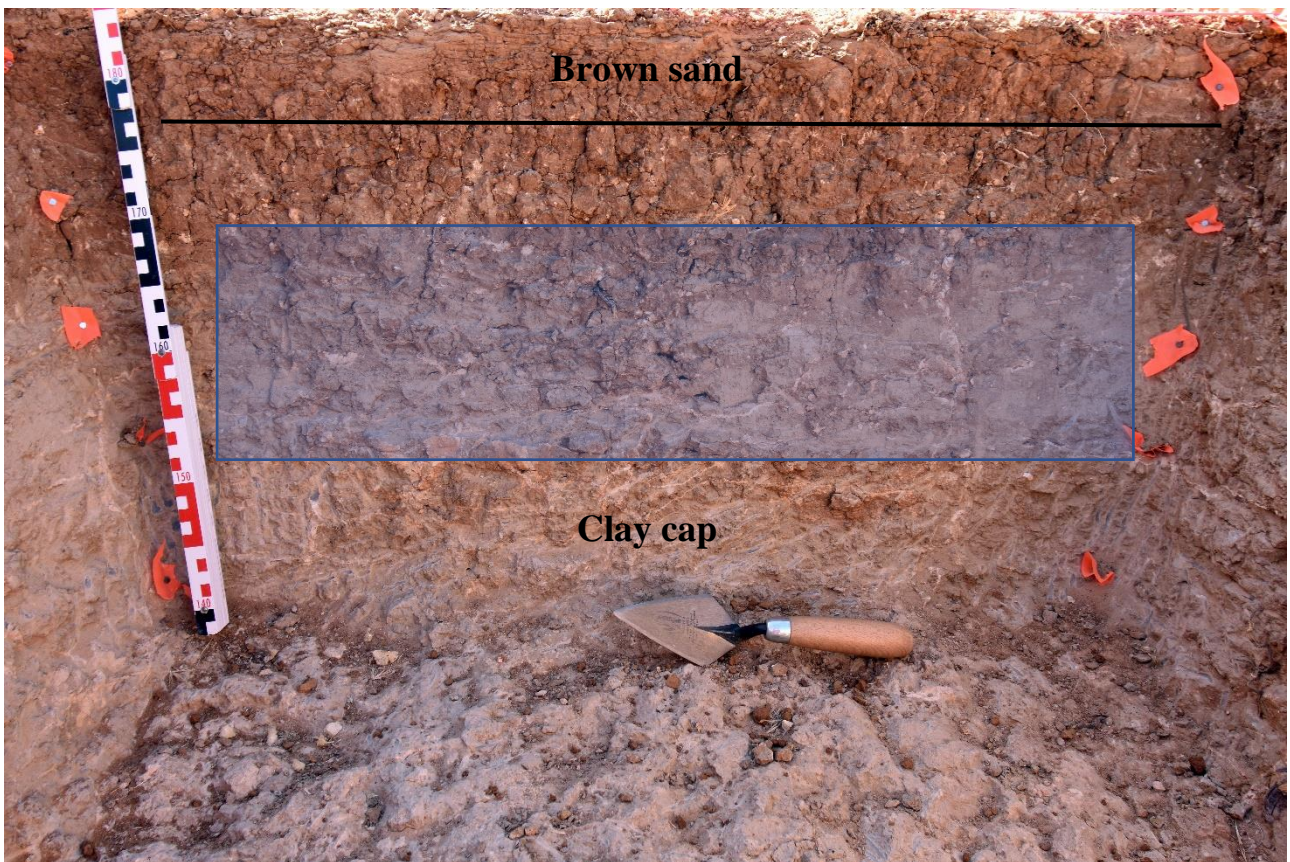


Figure 5. Photo of the east section of Unit 7 after excavation, showing sedimentary units. The rectangle marks the levels with the highest concentration of artifacts.

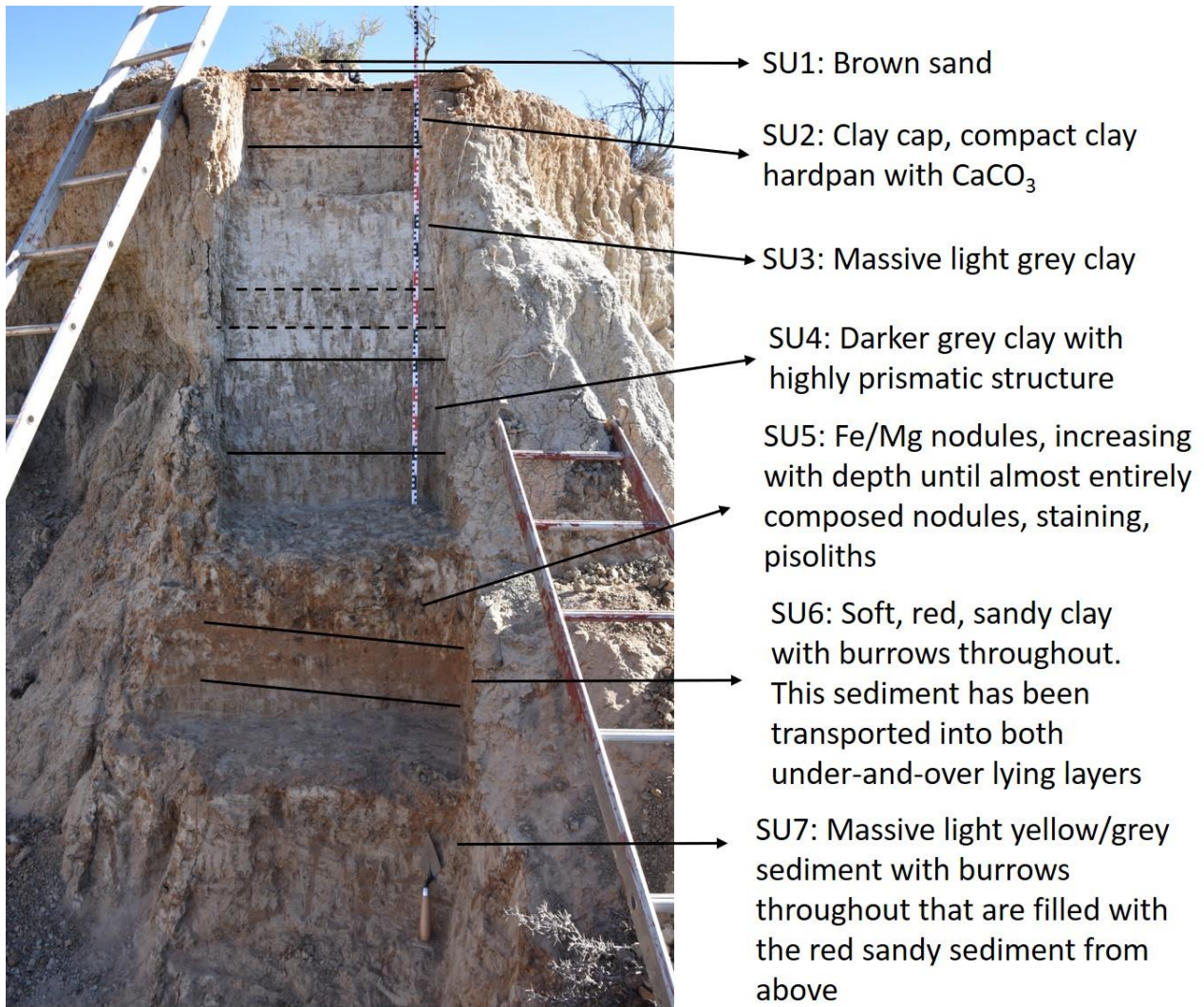


Figure 6. Dating profile, showing the entire stratigraphic sequence and its tentative description. Solid lines mark transitions between sedimentary units, whereas dashed lines mark zones of postdepositional processes.