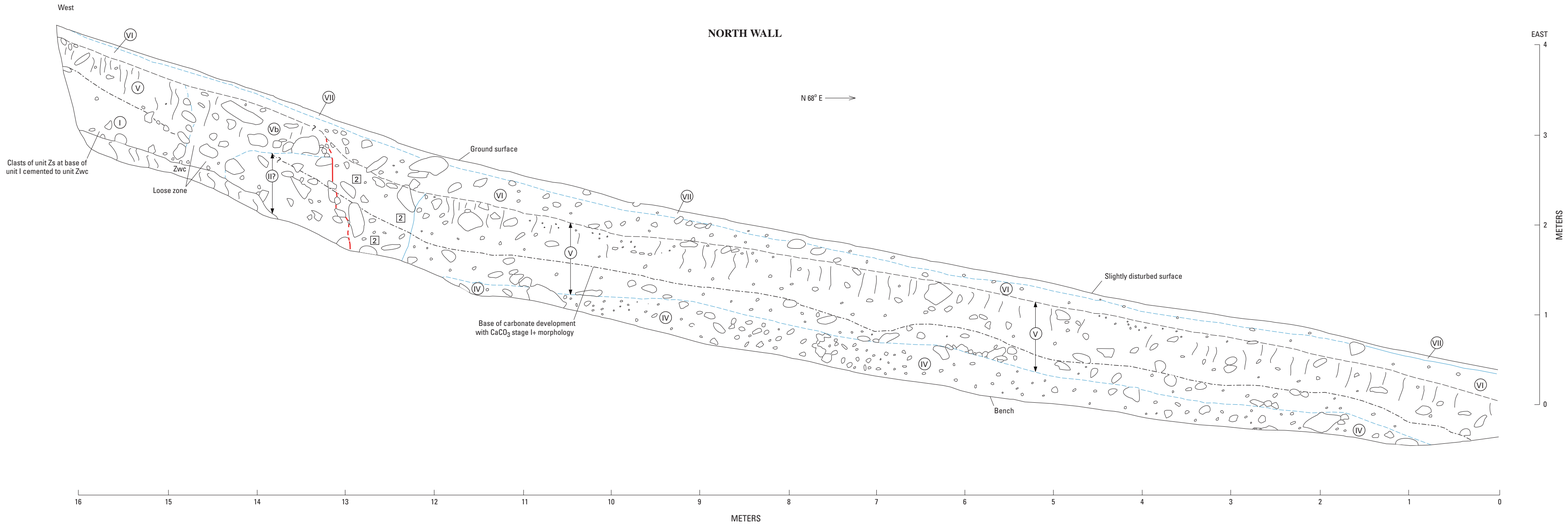

DESCRIPTION OF MAP UNITS

VII **Eolian sand and colluvium—**Fine sand, pale-brown (10YR 6/3), 0 to 12 cm thick. Unit is a vesicular A soil horizon with distinctive texture and pedogenic structure. Lower contact is marked by a weak stoneline formed by buried surface of unit VI.

VI **Eolian silt and colluvium—**Gravelly silt, very pale brown (10YR 7/3), massive, 10 to 50 cm thick. Unit consists of approximately 10 volume percent subangular pebbles and cobbles of Stirling Quartzite of Late Proterozoic age in a silty and sandy matrix. Unit is continuous along length of trench but thins markedly near station 13 m. Unit is predominantly a vesicular A soil horizon associated with underlying soil horizons and reflects a strong eolian component. Well-developed soil properties of Av horizon are mostly absent in vicinity of fault zone between stations 10 and 16 m. Upper part of unit displays platy, laminar-appearing soil structure. Contact with underlying units ranges from gradual to abrupt.

2, 2b **Fissure fill—**Sandy gravel, light-brown (7.5YR 6/4), massive. Unit consists of randomly oriented cobbles and small boulders of Stirling Quartzite in a loose sandy matrix, which is partly derived from clay-rich material from unit V. Contact with adjacent units ranges from diffuse to abrupt. Carbonate ($CaCO_3$ stage I+ morphology) is present as coatings on bottom of clasts to 75- to 90-cm depth.

V **Alluvium (east of fault on hanging wall)—**Silty to sandy gravel, light-brown (7.5YR 6/4), poorly stratified, 50 to 120 cm thick. Unit consists of angular to subangular clasts (pebbles, cobbles, small boulders) of Stirling Quartzite in a clayey, silty, and sandy matrix. Strong prismatic structure is displayed, and distinct clay films are visible. Unit is an argillic (Bt) soil horizon associated with overlying A soil horizon of unit VI and underlying carbonate horizon developed on unit IV. Upper part of unit has $CaCO_3$ stage I+–II morphology that has apparently been overprinted on unit. In this section of trench wall, unit V appears to be correlated with unit V on footwall of fault. Contact with unit IV is well defined and wavy. Together, units VI, V, and IV constitute unit Q2 (fig. 49).

V **Alluvium (west of fault on footwall)—**Clayey gravel, reddish-yellow (7.5YR 6/6), massive, 35 to 60 cm thick. Unit consists of pebbles and cobbles to small boulders of Stirling Quartzite in a clayey to clayey sand matrix. Angular-blocky soil structure is exhibited, and clay films are readily visible. Unit is an argillic (Bt) soil horizon. Contact with unit I is abrupt and smooth but locally has a relief of 10 to 35 cm.

Va, Vb **Alluvium (west of fault on footwall)—**Clayey to sandy gravel, reddish-yellow (7.5YR 6/6) to light-brown (7.5YR 6/4), poorly stratified, 45 to 75 cm thick. Units consist of angular to subangular pebbles, cobbles, and small boulders of Stirling Quartzite in a varyingly clayey to sandy matrix. Units are argillic (Bt) soil horizons, but soil properties are not as strongly developed as in unit V on hanging wall, probably owing to their location on steeper part of slope. Unit Va is generally looser than unit V, and unit Vb is much looser than unit Va. Contacts unit V are gradual, apparently masked by subsequent pedogenesis. Contacts with units I and II? are clear and smooth.

IV **Alluvium—**Sandy gravel, very pale brown (10YR 7/3), poorly stratified, typically 50 to 70 cm thick. Unit consists of carbonate-cemented, angular to subangular cobbles and pebbles of Stirling Quartzite in a sandy matrix; cobbles and pebbles are generally clast supported with subhorizontal fabric; gravel (>2 mm diam) generally composes 75 volume percent of unit. Unit has strong $CaCO_3$ stage II+–III morphology, and upper part incipient $CaCO_3$ stage IV morphology (laminae several millimeters thick in places). Unit is a calcic (Bk) soil horizon associated with overlying units V and VI. Base is characterized by change from clast to matrix supported.

1 **Fissure fill—**Sandy gravel, very pale brown (10YR 7/3), massive. Unit consists of randomly oriented clasts of Stirling Quartzite in a loose to slightly cemented sandy matrix. Contact with unit III (sta. 11.45 m, south wall of trench) is distinct and nearly vertical. Contact with fissure fill 2 is generally clear, though locally irregular, owing to greater cementation.

III **Alluvium—**Sandy to clayey gravel, very pale brown (10YR 7/3) to light-brown (7.5YR 6/4), poorly stratified, 40 to 60 cm thick. Unit consists of angular to subangular pebbles and cobbles of Stirling Quartzite in a sandy and silty to clayey matrix, with as much as 50 volume percent gravel (>2 mm diam). Upper 0 to 25 cm of unit is interpreted to be a buried A horizon overlying a buried Btk soil horizon that is 20 to 50 cm thick. Unit exhibits $CaCO_3$ stage II morphology. Basal contact is clear but irregular, and unit is distinguished from both overlying and underlying deposits by generally smaller clasts that are matrix supported.

II **Alluvium—**Sandy gravel, very pale brown (10YR 7/3), very poorly sorted, generally more than 50 cm thick. Unit consists of angular to subangular clasts of Stirling Quartzite in a sandy matrix, and is clast-supported; gravel (>2 mm diam) composes 75 volume percent of unit.

II? **Alluvium (west of fault)—**Sandy gravel, very pale brown (10YR 7/3), very poorly stratified, approximately 80 cm thick. Unit consists of carbonate-cemented angular to subangular pebbles and cobbles of Stirling Quartzite in a sandy matrix, and is generally clast supported, with a subhorizontal fabric. On south wall of trench, unit lies with erosional unconformity on altered bedrock (Wood Canyon Formation) and unit 1; contact is sharp but irregular.

I **Alluvium—**Sandy gravel, white (10YR 8/2) to very pale brown, massive, 10 to 60 cm thick. Unit consists of carbonate-cemented angular to subangular and subrounded pebbles and small boulders in a sandy matrix. Unit forms a Bk soil horizon ($CaCO_3$ stage IV morphology) and is strongly cemented to the point that quartzite clasts break as readily as the cement. Unit appears to form a thin pediment gravel on underlying bedrock, with a generally sharp contact penetrated by carbonate cement.

Zwc **Wood Canyon Formation (Cambrian and Upper Proterozoic)—**Quartzite, moderate-red (5YR 4/6) to grayish-orange-pink (10YR 8/2), sheared and altered. Upper 40 to 60 cm of unit (stas. 12.7–15.8 m, south wall of trench) is strongly impregnated with carbonate. Exposure appears to be part of unit A of lower member of the Wood Canyon Formation, on the basis of mapping by Monsen and others (1992).

Fault or fracture—Solid where clear and distinct, dashed where approximately located

Combined lithologic-unit/soil-horizon boundary—Solid where clear and distinct, dashed where approximately located or gradational

Soil-horizon boundary—Shown only where a soil-horizon boundary falls within a lithologic unit

Stratigraphic unit

Pebbles, cobbles, and boulders

Argillic (Bt) soil horizon

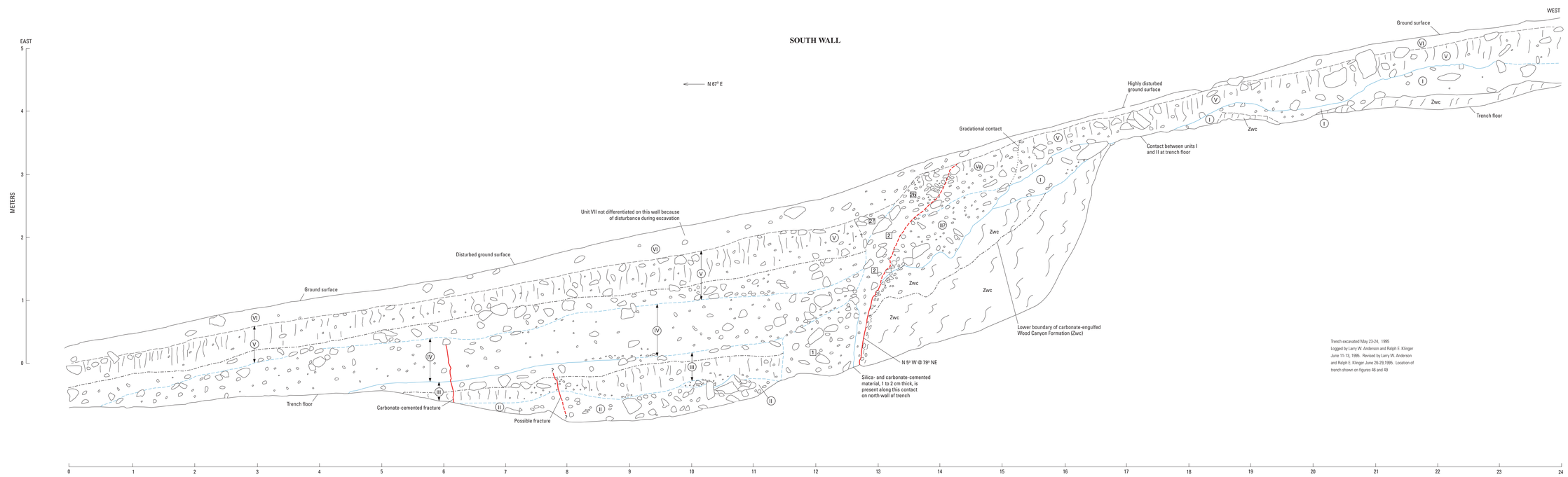

PLATE 22. LOG OF TRENCH BMT–3

Keefer, W.R., Whitney, J.W., and Taylor, E.M., eds., 2004, Quaternary Paleoseismology and Stratigraphy of the Yucca Mountain Area, Nevada: U.S. Geological Survey Professional Paper 1689