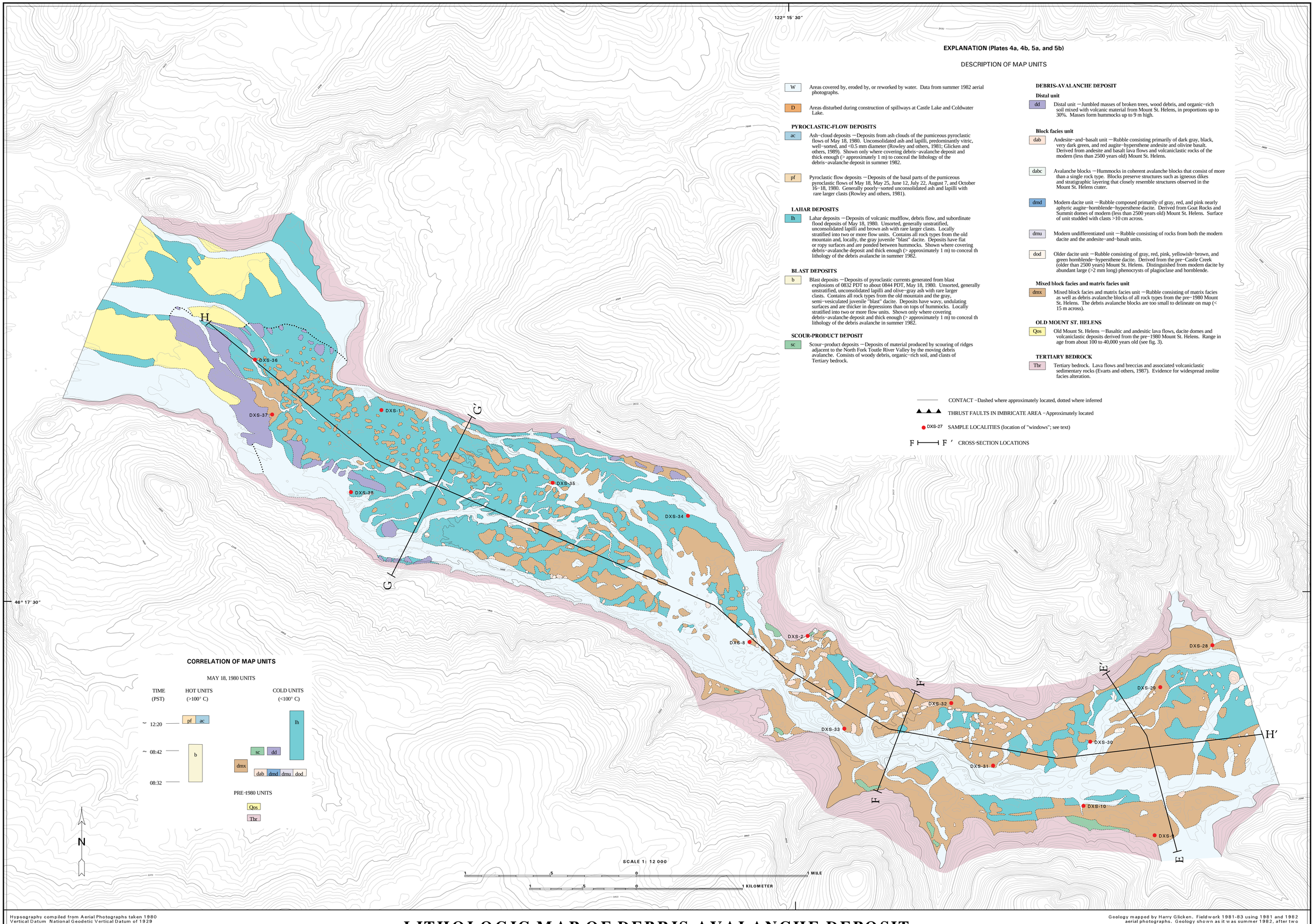

EXPLANATION (Plates 4a, 4b, 5a, and 5b)

DESCRIPTION OF MAP UNITS

W — Areas covered by, eroded by, or reworked by water. Data from summer 1982 aerial photographs.

D — Areas disturbed during construction of spillways at Castle Lake and Coldwater Lake.

PYROCLASTIC-FLOW DEPOSITS

ac — Ash-cloud deposits —Deposits from ash clouds of the pumiceous pyroclastic flows of May 18, 1980. Unconsolidated ash and lapilli, predominantly vitric, well-sorted, and <0.5 mm diameter (Rowley and others, 1981; Glicken and others, 1989). Shown only where covering debris-avalanche deposit and thick enough (> approximately 1 m) to conceal the lithology of the debris-avalanche deposit in summer 1982.

pf — Pyroclastic flow deposits —Deposits of the basal parts of the pumiceous pyroclastic flows of May 18, May 25, June 12, July 22, August 7, and October 16-18, 1980. Generally poorly-sorted unconsolidated ash and lapilli with rare larger clasts (Rowley and others, 1981).

LAHAR DEPOSITS

lh — Lahar deposits —Deposits of volcanic mudflow, debris flow, and subordinate flood deposits of May 18, 1980. Unsorted, generally unstratified, unconsolidated lapilli and brown ash with rare larger clasts. Locally stratified into two or more flow units. Contains all rock types from the old mountain and, locally, the gray juvenile "blast" dacite. Deposits have flat or ropy surfaces and are ponded between hummocks. Shown where covering debris-avalanche deposit and thick enough (> approximately 1 m) to conceal th lithology of the debris avalanche in summer 1982.

BLAST DEPOSITS

b — Blast deposits —Deposits of pyroclastic currents generated from blast explosions of 0832 PDT to about 0844 PDT, May 18, 1980. Unsorted, generally unstratified, unconsolidated lapilli and olive-gray ash with rare larger clasts. Contains all rock types from the old mountain and the gray, semi-vesiculated juvenile "blast" dacite. Deposits have wavy, undulating surfaces and are thicker in depressions than on tops of hummocks. Locally stratified into two or more flow units. Shown only where covering debris-avalanche deposit and thick enough (> approximately 1 m) to conceal th lithology of the debris avalanche in summer 1982.

SCOUR-PRODUCT DEPOSIT

sc — Scour-product deposits —Deposits of material produced by scouring of ridges adjacent to the North Fork Toutle River Valley by the moving debris avalanche. Consists of woody debris, organic-rich soil, and clasts of Tertiary bedrock.

DEBRIS-AVALANCHE DEPOSIT

Distal unit

dd — Distal unit —Jumbled masses of broken trees, wood debris, and organic-rich soil mixed with volcanic material from Mount St. Helens, in proportions up to 30%. Masses form hummocks up to 9 m high.

Block facies unit

dab — Andesite-and-basalt unit —Rubble consisting primarily of dark gray, black, very dark green, and red augite-hypersthene andesite and olivine basalt. Derived from andesite and basalt lava flows and volcaniclastic rocks of the modern (less than 2500 years old) Mount St. Helens.

dabc — Avalanche blocks —Hummocks in coherent avalanche blocks that consist of more than a single rock type. Blocks preserve structures such as igneous dikes and stratigraphic layering that closely resemble structures observed in the Mount St. Helens crater.

dmd — Modern dacite unit —Rubble composed primarily of gray, red, and pink nearly aphyric augite-hornblende-hypersthene dacite. Derived from Goat Rocks and Summit domes of modern (less than 2500 years old) Mount St. Helens. Surface of unit studded with clasts >10 cm across.

dmu — Modern undifferentiated unit —Rubble consisting of rocks from both the modern dacite and the andesite-and-basalt units.

dod — Older dacite unit —Rubble consisting of gray, red, pink, yellowish-brown, and green hornblende-hypersthene dacite. Derived from the pre-Castle Creek (older than 2500 years) Mount St. Helens. Distinguished from modern dacite by abundant large (>2 mm long) phenocrysts of plagioclase and hornblende.

Mixed block facies and matrix facies unit

dmx — Mixed block facies and matrix facies unit —Rubble consisting of matrix facies as well as debris avalanche blocks of all rock types from the pre-1980 Mount St. Helens. The debris avalanche blocks are too small to delineate on map (< 15 m across).

OLD MOUNT ST. HELENS

Qos — Old Mount St. Helens —Basaltic and andesitic lava flows, dacite domes and volcaniclastic deposits derived from the pre-1980 Mount St. Helens. Range in age from about 100 to 40,000 years old (see fig. 3).

TERTIARY BEDROCK

Tbr — Tertiary bedrock. Lava flows and breccias and associated volcaniclastic sedimentary rocks (Evarts and others, 1987). Evidence for widespread zeolite facies alteration.

CONTACT -Dashed where approximately located, dotted where inferred

THRUST FAULTS IN IMBRICATE AREA -Approximately located

DXS-27 SAMPLE LOCALITIES (location of "windows"; see text)

F — F′ CROSS-SECTION LOCATIONS

Hypsography compiled from Aerial Photographs taken 1980
Vertical Datum National Geodetic Vertical Datum of 1929
Horizontal Datum 1927 North American Datum
Digital hypsography by Infotec Development, Inc.

LITHOLOGIC MAP OF DEBRIS-AVALANCHE DEPOSIT MAY 18,1980, MOUNT ST. HELENS VOLCANO, WASHINGTON

WESTERN PART

Geology mapped by Harry Glicken. Fieldwork 1981-83 using 1981 and 1982 aerial photographs. Geology shown as it was summer 1982, after two years of fluvial modification.