Map units

Qo — **Surficial deposits** - Pleistocene-Holocene alluvium overlying Sentinel-Arlington Field volcanic units

Qba — **SAVF basaltic tephra** - Remnant basaltic ash, lapilli, and cinder as intercalated lenses or remnant phreatomagmatic cones and cinder cones

Sentinel Peak low shield

- **QbSNs** — **Sentinel Peak low shield secondary vent summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits with 6º-22º slope angle of the secondary Sentinel Peak vent +/- radial and concentric feeder dikes
- **QbSSs** — **Sentinel Peak low shield summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits with 6º-22º slope angle of the Sentinel Peak vent +/- radial and concentric feeder dikes
- **QbSSm** — **Sentinel Peak low shield midflank** - Basaltic pahoehoe flows with ~2º-5º slope of the Sentinel Peak vent
- **QbSSd** — **Sentinel Peak low shield distal** - Basaltic pahoehoe flows of the Sentinel Peak vent with <0-2º slope angle and alluvial cover

Malpais low shield

- **QbMLs** — **Malpais low shield summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits with 6º-22º slope angle +/- radial and concentric feeder dikes of the Malpais vent
- **QbMLm** — **Malpais low shield midflank** - Basaltic pahoehoe flows with ~2º-5º slope of the Malpais vent
- **QbMLd** — **Malpais low shield distal** - Basaltic pahoehoe flows of the Malpais vent with <0-2º slope angle

Isolated vent

- **QbSEd** — **Sent 774 low shield distal** - Basaltic pahoehoe flows with ~0º-5º slope of the Sent 774 vent, possible fissure-style eruption, very low aspect ratio, lacking typical low shield edifice

Midway low shield

- **QbMDs** — **Midway low shield secondary summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits with 6º-22º slope angle of the secondary Midway vent +/- radial and concentric feeder dikes
- **QbMDs** — **Midway low shield summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits with 6º-22º slope angle of the Midway vent +/- radial and concentric feeder dikes
- **QbMDm** — **Midway low shield midflank** - Basaltic pahoehoe flows with ~2º-5º slope angle of the Midway vent
- **QbMDd** — **Midway low shield distal** - Basaltic pahoehoe flows of the Midway vent with <0-2º slope angle and possible alluvial cover

Stanwix low shield

- **QbSTs** — **Stanwix low shield summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits with 6º-22º slope angle of the Stanwix vent +/- radial and concentric feeder dikes
- **QbSTm** — **Stanwix low shield midflank** - Basaltic pahoehoe flows with ~2º-5º slope of the Stanwix vent
- **QbSTd** — **Stanwix low shield distal** - Basaltic pahoehoe flows of the Stanwix vent with <0-2º slope angle

Control Tower low shield

- **QbCTs** — **Control Tower low shield summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits with 6º-22º slope angle of the Control Tower vent +/- radial and concentric feeder dikes
- **QbCTm** — **Control Tower low shield midflank** - Basaltic pahoehoe flows with ~2º-5º slope of the Control Tower vent
- **QbCTd** — **Control Tower low shield distal** - Basaltic pahoehoe flows of the Control Tower vent with <0-2º slope angle and alluvial cover

Wild Horse low shield

- **QbWSs** — **Wild Horse low shield seconday summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits with 6º-22º slope angle of the southeastern Wild Horse vent +/- radial and concentric feeder dikes
- **QbWNs** — **Wild Horse low shield summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits with 6º-22º slope angle of the northwestern Wild Horse vent +/- radial and concentric feeder dikes
- **QbWNm** — **Wild Horse low shield midflank** - Basaltic pahoehoe flows with ~2º-5º slope of the Wild Horse vent
- **QbWNd** — **Wild Horse low shield distal** - Basaltic pahoehoe flows of the Wild Horse vent with <0-2º slope angle and alluvial cover

Ten Mile low shield

- **QbTMs** — **Ten Mile low shield summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits with 6º-22º slope angle of the Ten Mile vent +/- radial and concentric feeder dikes, possible underlying tuff ring
- **QbTMm** — **Ten Mile low shield midflank** - Basaltic pahoehoe flows with ~2º-5º slope of the Ten Mile vent
- **QbTMd** — **Ten Mile low shield distal** - Basaltic pahoehoe flows of the Ten Mile vent with <0-2º slope angle and alluvial cover

Theba low shield

- **QbTHs** — **Theba low shield summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits with 6º-22º slope angle of the Theba vent +/- radial and concentric feeder dikes
- **QbTHm** — **Theba low shield midflank** - Basaltic pahoehoe flows with ~2º-5º slope of the Theba vent, 1.71 Ma
- **QbTHd** — **Theba low shield distal** - Basaltic pahoehoe flows of the Theba vent with <0-2º slope angle and alluvial cover

Tartron low shield

- **QbTRs** — **Tartron low shield summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits with 6º-22º slope angle of the Tartron vent +/- radial and concentric feeder dikes
- **QbTRm** — **Tartron low shield midflank** - Basaltic pahoehoe flows with ~2º-5º slope of the Tartron vent
- **QbTRd** — **Tartron low shield distal** - Basaltic pahoehoe flows of the Tartron vent with <0-2º slope angle and alluvial cover

White Hills low shield

- **QbWTs** — **White Hills low shield summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits with 6º-22º slope angle of the White Hills vent +/- radial and concentric feeder dikes
- **QbWTm** — **White Hills low shield midflank** - Basaltic pahoehoe flows with ~2º-5º slope of the White Hills vent

Black Gap low shield

- **QbBGs** — **Black Gap low shield summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits with 6º-22º slope angle of the Black Gap vent +/- radial and concentric feeder dikes
- **QbBGm** — **Black Gap low shield midflank** - Basaltic pahoehoe flows with ~2º-5º slope of the Black Gap vent

Isolated lava pond

- **QbSCm** — **Sauceda tuff ring lava pond/flows** - Late-stage basaltic lava flows and remnant lava pond partially covering or infilling the phreatomagmatic Sauceda tuff ring (most of the tuff deposit(s) subsequently weathered away)

Warford Ranch low shield

- **QbWRs** — **Warford Ranch low shield summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits with 6º-22º slope angle of the Warford Ranch vent +/- radial and concentric feeder dikes
- **QbWRm** — **Warford Ranch low shield midflank** - Basaltic pahoehoe flows with ~2º-5º slope of the Warford Ranch vent
- **QbWRd** — **Warford Ranch low shield distal** - Eroded and undercut basaltic pahoehoe flows of the Warford Ranch vent with <0-2º slope angle and possible alluvial cover

Gillespie low shield

- **QbGLs** — **Gillespie low shield summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits with 6º-22º slope angle of the Gillespie vent +/- radial and concentric feeder dikes
- **QbGLm** — **Gillespie low shield midflank** - Basaltic pahoehoe flows with ~2º-5º slope angle +/- possible festooned a'a flows around granitoid kipuka, of the Gillespie vent, the latter evidenced by partially concealed ~25 m to 75 m wavelength transverse flow buckling
- **QbGLd** — **Gillespie low shield distal** - Basaltic pahoehoe flows of the Gillespie vent with <0-2º slope angle and alluvial cover

Overlook low shield

- **QbOVs** — **Overlook low shield summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra
- **QbOVm** — **Overlook low shield midflank** - Basaltic pahoehoe flows with ~2º-5º slope of the Overlook vent

Woolsey low shield

- **QbWLs** — **Woolsey low shield summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits with 6º-22º slope angle of the Woolsey vent +/- radial and concentric feeder dikes
- **QbWLm** — **Woolsey low shield midflank** - Basaltic pahoehoe flows with ~2º-5º slope +/- possible a'a flows as evidenced by remnant ~10-50 m wavelength transverse buckling of the Woolsey vent
- **QbWLd** — **Woolsey low shield distal** - Basaltic pahoehoe flows of the Wild Horse vent with <0-2º slope angle and possible alluvial cover

Radio Tower low shield

- **QbRTs** — **RadioTower low shield summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits with 6º-22º slope angle of the Radio Tower vent +/- radial and concentric feeder dikes
- **QbRTm** — **RadioTower low shield midflank** - Basaltic pahoehoe flows with ~2º-5º slope of the Radio Tower vent
- **QbRTd** — **Radio Tower low shield distal** - Remnant oxidized cinder-sized intercalated basaltic tephra lenses and cinder cones

Painted Rock low shield

- **QBPSs** — **Painted Rock low shield seondary vent summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits with 6º-22º slope angle of the southern Painted Rock vent +/- radial and concentric feeder dikes
- **QbPNs** — **Painted Rock low shield summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits with 6º-22º slope angle of the northern Painted Rock vent +/- radial and concentric feeder dikes, 1.91 Ma
- **QbPRm** — **Painted Rock low shield midflank** - Basaltic pahoehoe flows with ~2º-5º slope angle of the northern Painted Rock vent
- **QbPNd** — **Painted Rock low shield distal** - Basaltic pahoehoe flows of the Painted Rock vent with <0-2º slope angle and alluvial cover

Oatman low shield

- **QbONs** — **Oatman low shield secondary vent summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits with 6º-22º slope angle of the northern Oatman vent +/- radial and concentric feeder dikes
- **QbOSs** — **Oatman low shield summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits with 6º-22º slope angle of the southern Oatman vent +/- radial and concentric feeder dikes
- **QbOSm** — **Oatman low shield midflank** - Basaltic pahoehoe flows with ~2º-5º slope angle of the southern Oatman vent
- **QbOTd** — **Oatman low shield distal** - Basaltic pahoehoe flows of the Oatman vent with <0-2º slope angle and alluvial cover

Arlington low sheild

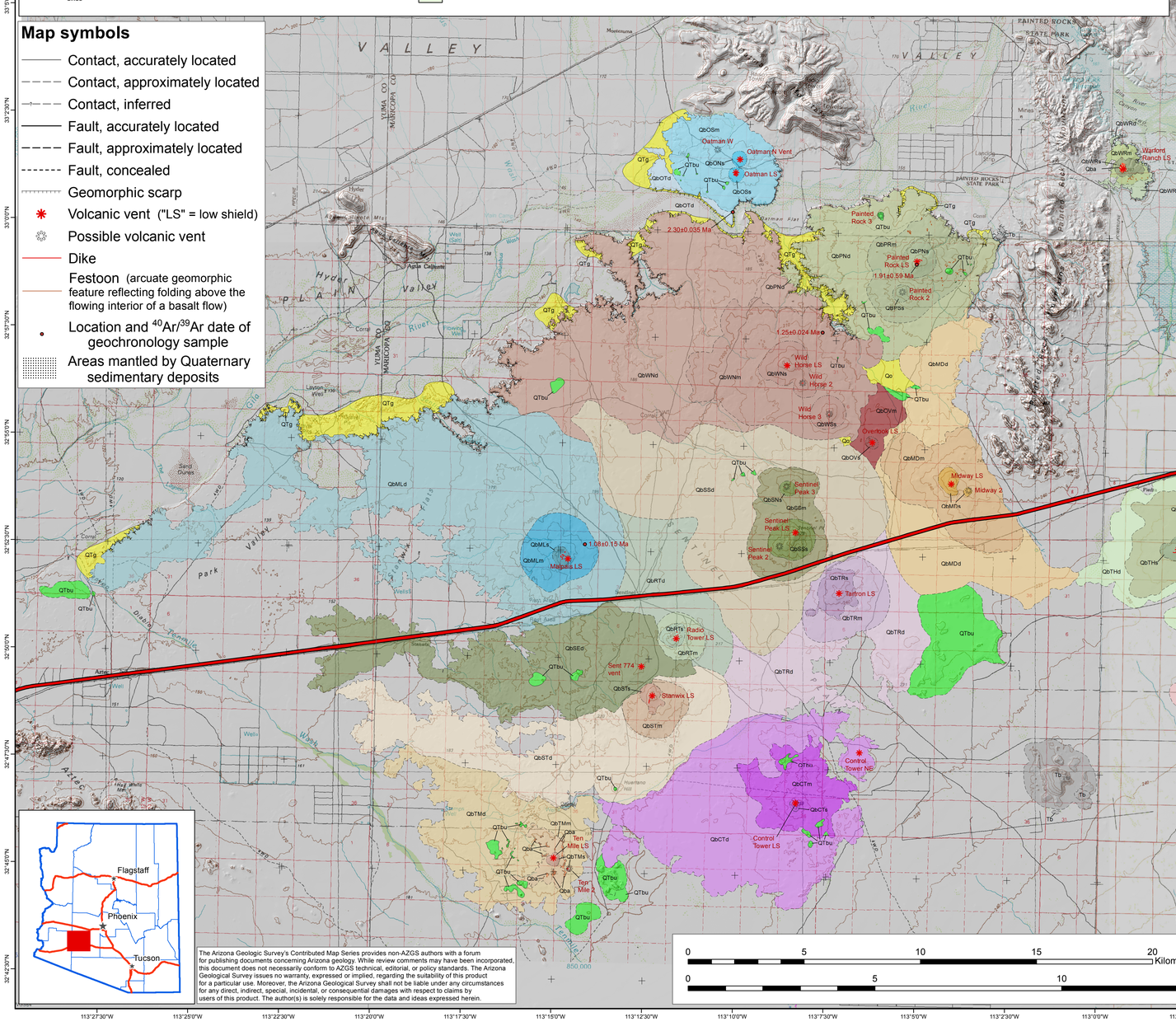
- **QbALs** — **Arlington low shield summit** - Basaltic pahoehoe flows and near-vent pyroclastic deposits and intercalated tephra deposits of the Arlington vent with 6º-22º slope angle +/- radial and concentric feeder dikes, 2.37 +- 0.03 Ma
- **QbALm** — **Arlington low shield midflank** - Basaltic pahoehoe flows with ~2º-5º slope angle +/- possible festooned a'a flows of the Arlington vent, the latter evidenced by partially concealed ~25 m to 75 m wavelength transverse flow buckling
- **QbALd** — **Arlington low shield distal** - Basaltic pahoehoe flows of the Arlington vent with <0-2º slope angle and stranded alluvial cover on northern and southern flanks

Other units

- **QTbu** — **Undivided - basaltic kipuka of unknown source** -
- **QTg** — **Gila River Gravels** - Plio-Pleistocene Gila River deposits/terraces ~30 m above current river profile
- **Tb** — **Tertiary basaltic units** - Basaltic to basaltic andesite flows and pyroclastic deposits, often tectonically rotated and/or embayed by SAVF units

Map symbols

- Contact, accurately located
- Contact, approximately located
- Contact, inferred
- Fault, accurately located
- Fault, approximately located
- Fault, concealed
- Geomorphic scarp
- Volcanic vent ("LS" = low shield)
- Possible volcanic vent
- Dike
- Festoon (arcuate geomorphic feature reflecting folding above the flowing interior of a basalt flow)
- Location and $^{40}Ar/^{39}Ar$ date of geochronology sample
- Areas mantled by Quaternary sedimentary deposits



Geologic map of the Sentinel-Arlington volcanic field, western Maricopa County and eastern Yuma County, Arizona

September 2014
Arizona Geological Survey Contributed Map CM-14-A, version1.0
Scale 1:100,000
(with accompanying report)

Shelby R. Cave
Arizona State University

Summary

The Sentinel – Arlington volcanic field extends over about 80 km from Sentinel volcanic sub-field west of Gila Bend northeastward to Arlington volcano west of Buckeye. The volcanic field consists of extensive, low relief basalt lava flows and small, gently sloping basalt shield volcanoes. Volcanic rocks in the field are olivine-clinopyroxene basalts with SiO_2 content of ~45-52% (Leeman, 1970; Cave et al., 2007). One sample yielded a $^{87}Sr/^{86}Sr$ ratio of 0.7035 (Leeman, 1970). No intermediate or felsic volcanic rocks are known in the field. Potassium-argon geochronologic age determinations indicate that the Sentinel – Arlington volcanic field has erupted intermittently over the past 1.0 - 3.5 Ma, with no clear migration of volcanic activity within the field (see review by Spencer, 2013).

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Spencer, J.E., 2013, A review of late Cenozoic volcanic activity in the Gila Bend – Buckeye area of western Maricopa County, Arizona: Arizona Geological Survey Open-File Report OFR-13-07, 34 p.

Topographic base map derived from the Phoenix South, Gila Bend, Little Horn Mountains, and Dateland 30' x 60', U.S. Geological Survey topographic maps (1:100,000 scale). UTM projection, NAD83, zone 12.

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