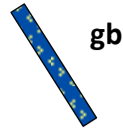
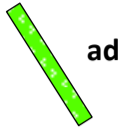


Diorite and basalt dikes (d), porphyritic diorite and basalt dikes (dp) – numerous ages from Proterozoic to Mesozoic (porphyritic may be Paleozoic only?), offset by faults and other dikes, not crosscut by any units except Medford Gabbro.



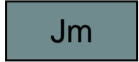
Gabbro dike – altered, crosscuts dolerite dikes, on west side of Middle Hill and on Pine Hill. Not related to Medford Gabbro. Likely Paleozoic?

Ages (Ma): 573 ± 4, 402.5 ± 3, 353 ± 4, 290 ± 15, 226 ± 3



Highly altered dolerite and basalt dikes – highly chloritic, have epidote and porphyroblasts of hornblende and chlorite, often with diffuse contacts. Several ages, likely late Proterozoic. Many occur in Nanepashemet Formation where they may have formed in wet or hydrothermal environments.

304 Ma

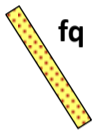


Medford Gabbro – gabbronorite dike at Pine Hill and a few branches. **Age (Ma): 304 ± 0.6 (⁴⁰Ar/³⁹Ar biotite)**

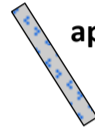
----- Large time gap in major map units, whole Paleozoic ----- (dikes shown above are mostly Paleozoic)



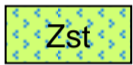
Whip Hill Formation – mudstone, sandstone, mass flow units, not metamorphosed



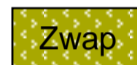
Felsic dikes with embayed quartz and feldspar xenocrysts – deformed with mass flow in Whip Hill Fm., xenocrysts from Spot Pond Granodiorite (?), flourite crystals.



Gray porphyritic andesite to dacite dikes – west side of Spot Pond with many xenoliths and xenocrysts including embayed quartz. May be an offshoot of Stoneham Tonalite. Late Proterozoic?



Stoneham Tonalite – tonalite, high mafic content, porphyritic in contact areas, equigranular away from contact areas, plagioclase dominant over alkali feldspar.



Wanapanaquin Porphyry – tonalite porphyry (offshoot of Stoneham Tonalite ?)

< 595 Ma

----- Unconformity (Whip Hill Formation over Wamosett Volcanics) -----

~594-596 Ma

Northern Fells Volcanics



Straw Point Volcanic Complex – bimodal (basalt to rhyolite) volcanics with following facies:
 (Zspb) – interlayered laminated greenish gray argillite and basalt flow facies
 (Zspc) – welded lithic crystal tuff to volcanoclastic conglomerate facies
 (Zspr) – rhyolite flow facies with minor tuff

Age (Ma): 594.7 ± 0.3 (TIMS)

Wamosett Hill Volcanic Complex – rhyolitic tuffs and banded flows



Age (Ma): 595.8 ± 0.2 (TIMS)

Pine Hill Volcanics



Wrights Tower Member – crystal tuff
Middle Hill Member – volcanoclastic breccia/cgl



Pine Hill Volcanics in Boojum Rock area

rhyolitic volcanics with following facies:
 (Zbjp) – fissure porphyry (may be Zlwg offshoot)
 (Zbjb) – welded, banded to crystal tuff
 (Zbjv) – vitric tuff
 (Zbjc) – volcanoclastic breccia/cgl (may be Zpmh equivalent)

Pine Hill Volcanics overlie brecciated top of Lawrence Woods Granophyre west of Bellevue Pond.

Lawrence Woods Granophyre intrudes base of Pine Hill Volcanics at Boojum Rock and Pine Hill

Rests unconformably on Spot Pond Granodiorite



Lawrence Woods Granophyre – porphyritic granophyre with needle-like hornblende (subvolcanic to units above), Zbjp (above) may be an offshoot.

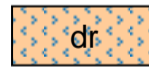
~600 Ma

Start of abundant embayed quartz and feldspar xenocrysts in volcanics.

----- Unconformity (overlain by Pine Hill Volcanics) -----



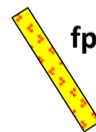
Rams Head Porphyry – diorite porphyry with minor quartz and alkali feldspar, intrudes Spot Pond Granodiorite (subvolcanic to Black Rock Volcanics ?)



diorite – mafic-rich diorite porphyry west of South Reservoir



Black Rock Volcanics – dacitic volcanics with no quartz crystals (suggests pre-Spot Pond or coeval to it)
 Zbrv - vitric tuff facies
 (- - - -) fiammé zone **Age (Ma): 602.1 ± 3.9**
 Zbrl - lithic crystal tuff facies
 Zbrc – dominant, crystal tuff facies



Dark red to tan porphyritic (fp) rhyolitic dikes – several ages, porphyritic varieties are more common. One set of red dikes at Wenepoykin Hill cuts through Spot Pond Granodiorite and is cut by Rams Head Porphyry. Also occur in Nanepashemet Formation and Winchester Granite. Late Proterozoic? (See special variety above, fq, in Whip Hill Formation)

----- co-magmatic units ? (Spot Pond and Black Rock), indistinguishable ages -----



Spot Pond Granodiorite – coarse granodiorite to granite with alkali granite zones (Zsgk), abundant quartzite xenoliths **Zfi** – felsic xenoliths, unknown origin
Age (Ma): 609.5 ± 0.2 (TIMS)



Doleful Pond Granite – coarse granite, uncertain age, possibly Spot Pond Granodiorite.

~610 Ma



Winchester Granite – equigranular granite to granodiorite with relatively high mafics. Plagioclase subordinate or equal to alkali feldspar (also has Zsgk xenolith like above).

Age (Ma): 609.7 ± x.x (TIMS)



Quartz Diorite Xenolith in Winchester Granite – medium grained quartz diorite xenoliths of unknown origin or age

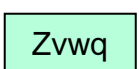
----- (overlain by Straw Point Volcanics in northern Fells, intruded by Winchester Granite)



Nanepashemet Formation – dark greenish gray metabasalt+ tuff + basaltic conglomerate/breccia, scattered argillite, basal conglomerate with Virginia Wood Quartzite clasts.

----- Angular Unconformity ----- (overlain by basal breccia/conglomerate layers in Nanepashemet Formation)

<900 Ma



Virginia Wood Quartzite – metamorphosed and sheared, quartzite and argillite intervals