Traversing the bedrock slope from Homestead Meadow to Lynx Creek one can count at least 18 individual diabase dikes, some of which may have a common origin. A single dike bifurcates at one point and becomes two or more separate dikes. These dikes are continuous to the south, east of the Lynx Dam spillway, and to the north all along the trail adjacent to the Creek.

#16. Granite Gneiss or Extrusive Rhyolite?

This salt-and-pepper appearing granite seems similar to some plutons found within Prescott, but is a deformed and metamorphosed host rock with rhyolitic composition, having distinct banding and alignment of minerals. The composition of quartz, biotite and feldspars are similar. The process of intrusion by another volcanic rock may have led to the texture seen in the gneiss. Note how the trend of both the dikes and the banding in the granite gneiss is essentially north-south.

#17. Lynx Creek Gold Exploitation

Native metallic gold has been mined all along the Lynx Creek drainage, beginning 150 years ago with Sam Miller, one of the first prospectors. A few industrious hobbyists still pan for gold, although most of it has already been claimed. Lynx Creek is the most productive stream in Arizona, but more gold has been removed from alluvial fans, flats and arroyos in other districts in La Paz, Yuma, Weaver and Yavapai counties.

The gold in Lynx Creek is found in sands and gravels along flood plains and sandbars and in crevices and holes in the Precambrian rock, but not in the bedrock. These deposits are placer gold derived from parent rocks upstream. The placers occur along the entire length of Lynx Creek, from a location in Walker to the south and all the way eastward to the junction with the Agua Fria River near Dewey. Gold nuggets weighing up to four ounces have been found in the upper reaches of Lynx Creek, but mostly fine flake gold is found in the lower part.

The placer gold in the creek came from small and widely scattered gold-quartz veins in the Bradshaw Mountains, some of which were Precambrian exhalites.Some of the veins near Walker are associated with granodiorite intrusions that were contemporaneous with the uplift of the Rocky Mountains in the last 2% of Earth's history!

#18. Transported Granite Boulders

Rounded boulders consisting of pinkish granite are only seen on this hillside. They are "foreigners," which were transported as stream deposits from elsewhere, most likely by the action of a rapidly flowing stream at some time in the distant past. Similar lag boulders and gravels are found throughout northern Arizona, and their origin can usually be traced. The transport of such boulders requires long periods of time, combined with gravity and downslope movement.

#19. Glassford and Yavapai Hills

Looking northeast to your right, one sees the rounded Glassford Hill, a volcanic cone that is very much younger than the rocks at the Highlands Center, having erupted during the Miocene Period—just 14 million years ago! The eroded core of the crater is breached on the northeast side, and inside is a volcanic neck with three radiating dikes that cut into the walls of the combination tuff and basalt lava flow sequence. Lava flowed out in all directions and is evident in the area to the east and north, although almost all lava in the latter has eroded away and evidence of its former presence has disappeared. Only fragmented outcrops of the lava are found at the Watson Lake Ramada, and on the northern side of the Dells. The Granite Dells are much older—some 1.4 billion years—showing the rapid decomposition and erodibility of much-younger lava.

#20. Rocks Influence Vegetation

As you've walked the trails, you probably noticed quite a variety of vegetation, ranging from mature Ponderosa pine forest, to riparian deciduous growth, to scrub oak and manzanita shrub growth and alluvial grasslands with fruit and nut trees. Each of these ecosystems reflects rock and soil cover, available moisture, human influence, and amount the of sunlight on north- and south-facing slopes.

More information on botany is available in the Benson Family Nature Store.

After Stop #20, it is only a few hundred feet to the Kiwanis Amphitheater, your starting point.

Those who wish to continue hiking can turn around and walk back to the junction of #305 and #443 then follow #443, the Stretch Pebble Loop Trail (see map). It is broad and level, composed of compacted dirt and gravel and is wheel-chair accessible. This trail offers an exceptional close-up view of the classic metaconglomerate that was exposed at Stop #13 as well as points of interest and information about the various vegetation in the Highlands area. A separate guide is available for the Stretch Pebble Loop Trail. Estimated time: 20 minutes.

Acknowledgements

The development of this geology trails and guide was made possible by a grant from Freeport, McMoRan Copper & Gold Foundation. Special thanks to geologist Jim Neal, who wrote this guide, and to volunteers Alan Grell, Jay Crocker and the Yavapai Exceptional Industries volunteers, the Prescott Geology Club, as well as Paul Lindberg, Beth Boyd, Edessa Carr and Debbie and Harry Allen for all their work in making this happen.

FREEPORT-McMoRan COPPER & GOLD

The Highlands Center for Natural History helps children and adults discover the wonders of nature and become wise caretakers of the land. We believe that everyone has a fundamental need to connect with the natural world. This connection is fostered by the Center through outdoor science education based on observation and discovery of the Central Arizona Highlands.

The Highlands Center is a not-for-profit, membership-funded organization. Hiking trails are open to the public year round. Donations are appreciated.

Highlands Center for Natural History

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Please Return

Highlands Center for Natural History

Geologic Field Guide to the Highlands Center's Lynx Creek Site

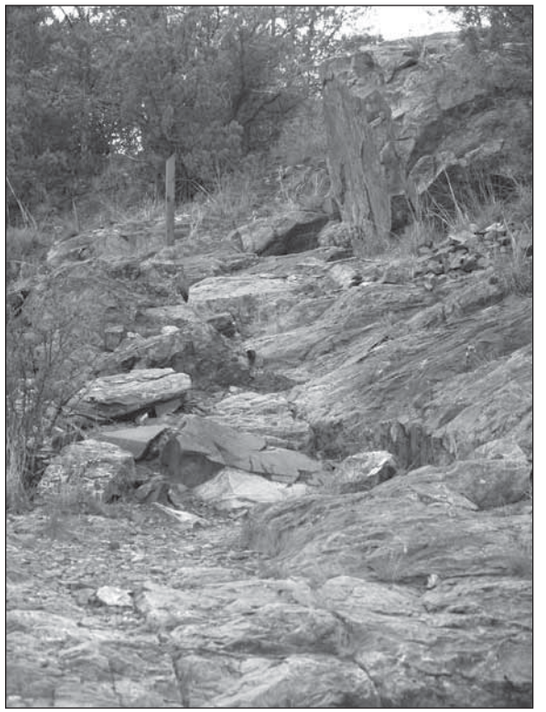


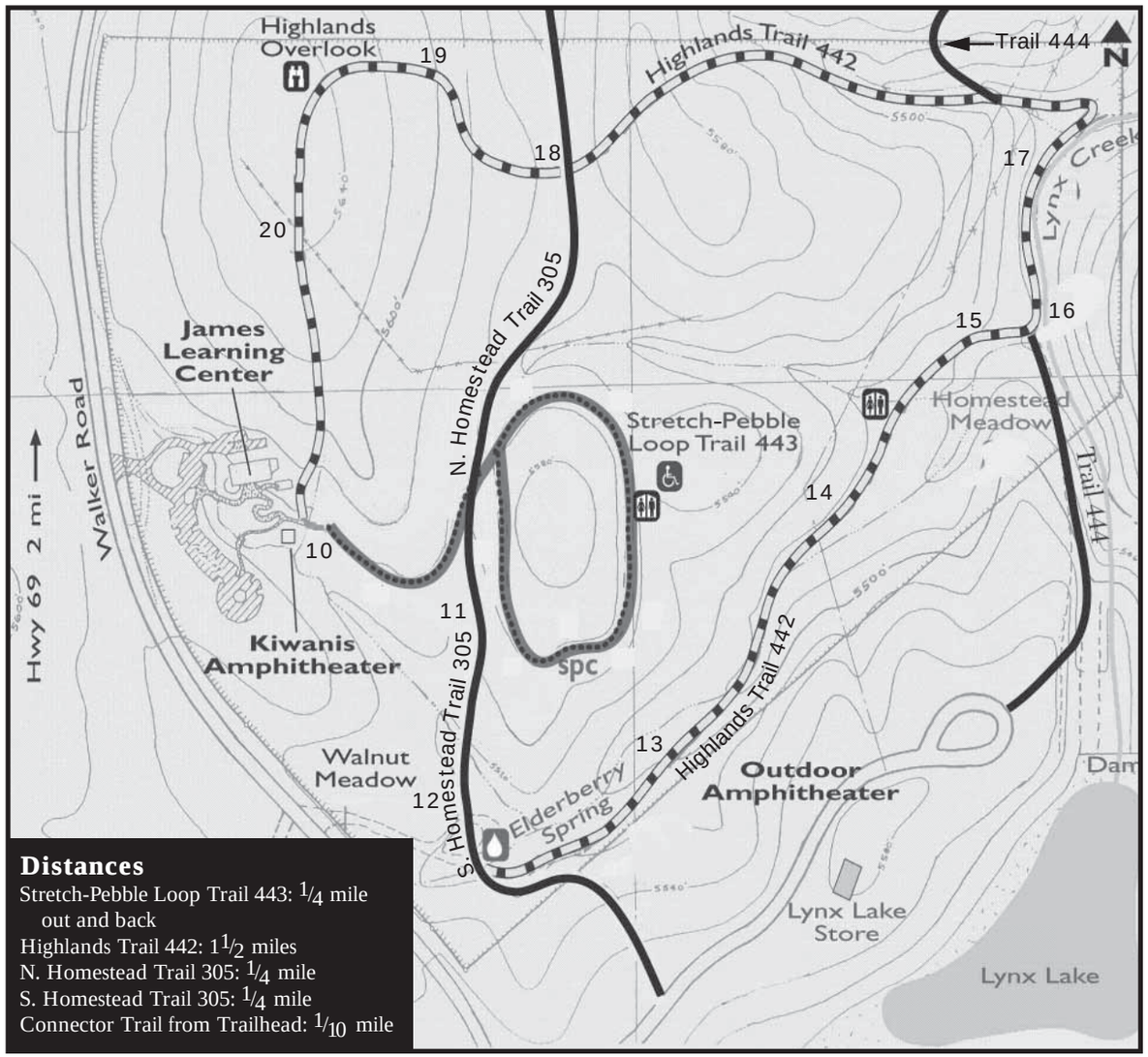
Photo of Diabase Dikes at Stop #15

Welcome to the Highlands Center for Natural History. This self-guided tour begins at the east side of the Kiwanis Amphitheater and takes about two hours to complete. The route (see map) is a mile and one-half long and involves moderate inclines toward the latter half.

Follow symbols numbered 10 through 20.

#10. Phyllite outcrops

Within 100 feet eastward of the Kiwanis Amphitheater, slate-like rocks called phyllite are seen along the path. These rocks are very different from when they were originally deposited and are called metamorphic, meaning they have changed form. The minerals in these phyllites are believed to have been derived from volcanic ash that originated from volcanism associated with the Prescott island arc, such as is occurring in Indonesia today. Differential pressure (greater in one or two directions) causes the foliation (leaf-like layering) in these rocks to appear as pages in a book. The outcrop is aligned mostly northward and in a nearly vertical attitude. Geologists know that very high pressures are required to produce such compressed and altered rocks. Only deep burial of sediments produce these effects. These opposed rocks tell us a story about the natural history they have experienced. An environment so diametrically opposite to modern Prescott seems hard to believe! But geologists can show that this initial deposition occurred more than 1.7 billion years ago, and subsequent metamorphism developed when continents collided.



Distances
Stretch-Pebble Loop Trail 443: 1/4 mile out and back
Highlands Trail 442: 1 1/2 miles
N. Homestead Trail 305: 1/4 mile
S. Homestead Trail 305: 1/4 mile
Connector Trail from Trailhead: 1/10 mile

At Junction, turn right onto Trail 305.

#11. Man's Quest for Minerals

This tributary arroyo eventually drains into Elderberry Creek and shows signs of placer mining that occurred 100 years ago or earlier. Placer (deposits washed in from elsewhere) gold was discovered in Lynx Creek (see Stop #17) and many hoped that the tributaries would also contain gold. Small amounts were discovered in some tributaries—and even in the banded iron formation (Stop #14), but not here. Little restoration was done to return this site to its original condition. The ridges on top of the banks and beside the creekbed testify to the stripping of bedrock in the attempt to locate more gold. The disruption here is not without benefit, however, as the greenstone rock is now well exposed and is very different from the phyllites seen earlier. Pillow-shaped structures identified in the greenstone testify to their eruption into water, similar to what is occurring today in Hawaii as molten lavas run into the ocean.

#12. Springs/Draw

The drainage of Elderberry Creek passes through the highway dam on the right (southwest) a few hundred feet beyond Stop #11. The 10½ foot culvert is needed to transport the large amounts of water flowing under the highway when major storms occur, especially during the summer monsoon season. During the dam's construction, substantial disruption took place and the leveling of the area is largely manmade on the east, where large quantities of boulder fill were introduced. The drainage is perennially moist and water flows out of springs during most of the year, making this a favored location for many species of birds. Early settlers lived here because water was available, as well as fertile alluvial soil. A former barn foundation may be seen on the north side of the creek.

Turn left onto Trail 442.

#13. Stretch Pebble Conglomerate

Alongside the trail to the left, stands a flat-faced boulder, displaying an example of intense tectonic compression and metamorphism in which flattening and deformation of the pebble conglomerate occurred, almost completely obscuring the original rock. The rock outcrops on the opposite side of the creek contain many more deformed pebbles. These conglomerates were originally deposited horizontally and have been squeezed into vertical layers. The stretched red pebbles consist of jasper, an iron-rich variety of chert probably deposited as precipitates from volcanic exhalations out of seafloor vents. Because the pebbles formed a conglomerate, an additional cycle of erosion and deposition is probable. Indeed the history of these rocks is storied, but just remember how much time was available for all of this to happen—more than 1.7 billion years!

#14. Banded Iron Formation (BIF)

50 feet off to the right. These alternating gray and red rocks are rare and occur only in specific places and at times favoring their formation. They are often mined for the iron, which could have happened here were there sufficient tonnages. Much of what outcrops here are strongly magnetic, owing to the mineral magnetite—the reduced form of iron oxide. A different variety of iron oxide called hematite occurs elsewhere and has been used by Native Americans for ceremonial purposes. Both varieties of iron oxide are mined in Minnesota, Wisconsin and Michigan and are concentrated and then shipped to steel mills. Sedimentary iron deposits such as these are no longer forming.

#15. Intrusive Dikes on left

After walking through Homestead Meadow (the fertile alluvial deposits and site of an early settlement and orchard), the host rocks along Lynx Creek appear as a wavy, rhyolitic mass, which in turn is intruded by repetitive dikes of diabase, an intrusive volcanic rock that filled fractures and joints in the crystalline rock mass while deeply buried. Pillow lavas occur in these rocks, as at Stop #11. Similar rocks are seen at the town of Jerome and are known as Cleopatra Rhyolite.