

# Oracle State Park Geology Program Update

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April 2023





# Geology Program – Our Initial Objective

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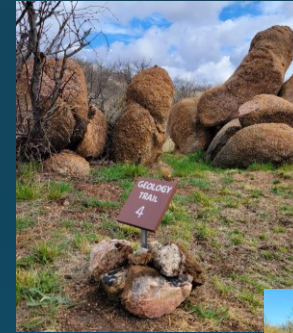
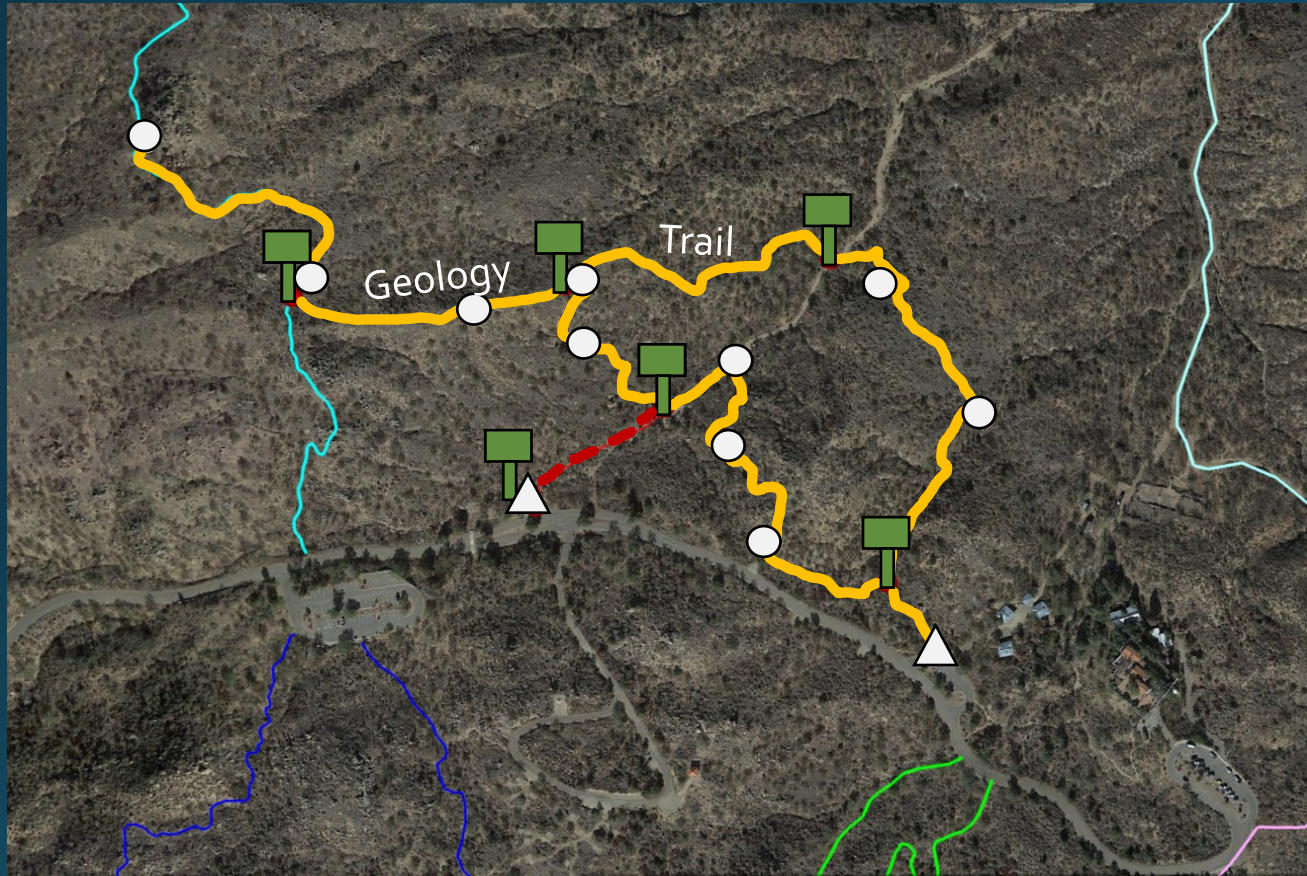


Geology Trail  
Self-Guided Tours  
Geologist Led Tours  
Rock and Mineral Exhibit  
Trailside Interpretive Signs  
Geology Webpage

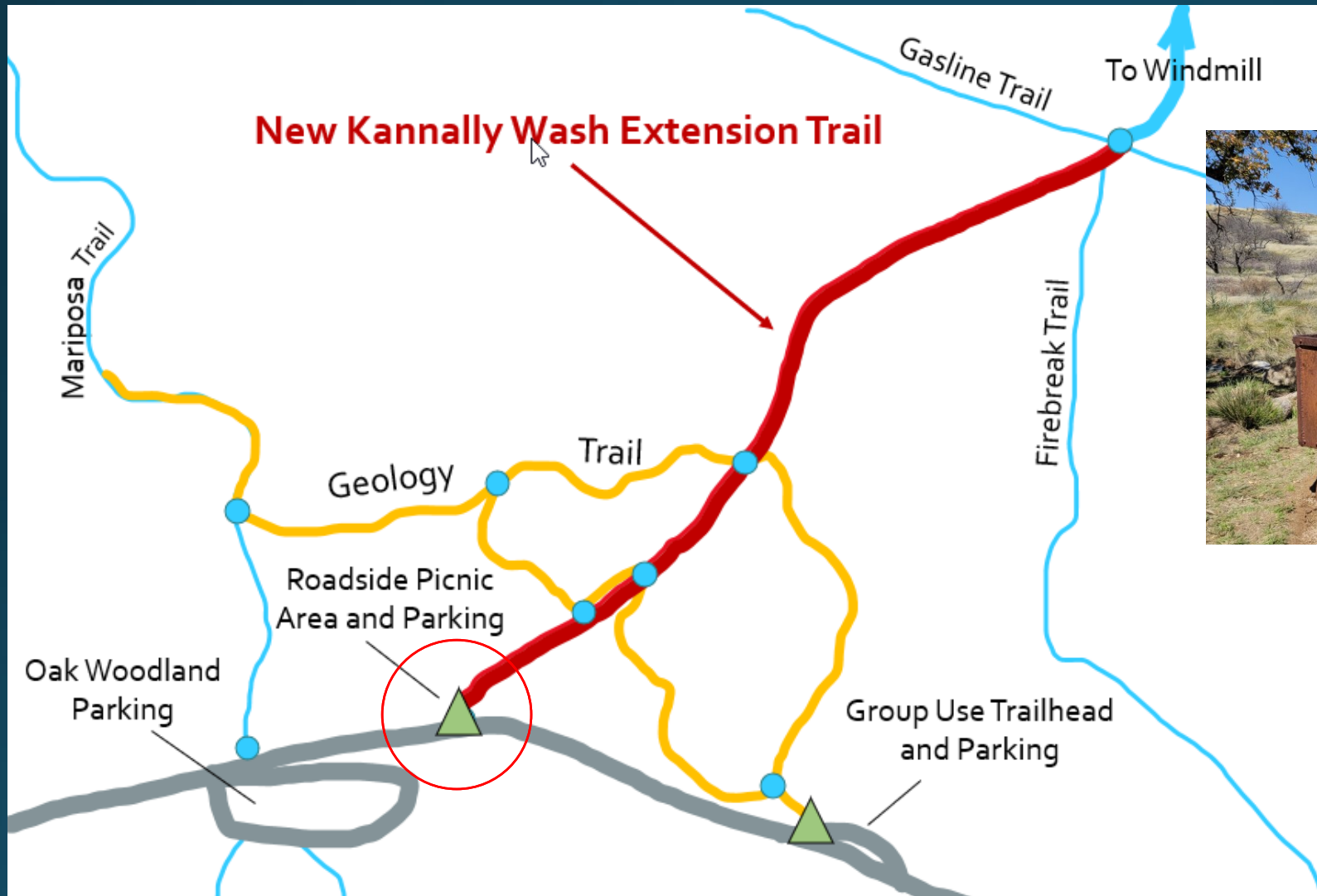
*Goal of raising necessary funds  
and completing the project by  
Earth Day April 22, 2023*



# 1.25 Mile Geology Trail Route – Open



# New Trail at Roadside Picnic - Open

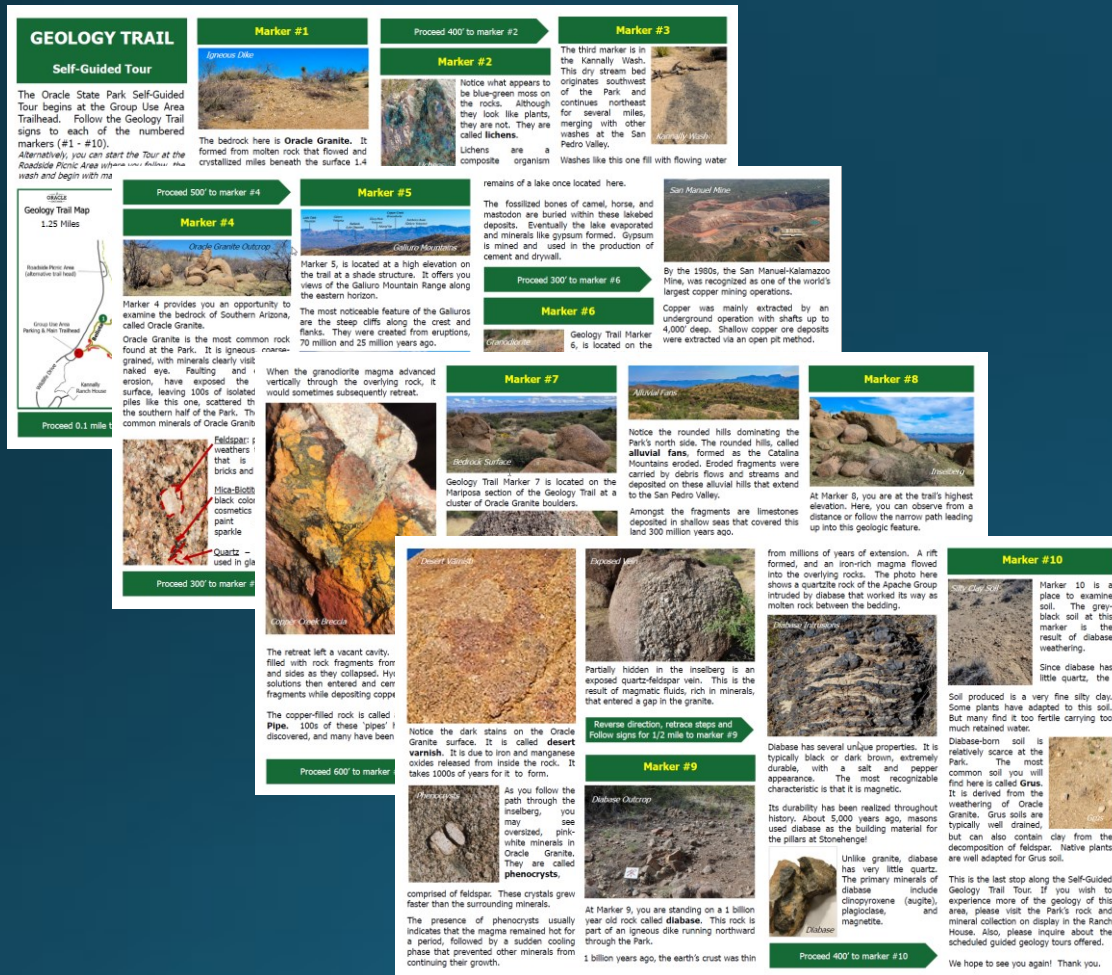


✓ New ½ mile trail

Access to Geology and  
Kannally Wash Trails



# Self-Guided Tour – Printed Brochure Available



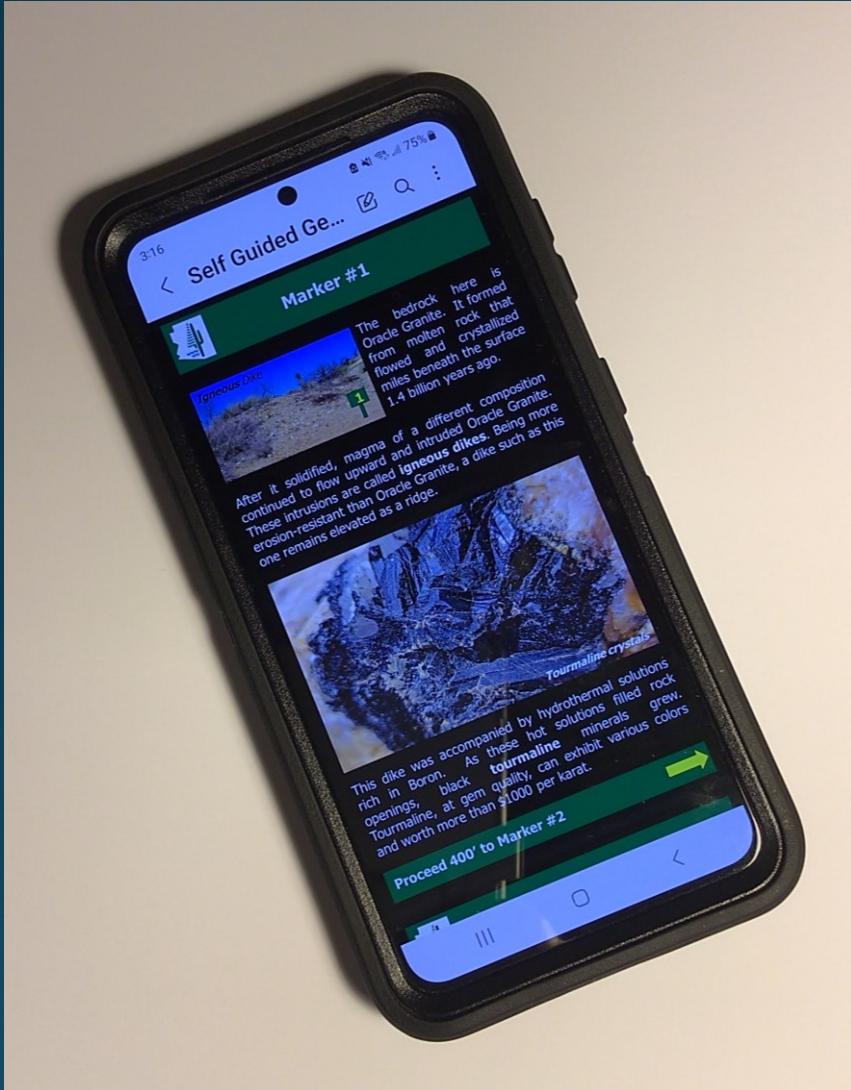
New redesigned self-guided tour brochure

More photos

Enhanced descriptions

600 copies printed

# Self-Guided Tours – Phone Version Available



✓ New self-guided tour now accessible from cell phone

Android and iPhone compatible

Sized for 30 second download

QR code at trailhead or download from website

# Geologist Led Tours - Conducted

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✓ 2-hour geology tours

Regularly scheduled

Online registration system

15 tours thru April 1, 2023

248 visitors have participated



# Rock and Mineral Exhibit - Installed

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## ✓ Rock and Mineral Exhibit Upgraded

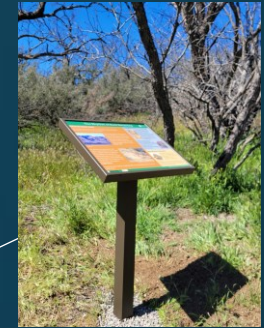
New specimens added

New information cards

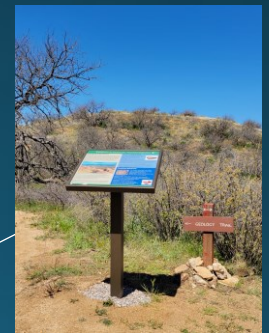
New motion-activated lighting



# New Interpretive Signs



GEOLOGY  
TRAIL



✓ Installed April 4, 2023

# Geology & Tours Webpage - Live

ARIZONA STATE PARKS | (877) MY PARKS | [f](#) [@](#) [v](#) [t](#)

ORACLE  
STATE PARK

EXPLORE - DARK SKIES - THINGS TO DO - GROUP PLANNING - [Q](#)

## GEOLOGY

### Geology and Tours

#### Park Geology

Southern Arizona is a place of rugged linear mountains, called "sky islands," separated by arid desert plains. Geologically, this area is part of the Basin and Range Province of the Western U.S. The landscape began to form more than 20 million years ago as land masses moved along numerous faults. As the mountains rose, erosion removed an enormous amount of overlying rock, exposing once deeply buried rocks in the highlands while filling the valleys.

The past 20+ million years of mountain building and erosion is a significant yet brief segment of the extensive history of this area. Major events are preserved in geologic features visible along the Geology Trail at Oracle State Park.

#### Significant geologic events

**1.7 billion years ago**, this area was part of an island chain located off the coast of a continent during a period of early mountain building. Rock formed from sediments that accumulated at the base of sea canyons. This sedimentary rock was later metamorphosed as Pinal schist, the oldest rock of this area. Fragments of this rock are visible at the park.

**1.4 billion years ago**, magmatic activity deep beneath the surface enabled the formation of Oracle Granite. It is the basement rock of the area. Oracle Granite's stacked boulders and balanced rocks dominate the park's landscape.

**1.0 to 1.4 billion years ago**, molten rock intruded into Oracle Granite, forming igneous dikes and sills. Hydrothermal solutions associated with the magma formed minerals like tourmaline. This was also a time of sedimentation from shoreline erosion and sea action. The **Apache Group** of sedimentary rocks formed during this time, and their fragments are scattered across the park's bajada.

**252 to 541 million years ago**, shallow seas covered this area multiple times. This created fossil-bearing **Paleozoic limestone**. These rocks later hosted valuable mineral deposits.

**70-80 million years ago**, North America was gliding westward, colliding with the crust of the ocean. The downward movement of ocean crust initiated magmatic activity, producing a Laramide Granitic Porphyry rock that intruded into Oracle granite. This time, the hydrothermal solutions were rich in copper and smaller amounts of silver, gold and molybdenum. The porphyry rock related to this mineral deposit is exposed at the surface along trails in the park. Although mining never occurred within the park boundary, Oracle State Park is surrounded by numerous underground and open pit mines that have extracted valuable minerals over the past 100 years.

This history and more can be explored along the park's **Geology Trail**. Information about the trail and guided geology hikes can be found below.

#### Geology Tours

In 2022, Oracle State Park launched a 1.2-mile Geology Trail. Starting at the park's Group Use Area Trailhead, hikers wind through igneous intrusions, mineral deposits, bedrock pediment, and alluvial fans that showcase the past 1.7 billion years of geologic history. From high points along the trail, there are unobstructed views of the volcanic Galiuro Mountains, the Santa Catalina Mountains, and the San Pedro Valley.

There are two ways to experience Oracle State Park's Geology Trail. Join a Geologist/park staff-led tour by calling the visitor center at 520-896-2425 or [sign up online here](#) (search Oracle under Places).

You can also take a self-guided tour using the Geology Trail map. You can download the map in advance or pick one up at the Kannally Ranch House.

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✓ Webpage dedicated to the geology of the park and related tours added to website

A supplement to the active promotion of geology tours by the Park and the Friends of Oracle State Park via social media





# Program Costs – 24% Under Budget

Exhibit Boards Costs	<u>Budget</u>	<u>Actual</u>
Preparation of Sign Content, Print-Ready File Creation		
Creation of Panels, Frames, Exhibit Stands, and Shipping	\$6,000	\$6,050
Installation Equipment Rental	\$1,500	\$ 0
Installation Materials	\$ 200	\$ 200
Miscellaneous Costs – Add'l labor, equipment, materials, land restoration	<u>\$1,300</u>	<u>\$ 250</u>
Sub-Total	\$9,000	\$6,500
Additional Program Costs		
Rock Collection Lighting Upgrade	\$ 300	\$ 350
Self-Guided Tour Brochure Upgrade/Printing	<u>\$ 700</u>	<u>\$ 750</u>
Sub-Total	\$1,000	\$1,100
<b>Total Program Costs</b>	\$10,000	<b>\$7,600</b>

# Next Phase

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Broaden the Geology Program from our established base

Geology Short Film Clips from multiple trails and/or

Geology of the Park Document/Brochure covering multiple trails

Geology Day – a day dedicated to geology, offering seminars on minerals and gems and fossils, guided geology walks, etc.



# THANK YOU FOR MAKING THIS A SUCCESS

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Friends of Oracle State Park ran a very successful campaign to raise funds and secure the equipment and materials for the project

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Our local Community showed support for science at our park through generous donations

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Oracle State Park Management, Staff and Volunteers dedicated their time and efforts to deliver this project ahead of schedule and below budget