



GEOLOGY

AT-HOME ACTIVITY



NANAIMO ROCK HUNT!

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Vancouver Island is a great place to hunt for rocks. In fact, Nanaimo grew quickly into a large community mostly due to the rich mining deposits that were found in the area as early as 1849. With your friends and family, see if you can identify the different kinds of rock that we have in our communities.

DOWNTOWN NANAIMO ROCK SITES

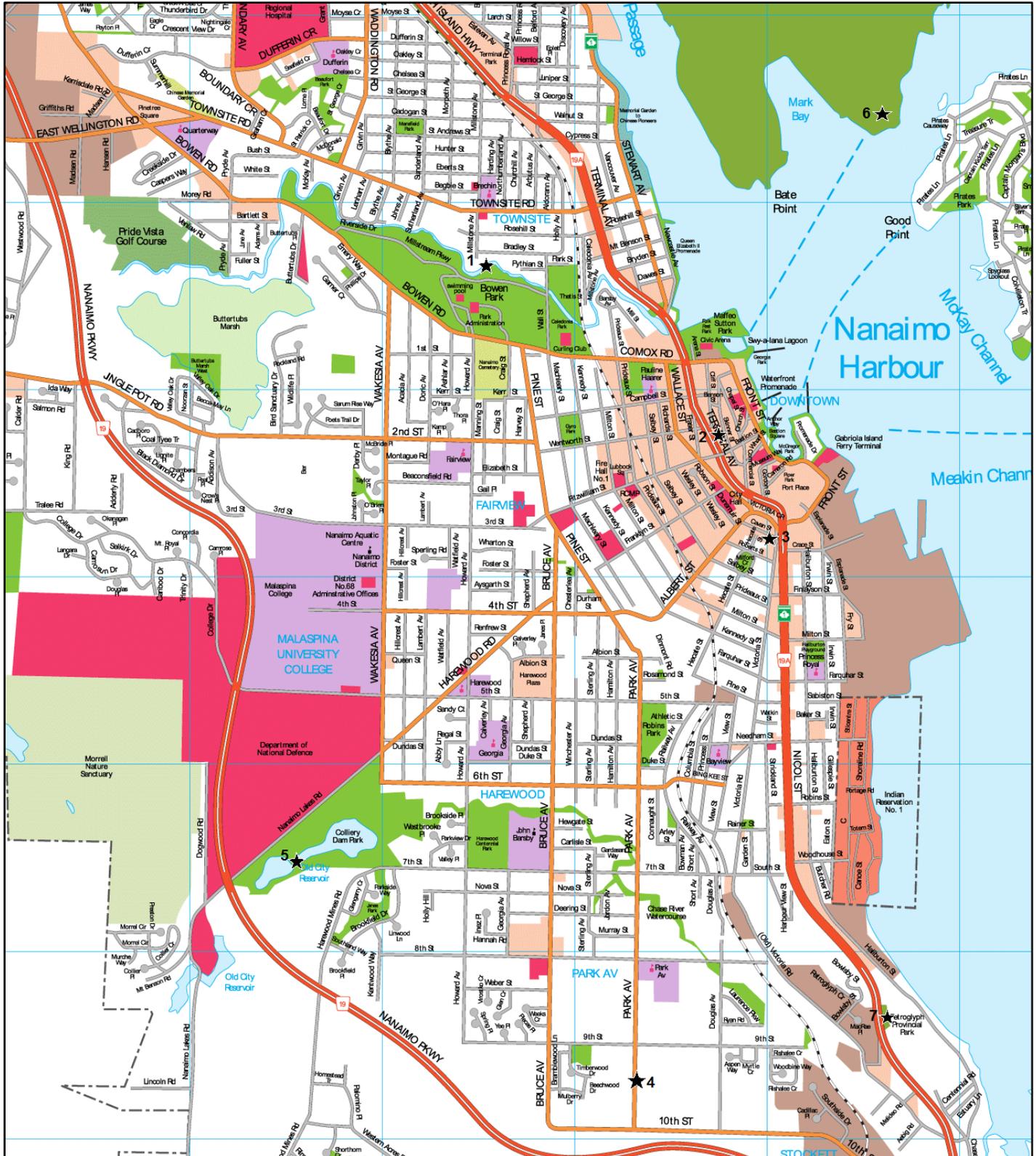
Location	Highlights
1 The Falls at Bowen Park	Several good exposures, sandstone and conglomerate.
Sandstone and conglomerate of the Extension Formation of the Nanaimo Group can be seen at the base of the falls, and in part of the excavation for the salmon side channel.	
2 140 Skinner St.	Sandstone exposure in a parking lot.
3 Cavan St. Parkade (Cavan St. and Old Victoria Rd.)	Sandstone, conglomerate and coal. Great exposure, good example of bedding.
<p>Three main rock types are visible on the rock wall on the southern side of the parking lot (labelled 1, 2 and 3). What are they? Which is the oldest? The middle rock type is a coal seam. How thick is it? This coal seam is thicker elsewhere—thick enough to be mined. At this location it is dipping towards the east, and it continues underneath the water of Nanaimo Harbour, where it was mined, as much as several hundreds of metres below the ocean floor. Look at the lowest rock unit, on the right-hand side. Can you see evidence of bedding? The rocks at Cavan St. are part of the Protection Formation of the Nanaimo Group, and they are about 75 million years old.</p>	
4 South end of Park Ave. (south of 9 th St.)	Sandstone in a road cut.
5 Colliery Dam Park – upper dam	Good exposures of sandstone around the dam
6 Newcastle Island	Many good exposures of sandstone along the shorelines.
All of the rock exposed at the southern end of Newcastle Island is sandstone of the Protection Formation of the Nanaimo Group (around 75 million years old). Some of this rock was quarried for pulp-processing millstones many decades ago, and the remains of the quarry are still there, close to the boat-launch ramp. The same rock was also used for building stone. Why do you think that this rock was chosen for making pulp stones?	
7 Petroglyph Park	Sandstone with petroglyphs
Take a look at the large outcrop of sandstone beside the main petroglyph display area. What property of this rock makes it suitable for petroglyph carving?	

DOWNTOWN NANAIMO AREA ROCK OUTCROP LOCATIONS

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- 1 - The falls at Bowen Park, 2 – 140 Skinner St., 3 – Cavan St. parking lot, 4 – Park Ave., 5 – Colliery Dam Park, 6 – Newcastle Island, 7 – Petroglyph Park





NORTH NANAIMO AREA SITES

	Location	Highlights
8	Planta Park at the end of Stephenson Pt. Road	Conglomerate and limestone overlying sea-floor basalt (along the beach towards the west)
<p>Walk down the steps to the beach. There are three main types of rock here (and a fourth a little way down the beach). Up against the side of the sea-cliff you can see conglomerate with fist-sized cobbles in it. On the beach itself there is a creamy coloured limestone, and a dark green sandstone. Which of these rocks is the oldest? The sandstone has lots of fossils in it in some places. Can you tell, by looking at the fossils, whether it was deposited in the ocean or on land? These rocks are all part of the Comox Formation of the Cretaceous Nanaimo Group— about 85 million years old. If you walk around the corner to the west (towards Departure Bay) you'll find the fourth rock type exposed underneath the conglomerate layer. This is the much older Karmutsen Formation sea-floor basalt (Triassic in age, about 220 million years). Take a close look at the pebbles and cobbles in the conglomerate. Can you tell what type of rock these were eroded from? It's best to visit this location at medium to low tide.</p>		
9	Pipers lagoon	Sea-floor basalt with pillows exposed on the headland. Lots of basalt pebbles on the beach leading out to the headland.
<p>From the main parking lot walk along the gravel bar towards the rocky headland. On the beach to your right you'll see lots of black and dark green pebbles. What kind of rock are these? Climb over the first rocky hill, and then take the trail to the right around the main headland. Look for pillows in the basalt—roundish shapes up to about half a metre across. Pillows like these only form on the deep ocean floor, so this is the product of sea-floor volcanism. The basalt is well exposed on all of the shorelines, but the pillows are easiest to see where they have been washed by the waves – near to the high tide level.</p>		
10	Neck Point Park	Sea-floor basalt with pillows and cross-cut by dykes, exposed along the shore.
<p>Walk out to the northernmost part of the park where there is a “neck” consisting of a gravel bar connecting a small rocky mass to the “mainland”. This is known as a tombolo. (It may not be obvious at high tide.) All of the rock here is Karmutsen Formation sea-floor basalt (Triassic in age, about 220 million years old). On the inshore end of the tombolo you should be able to see pillows in the basalt—roundish shapes up to about half a metre across. If you look carefully you'll also be able to see a number of dykes that cut across the pillow-basalt. The dyke rock is similar in colour and composition to the basalt, but it does have a slightly coarser texture. Which rock type is older, the pillow basalt or the dykes? You may be able to see that the edges of the dykes have a different texture (finer) than the middles. This is known as a “chilled margin”. Can you figure out why there is a chilled margin?</p>		
11	Sugarloaf Park	Karmutsen Fm. Triassic aged (220 million year) sea-floor basalt

NORTH NANAIMO AREA ROCK OUTCROP LOCATIONS

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8 – Planta Park at Stephenson Pt., 9 – Pipers Lagoon, 10 – Neck Point Park, 11 – Sugarloaf Park

