



Date: July 24th, 2018
To: Jon Jainga, Natural Resources Unit Manager; Parks Urban Forestry Unit
From: Christopher Rippey, Parks Arboriculturist
ISA Certified Arborist/Municipal Specialist (WE-7672AUTM), ASCA RCA #633, TRAQ
Subject: **ARBORIST REPORT:** Cheasty Bike Trail

Background

Seattle Parks Urban Forestry inspected any tree six feet or less from a proposed trail at Cheasty Blvd Greenspace. Only trees with a diameter greater than six inches were counted. To locate the proposed trail we utilized trail markers, a printed map and a GIS layer on Arc Collector.

Limits of the assignment: I have been assigned to state my opinion regarding potential tree damage due to soil compaction or installation damage that would result from this trail's installation. The trail was not fully physically laid out on site when technicians performed their assessment. Technicians used a printed map and GIS layer on Arc Collector to best determine where the proposed trail would be. Much of the trail went through areas that were covered with blackberry bushes. These areas were inaccessible by survey crews and were not assessed.

Discussion

Trees can adapt to slow environmental change, trees are not very good at adapting to fast environmental changes. Fast environmental changes would include things such as large root cutting, excessive water or elimination of a long-term water source. These things can rapidly kill or destabilize a tree. Slow environmental changes such as small-scale root cutting, soil compaction and reduction of water are things a tree can adapt to. Slow environmental changes around a tree are also more easily mitigated than fast or abrupt environmental changes.

The Cheasty Bike Trail project is unique but not too different for any other trail in our Parks system. All trail installation projects cause some amount of root damage by either root cutting, disturbance of water flow or soil compaction within the critical root zone. That said, trees will often adapt to, and overcome trail related construction damages in the long term. Especially if proper planning occurs and the trail is not situation close to the trunk of the trees. Seattle Parks has the authority to move the Cheasty Bike Trail when it is situated too close to a tree which could cause detrimental damage to the tree(s). Areas of the proposed trail that would fall into this category have been noted by technicians when they performed a site assessment and adjustments to the trail will be made to promote long term tree health.

Damage specifically caused by bikes to trees can come in two ways; soil compaction and damage caused by bikes physically impacting trees. Bike damage caused by bike parts or repeated tire impacts can be mitigated by trail placement, site inspections and the installation of wood chips where necessary.

Soil compaction caused by bikes is no more damaging than soil compaction caused by foot traffic, horses or other types of trail usage. Plant roots are damaged by soil compaction when the pore space in the soil is compressed to the point where air and water cannot be retained in the soil for the tree to use or when soils are compressed and tree root growth is restricted. Clay soils (like those in the Cheasty Blvd area) restrict root growth when compaction levels reach 1.46-1.63 g/cm³. This threshold can be monitored and mitigation processes can be implemented if that threshold is neared.

Lastly, in 2015 Cyclocross National was almost cancelled when concerns of bike caused soil compaction was raised by local residences. The race course past close to some heritage oak trees and the races were held on a very rainy and muddy day. This was a worst-case scenario for soil compaction. After the event an arborist performed an inspection of the soils around these trees. Their findings were that soil compaction readings ranged from 100 to 150 psi, well under the acceptable soil compaction levels for root development at 200psi.

Conclusion

If Cheasty Bike Trail is appropriately placed, construction mitigation efforts are implemented (watering, wood chip installation in areas determined by a Parks arborist), and site monitoring is cyclically performed then the installation of this bike trail will most likely not negatively affect the stability or long-term health of the trees indicated in our survey.