

Research projects in and around the water protection areas of Veitur Utilities and ON Power

Continuous efforts are made to enhance the knowledge of groundwater flows in the water protection areas of Veitur Utilities and ON Power. Research is conducted to better underpin decisions regarding land use and water extraction, as well as to the quality of drinking water for the future.

Water protection for the Capital Area

- Continued operation of a dense network of water level meters in monitoring wells in the vicinity of the capital area. These meters are used to monitor the effects of water extraction on the water table in the area.
- Annual update of the engineering firm Vatnaskil's groundwater model of the capital area.
- Ongoing assessment of the impacts of increased extraction from Vatnsendakriki on the water level in the vicinity, especially in Kaldárbotnar. The Hafnarfjörður Water Utility plans to conduct pump tests in Kaldárbotnar, and subsequently, Veitur Utilities and the Kópavogur Water Utility will have Vatnaskil re-evaluate parameters in the groundwater model around Vatnsendakriki to better predict the effects of future extraction in the area.
- Continued real-time measurements of the microbial flora in water using flow cytometry for i) managing drinking water quality and water collection, and ii) research to identify possible improvements to exposed water extraction wells. Veitur Utilities now has five flow cytometers providing a concurrent view of the microbial quality of drinking water in separate water collection areas and wells. The equipment is used alongside other environmental measurements for real-time monitoring and management of water quality in Veitur Utility's lower water collection area in Heidmörk and for improved resource utilization. One device was installed at Veitur Utility's pumping station in Grábrókarhraun to monitor the microbial load in the supply, which has been used, for example, to assess the impact of earthquakes and precipitation events on water quality.
- Two new devices for real-time water quality measurements were installed, one in the lower water collection area of Veitur Utility in Heidmörk, and the other in a water tank in Litluhlíð within the distribution network. This new measuring technology can detect increases in microbial flora and other undesirable substances that degrade water quality. The devices were installed for validation purposes.
- Continuous measurements of weather conditions and snow depth along with temperature, humidity, water content, and conductivity in the soil in Heidmörk. The data are i) used by operators to monitor the relationship between weather, environmental factors, and microbial contamination and to assess the need for responses, ii) used to observe variability due to weather and long-term climate changes (long-term measurements for a better understanding of the effects of climate change), and iii) used for research purposes to better understand the relationship between the environment, vegetation, and weather on the quality of aquifers.

- Continued experiments on lowering the water level in Myllulækjartjörn Pond. Concurrently, tests were conducted aimed at maintaining steady pumping from water extraction well V-14 in the Myllulækjar area. The goal was to see if steady pumping and reduced water level height in the pond would improve microbial quality in water extraction well V-14. Real-time monitoring of the microbial flora in the borehole water has confirmed that steady pumping results in stable and improved microbial quality. The experiment is still ongoing.
- Continuous monitoring of turbidity, pH, conductivity, temperature, and fluoride levels in water from water collection areas of Veitur Utility in Heidmörk, among other things, to monitor potential effects of the volcanic eruption on the Reykjanes Peninsula on water quality.

Water protection in rural areas

- Water extraction wells at Seleyri near Borgarfjörður bridge were renewed in the summer of 2022 to ensure future water collection from the area. The design of the well activation along with the construction of a pumping station is currently underway.
- The possibilities for improved water quality in the water utility connected to the aquifer in Grábrókarhraun due to fine particle issues that have increased following frequent seismic activity on the Reykjanes Peninsula are being analyzed. Options being considered include, for ex., increased water filtration, getting water from other locations. This examination is still ongoing.
- Close monitoring of water table changes in the aquifer at Steindórsstaðir has continued following the low water level in the winter of 2022/2023. The changes made to the management of water extraction to better distribute uptake have yielded good results.
- Overflow measurements were installed at Veitur Utility's aquifer at Fossamelar to improve understanding of the aquifer's capacity under different weather conditions.
- Extensive sampling and research on Veitur Utility's aquifer in Berjadalsá were conducted in August 2023 following indications of impaired taste quality of the water. An assessment of the aquifer and its operation is ongoing.

Water protection in the Hengill area

- Monitoring of water level measurements in monitoring wells in the Hengill area to better understand the effects of water extraction on groundwater level and groundwater flows.
- Annual update of the engineering firm Vatnaskil's groundwater model covering the Capital area and the Hengill extraction area.
- Chemical monitoring of groundwater in the vicinity of the power plants to monitor potential impacts of geothermal extraction on the groundwater resource.
- Sampling and measurements from springs and boreholes at Nesjavellir to monitor and increase understanding of variability in water temperature and water quality.