

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

Knowledge is lacking in groundwater flows in the water protection area of Veitur Utilities and ON Power. It has been decided that research will be undertaken to better prepare for land use and water management decisions, as well as to ensure the quality of drinking water into the future.

Water protection for the Capital Area

Veitur Utilities and the Vatnsveita Utility of Kópavogur, in collaboration with the Vatnsveita Utility of Hafnarfjörður, carried out tests in Vatnsendakriki in the summer of 2020 to assess the impact of increased production from Vatnsendakriki on water levels in the vicinity, especially in Kaldárbotnar in the Municipality of Hafnarfjörður. The test was part a monitoring plan, which was presented in parallel with the utilization license application. Results were presented in the beginning of 2021 and the main results were that the groundwater model of the area overestimated the effect of the test in Vatnsendakriki on the water level in the area. The results need to be examined more closely as updated meteorological data are added.

Continued operation of a dense network of water level meters in monitoring wells in the vicinity of the capital area. The network was used to monitor the effects of a prolonged drought period in the spring of 2021. Water level measurements in a monitoring well I in Grenkriki, in Heiðmörk, showed that the water level in May was at an all-time low since measurements started in 1973. Rainfall events during the summer raised the water level above the historical minimum and low water levels did not affect water supply.

- Annual revision of the groundwater model for the capital area.
- A peer-reviewed scientific article on the collaborative project between Veitur and Matís on DNA analysis of microorganisms in surface water, soil and groundwater was published in FEMS Microbiology Ecology in 2021. The aim of the project was to better understand the relationship between microbial contamination and environmental factors.
- Ongoing implementation on real-time measurements of microbial flora in water using a cell flow monitor to i) quality control of drinking water and ii) research to identify possible improvements in exposed wells. Two cell flow meters were added during the year 2021. There are now five of them and they provide a contemporary view of the quality of drinking water in different water extraction areas. The equipment is used in parallel with other environmental measurements for real-time monitoring and control of water quality in both the lower and upper water extraction areas of Veitur Utilities in Heiðmörk, as well as for improved resource utilization.
- Ongoing measurements of weather factors like snow thickness along with temperature, humidity, water content and conductivity in the soil. Data are i) used to monitor the relationship between weather, environmental factors and microbial pollution and to assess the need for response. ii) to discover variability weather and long-term climate change (long-term measurements to help understanding the effects of climate change), iii) for research purposes to better understand the relationship between the environment, vegetation and weather on water quality. The data were used e.g. by Tarek A. M. Zaqout, a doctoral student at the Faculty of Environmental Engineering at the University of Iceland, who studies the effects of vegetation and soil type on surface permeability under different conditions and surface conditions.

- Research at Myllulækjartjörn in Heiðmörk, on impact of water level on microbes in well V-14. The aim is to complete the project by 2022.
- Installation of equipment for continuous monitoring particles, acidity, conductivity, temperature, and fluorine content on main pipeline 1 and 2. in 2020. It was used to monitor the possible effects of the eruption in Geldingardalur on the Reykjanes peninsula on water quality in Heiðmörk. The equipment is part of Veitur Utilities' monitoring and response plan for volcanic eruptions on the Reykjanes peninsula and elsewhere. Individual samples were also taken from Veitur Utilities' well in Berjadalsá, Akranes to assess the possible effects of the eruption there. No significant changes in drinking water quality were detected due to the eruption.
- The same equipment was used for monitoring of possible changes in drinking water quality following extensive wildfires in Heiðmörk in May 2021. No quality changes were detected. Following the wildfires, an action and improvement groups were appointed within Veitur Utilities to update work procedures and work on various projects to prevent damage caused by wildfires.

Water protection in the Grabrokarhraun Lava

- Preparations for drilling a research well in Grábrókarhraun, which is planned for 2022, to find a solution to the fine-particle pollution in Grábrókarveita.
- The aim is to renew production wells at Seleyri in 2022, and preparations began 2021.

Water protection in the Hengill Area

- Monitoring water level in monitoring wells in the vicinity of the capital area to better understand the effect of water extraction on groundwater level and groundwater flow.
- Annual revision of the groundwater model for the capital area.
- The engineering firm Vatnaskil began a preliminary analysis of the effects of increased production at Engidalskvísl on waterresources in the area. Results are expected in the beginning of 2022.
- Chemical monitoring of groundwater in the vicinity of the geothermal power plants in order to monitor the possible effects of geothermal production on the groundwater resource.
- Increased sampling from springs at Nesjavellir to monitor variability in water quality.