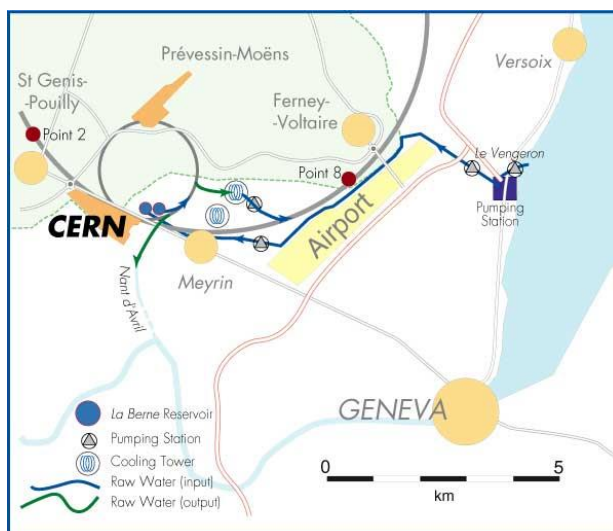


2019 CERN Water Consumption

The water is supplied to CERN from Lake of Geneva by a pumping station located in Vengeron (CH) by the Services Industriels de Genève (SIG). On some SPS Points (BA2, BA4) and on all the LHC Points, drinking water is supplied by the local French network for sanitary use and to ensure redundancy on the fire extinction network.



The total water consumption in 2019 amounted to 2 M m³ with a very strong decrease with respect to the previous years; this is clearly related to the stop of the accelerator for maintenance purposes in 2019.

The water is mainly used on the CERN sites for cooling purposes or industrial usage as well as for sanitary installations. The resulting effluents, together with natural meteoric and infiltration waters, are evacuated from the CERN sites in a controlled way.

Cooling water

The cooling water is either used as it is supplied (raw water), or is processed (demineralized water) and used in secondary circuits cooled by cooling towers using heat exchangers.

With the aim of keeping the water consumption low, the cooling water is circulated in closed loops that periodically require the addition of raw water to compensate for the evaporation in the cooling towers. Also, in case of excessive mineralization, the water in these circuits can be discharged and evacuated from the CERN site.

In addition, according to the legislation in force, water in the CERN atmospheric refrigerants is regularly checked for the Legionella and preventive treatments with biocides, respecting the applicable standards for water quality protection, are carried out.

The Water Distribution Network

Three pumping stations, all located in Point 1 of the LHC opposite to the main entrance, ensure most of the water distribution to all the CERN sites. These are:

1. The pumping station (P1) dedicated to the SPS and serving all technical equipment in the SPS and its surface buildings. This is a pure circulation pumping system, which during 2019 has circulated 7.5 M m³ in the SPS.
2. The pumping station (P2) is dedicated to the LHC and serves all the technical equipment in the LHC and its surface buildings. It pumps water made available by the Vengeron pumping station owned by the Service Industriels de Genève.
3. The pumping station (P3) is for the sanitary and technical needs in both the Meyrin and the Prévessin sites. Like the previous pumping station, it pumps water made available by the Vengeron pumping station owned by the Service Industriels de Genève.

In addition, the French (S4) and Swiss (S5) water distribution networks supply some of the SPS and LHC surface sites as detailed in the tables below.

SPS - 2019	Source	Origin	Total [m ³]
SPS BA2	S4	F	497
SPS BA4	S4	F	1'063
SPS BA5	S5	CH	554
Total			2'114

The water consumption in the SPS Points is for sanitary use only. The water to compensate for the evaporation in the cooling towers is given in the table for the water consumption of the Meyrin and Prévessin sites.

LHC - 2019	Source	Origin	Total [m ³]
LHC Complex	P2	CH	12'555
LHC Point 2	S4	F	3'785
LHC Point 3.2, 3.3	S4	F	315
LHC Point 4	S4	F	4'450
LHC Point 5	S4	F	9'260
LHC Point 6	S4	F	8'673
LHC Point 7	S4	F	3'080
LHC Point 8	S4	F	2'576
Total			44'694

The water consumption for the LHC Complex is mainly used to compensate for the evaporation in the cooling towers of the LHC Points. The water consumption in the LHC Points is mainly for sanitary use and for backup of the surface network for the hydrants in case of fire.

The small variations of water consumption in the LHC Points are due to the number of people present on the site and to occasional leaks whereas the big decrease of the water provided by the WS-LHC is due to the fact that the LHC complex has been supplied by the WS-NET (acting as back-up station in case of low demand on LHC areas).

Meyrin & Prévessin 2019			Total [m ³]
	Source	Origin	
Meyrin and Prévessin sites main supply, SPS BA1 and BA6, LHC Point 1	P3	CH	1'955'739
Safe supply	S5	CH	1'431
Clubs	S5	CH	802
Globe	S5	CH	739
Total			1'958'711

The first row of this table also includes the water to compensate for the evaporation in the cooling towers of the SPS and part of the supply to the LHC when the flow needed is reduced and the pumping station of LHC is not needed.