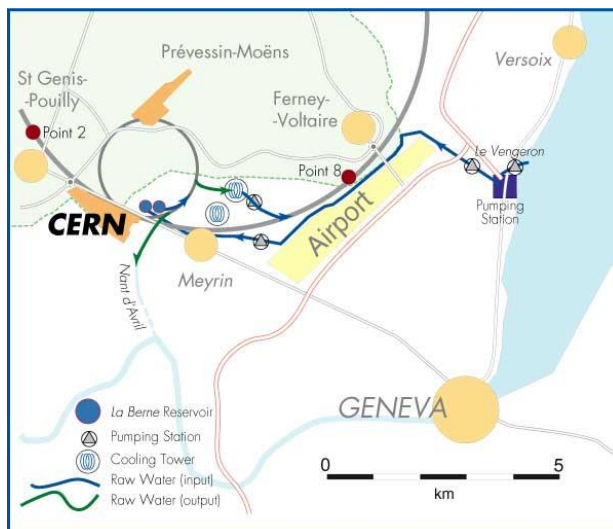


# 2017 CERN Water Consumption

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 2017 amounted to less than 3.4 M m<sup>3</sup> decreasing by about 16% with respect to the previous year; if compared with 2012 consumption, when the accelerators run with a similar schedule, the consumption is 1.7 M m<sup>3</sup> lower.

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 2017 has circulated 18.7 M m<sup>3</sup> 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 - 2017			Total [m <sup>3</sup> ]
	Source	Origin	
SPS BA2	S4	F	636
SPS BA4	S4	F	292
SPS BA5	S5	CH	101
<b>Total</b>			<b>1'029</b>

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 - 2017	Source	Origin	Total [m <sup>3</sup> ]
LHC Complex	P2	CH	751'131
LHC Point 2	S4	F	6'670
LHC Point 3.2, 3.3	S4	F	128
LHC Point 4	S4	F	6'217
LHC Point 5	S4	F	3'549
LHC Point 6	S4	F	5'464
LHC Point 7	S4	F	538
LHC Point 8	S4	F	4'556
<b>Total</b>			<b>778'253</b>

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 variations of water consumption in the LHC Points are due to the number of people present on the site and to occasional leaks.

Meyrin & Prévessin 2017			Total [m <sup>3</sup> ]
	Source	Origin	
Meyrin and Prévessin sites main supply, SPS BA1 and BA6, LHC Point 1	P3	CH	2'562'807
Safe supply	S5	CH	3'235
Clubs	S5	CH	876
Globe	S5	CH	851
<b>Total</b>			<b>2'567'769</b>

The first row of this table also includes the water to compensate for the evaporation in the cooling towers of the SPS.