



Grenoble North Bypass Project route

Country

France

Client

Conseil Général de l'Isère

Date

2008-2010

Sogreah's services

- ▶ Phase 1: Analysis and summary of existing hydrogeological and geological data concerning the North Bypass route
- ▶ Phase 2: Implementation of field investigations (boreholes, piezometers, hydraulic tests, water analyses) and measurement campaigns over a one-year period
- ▶ Purpose: Analysis of functioning of the aquifers along the project route and identification of the impacts of the road infrastructure on subsurface flows in these aquifers

Background

The Grenoble North Bypass route stretches from the end of the A41 motorway (La Carronnerie junction in Meylan) to the interchange with the A480 motorway (Polygone Scientifique district). The North Bypass project cuts through the alluvium of the river Isère and the alluvial cone at La Tronche passes through a tunnel driven through the limestone massif of the Bastille, and crosses a viaduct over the alluvium of the river Drac.

Hydrogeology was identified as being an important issue in the project, to which particular attention must be paid.

Content of the study

The Grenoble North Bypass project hydrogeological study comprises two phases.

Phase 1: Preliminary study

- Collection, analysis and summary of existing hydrogeological data.

- Finalisation of a programme of investigations aimed at removing geological and hydrogeological uncertainties and defining aquifer measurement points.

Phase 2: Complementary investigations

- Creation of a network of 60 piezometers spread over the municipalities of La Tronche, Meylan, Saint-Martin-d'Hères, Grenoble and Saint-Martin-le-Vinoux.



- Monitoring of aquifer levels and piezometric studies in order to establish the main flow directions in these aquifers and their interactions with surface watercourses (notably the River Isère).
- Instrumentation of 8 points (piezometers, spring, Isère, etc.) for continuous water level monitoring.
- Drilling of test boreholes (6 and 8" diameter) and piezometers.
- Pumping tests (60 to 110 m³/h).

- Gauging of watercourses (the Charmeyran in La Tronche) and springs.
- Water analysis campaigns on the piezometer network.

Objectives

The ultimate aim of the hydrogeological studies is to gain a better understanding of how the aquifers function, especially the alluvium of the Isère, in a geologically complex area about

which little is known, in order to identify the project impacts on subsurface flows.

These studies will be used as a basis for creating a mathematical model of aquifer flows, in order to quantify in particular the impacts of certain hydraulic or buried structures on flows in the alluvial aquifer of the Isère.



Instrumentation of a piezometer for continuous water level monitoring



Drilling of a test borehole

