



To Whom It May Concern,

I hereby certify that Mr. Santiago Sandoval was employed as an Academic Associate at the School of Engineering and Architecture of Fribourg (HEIA-FR) from February 1, 2021, to August 31, 2023, on a full-time basis (42 hours per week). During this time, he demonstrated strong expertise in project acquisition, research coordination, and interdisciplinary collaboration. His work contributed significantly to scientific outputs and institutional visibility, particularly within:

- the [Smart Living Lab](#), a center dedicated to innovation and sustainability in the built environment; and
- the [iTEC Institute](#), focused on construction and environmental technologies.

Key Responsibilities and Achievements

1. Member of the Smart Living Lab

Period: February 2021 – August 2023

Role: Project Coordinator and Researcher

Mr. Sandoval contributed to several high-impact, interdisciplinary research projects:

- **Blue Energy**

Amount: CHF 100,000 (starting/ending date: 2021-02-01/2023-09-01)

Objective: Assessing the energy potential of local water resources and their sustainable management at the district scale

Contribution: Hydrological expertise and integration of urban sustainability concepts

- **MIP – Modelling of Deep Infiltration**

Amount: CHF 15,000 (starting/ending date: 2021-09-01/2022-01-01)

Objective: Estimating deep infiltration using calibrated hydrological models at the urban catchment scale

Contribution: Funding acquisition, conceptualization, hydrological modelling, data analysis, and dissemination

Main publication: Sandoval, S., Favre Boivin, F., & Pfister, M. (2022). *Comparaison des modèles hydrologiques afin d'estimer l'infiltration profonde dans les milieux urbains à l'échelle de la parcelle*. Presented at: Conférence ArODES – 5e Séminaire Hydraulique des Canalisations VSA, Fribourg, Switzerland, 6 September 2022.

2. TTV Project – Project Leader

Period: 2022–2023 (starting/ending date: 2022-12-15 /2023-08-31)

Funding: CHF 170,000 (Innosquare – Fribourg Economic Promotion)

Role: Project initiator, funding acquisition, design, and management

Objective: Development of biochar-based green roofs combining stormwater reuse and urban agriculture

Outcome: Coordination of a multi-stakeholder consortium involving public authorities, private companies, and innovation incubators

3. Environmental Data Expert and Scientific Researcher at iTEC

• SEDIPIPE (starting/ending date: 2021-02-01/2022-02-01)

Period: 2021–2022

Amount: CHF 200,000

Objective: Design of decentralized systems for urban runoff treatment in collaboration with Swiss municipalities

Contribution: Technical development, data validation, and uncertainty analysis

Main publication: Sandoval, S., Favre, F., & Spahni, B. (2023). *Evaluation of in-situ TSS removal efficiency of a decentralized stormwater treatment system by means of continuous measurements*. Proceedings of Novatech 2023, Lyon, France, 4–7 July.

• PILNORD (starting/ending date: 2021-02-01/2022-02-01)

Period: 2020–2021

Amount: CHF 200,000

Objective: Design of decentralized treatment systems for railway runoff in partnership with CFF (Swiss Federal Railways)

Contribution: Technical development, data validation, and uncertainty analysis

Main publication: Sandoval, S., Favre, F., & Spahni, B. (2021). *Transformation of continuous turbidity measurements into pollutant concentrations in urban drainage systems: detangling global regressions*. 15th International Conference on Urban Drainage, Melbourne, Australia, 25–28 October (online).

• RCAF – Bilateral Research Funding

Period: 2022 (starting/ending date: 2022-06-01/2023-08-31)

Amount: CHF 15,000

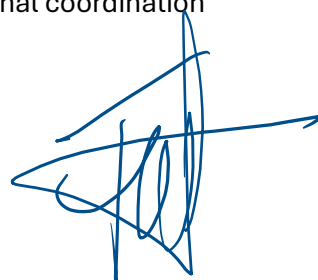
Partners: French–Swiss academic collaboration

Objective: Development of low-cost environmental monitoring solutions in Nature-Based Solutions (NBS)

Role: Project design, funding acquisition, and international coordination

Please do not hesitate to contact me for further details.

Sincerely,



■ Prof. Dr. Fabienne Favre Boivin ■ Responsable institut iTEC

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