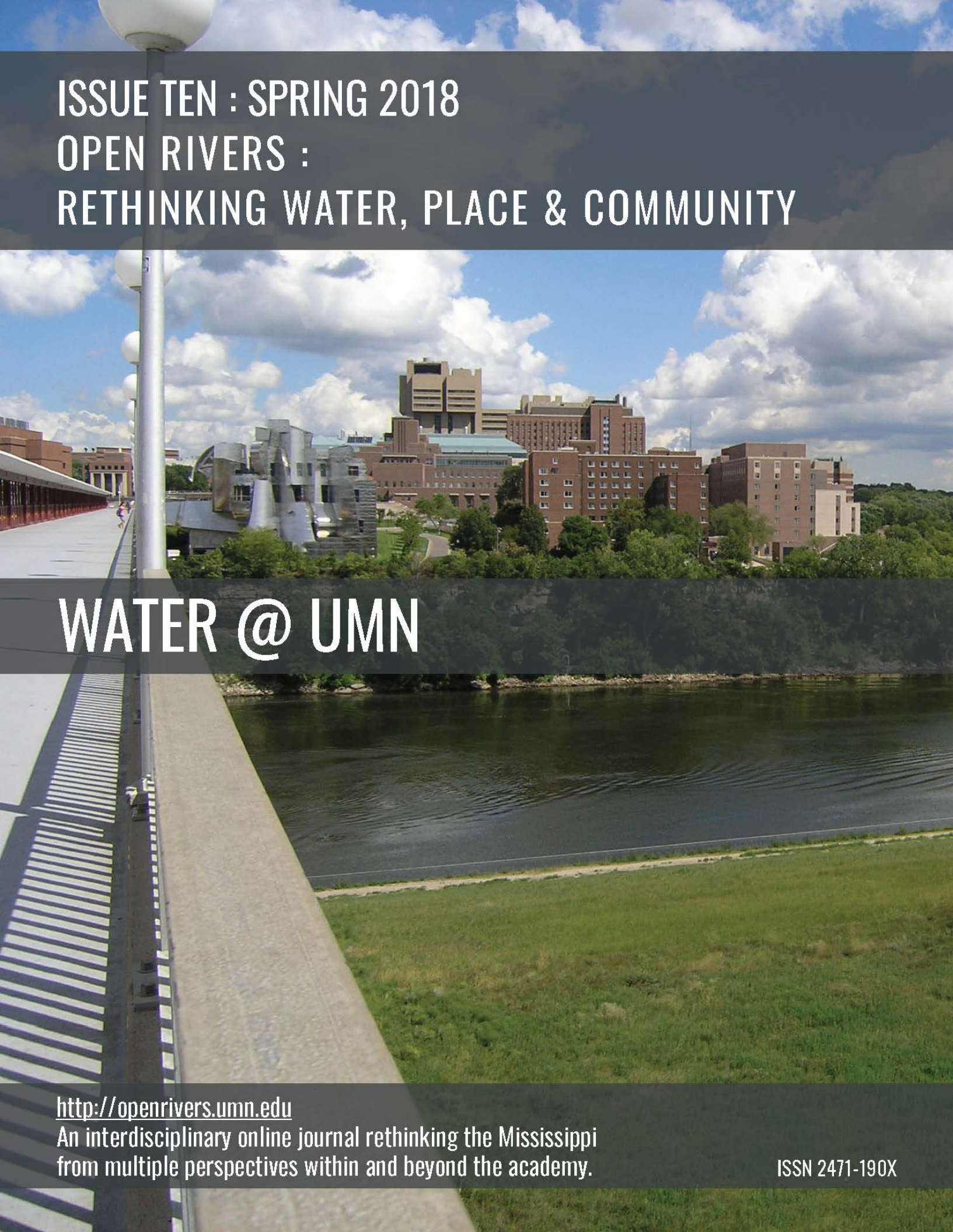
ISSUE TEN : SPRING 2018

OPEN RIVERS : RETHINKING WATER, PLACE & COMMUNITY



WATER @ UMN

http://openrivers.umn.edu
An interdisciplinary online journal rethinking the Mississippi from multiple perspectives within and beyond the academy.
ISSN 2471-190X

The cover image is of The East Bank of the Minneapolis campus of the University of Minnesota and the Mississippi River from the Washington Avenue Bridge. Image courtesy of Patrick Nunnally.

Open Rivers: Rethinking Water, Place & Community is produced by the University of Minnesota Libraries Publishing and the University of Minnesota Institute for Advanced Study.

Editors

Contact Us

Open Rivers
Institute for Advanced Study
University of Minnesota
Northrop
84 Church Street SE
Minneapolis, MN 55455

Telephone: (612) 626-5054
Fax: (612) 625-8583
E-mail: openrvrs@umn.edu
Web Site: http://openrivers.umn.edu

ISSN 2471-190X

Editorial Board

CONTENTS

Introduction

Features

Geographies

In Review

Perspectives

Primary Sources

Teaching And Practice

GEOGRAPHIES

LAB ON THE RIVER – SNAPSHOTS OF THE ST. ANTHONY FALLS LABORATORY

By Barbara Heitkamp

The St. Anthony Falls Laboratory (SAFL), which falls under the College of Science and Engineering at the University of Minnesota (UMN), is one of several historic buildings along the Minneapolis riverfront. Constructed in 1938 using funds from the Works Progress Administration (WPA), SAFL utilizes the 50-foot elevation drop over the St. Anthony Falls to bring water into the building for use in experiments and research of fluid dynamics.

St. Anthony Falls Laboratory on the Minneapolis riverfront in 1942. The landmarks of Minneapolis are evident, as well as SAFL's intimate relationship with the river. Courtesy of University of Minnesota Archives.

Lorenz Straub, UMN professor and engineer, was the mastermind behind constructing a hydraulic research facility on the Mississippi River. He served as the building designer and architect and after construction, served as SAFL's director until his death in 1963. You can read more about SAFL's history and research here.

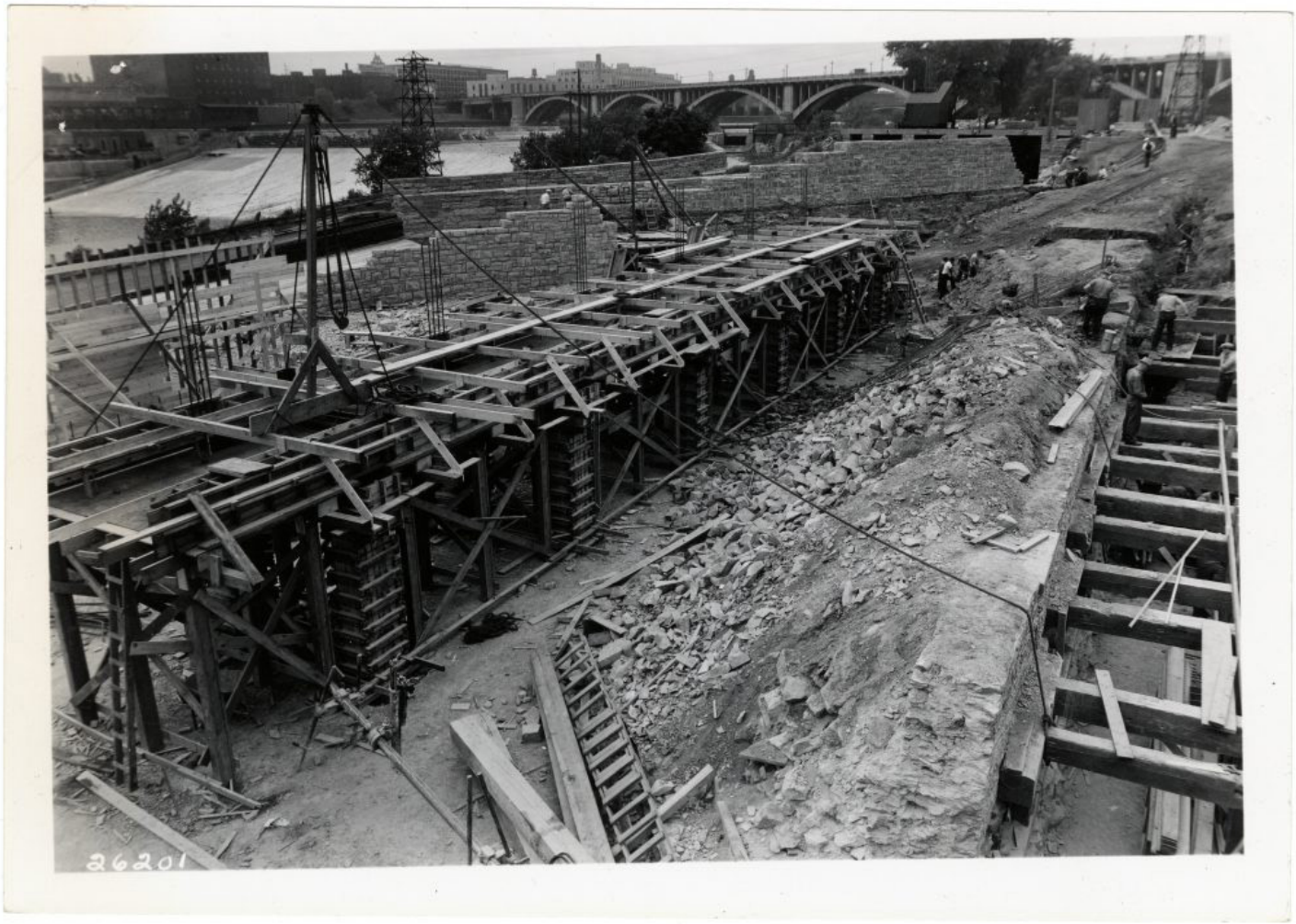
The following gallery showcases several photos from the early years of the laboratory, including construction. While most Minneapolis riverfront architecture has evolved beyond its original intended use, 80 years later SAFL continues its original function of educating the next generation of researchers who seek to answer some of society's most complex environmental concerns through basic and applied research.

All images courtesy of University of Minnesota Archives.

The St. Anthony Falls Laboratory was built on the site of a former Minneapolis pumping station (building in foreground at right) that was shut down in the early 1900s after a typhoid epidemic.

Lorenz Straub with a scale model of the proposed St. Anthony Falls Laboratory. 1937.

1936 pre-construction photo of the lab site. The pumping station has been deconstructed.



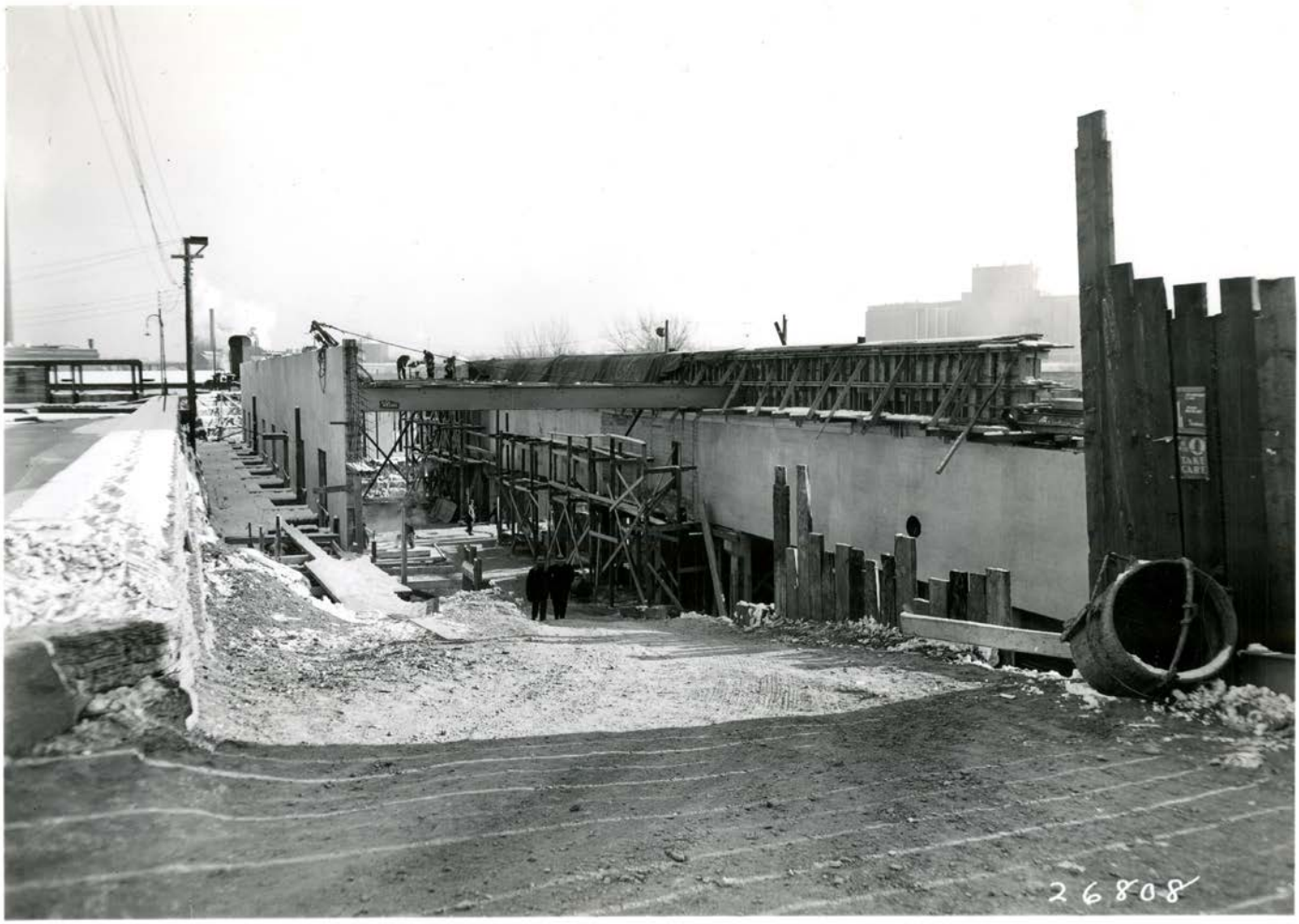
1936 construction of SAFL's supply channel that would divert up to 300 cfs (cubic feet per second) of river water from above St. Anthony Falls through SAFL's experimental facilities.

Laboratory construction in 1936 included excavation of approximately 30,000 lbs of limestone to expand the bottom floor where SAFL's outflow channel takes diverted water back to the river below St. Anthony Falls.

A 1936 view to the bottom of the laboratory where the turbine of the former pumping station still resided at time of construction. To this day, the basement floor of the lab is referred to as "the turbine level."

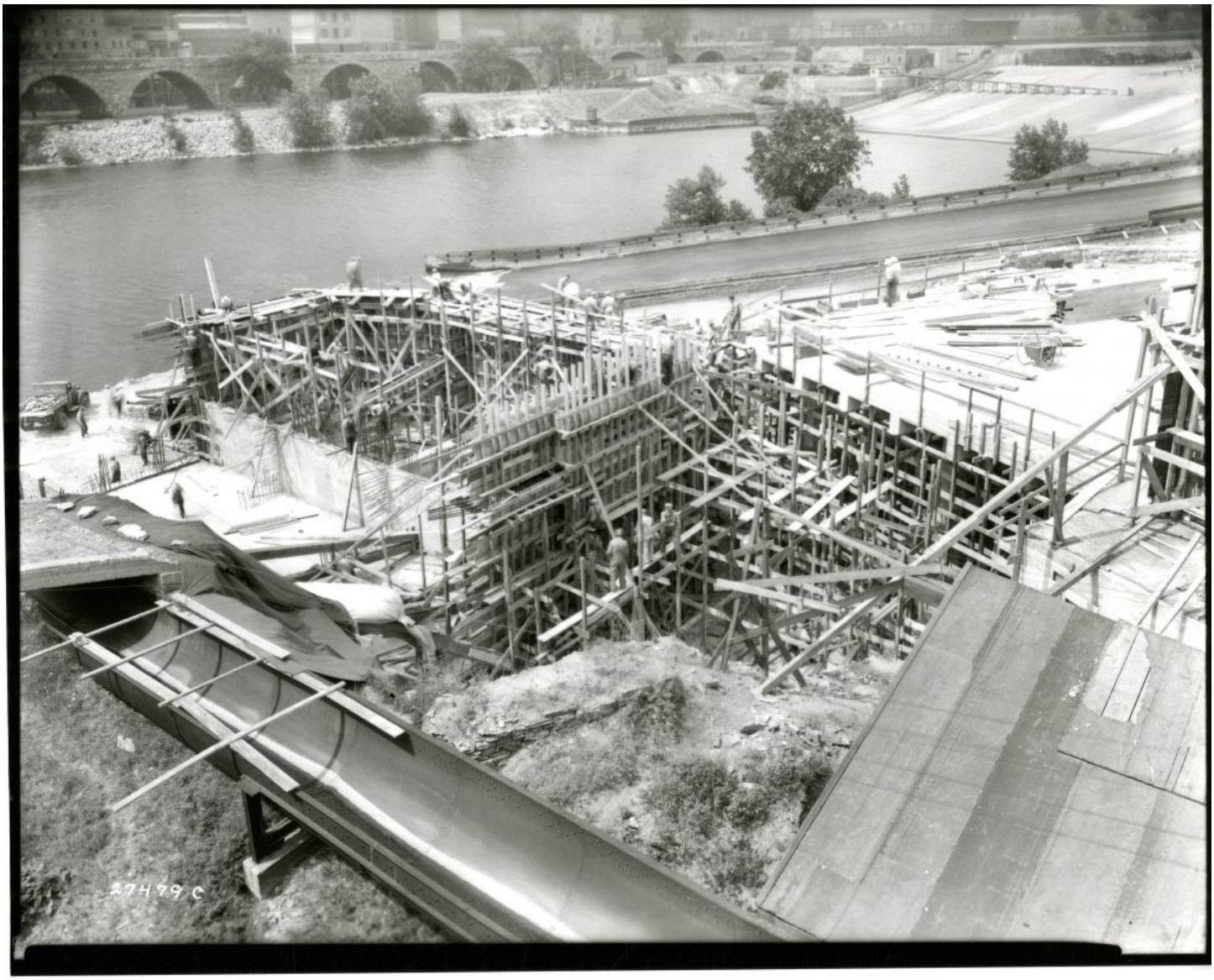
SAFL's exterior walls were constructed using limestone quarried on site, 1936-37.

Workers building the exterior walls of the laboratory in 1937.

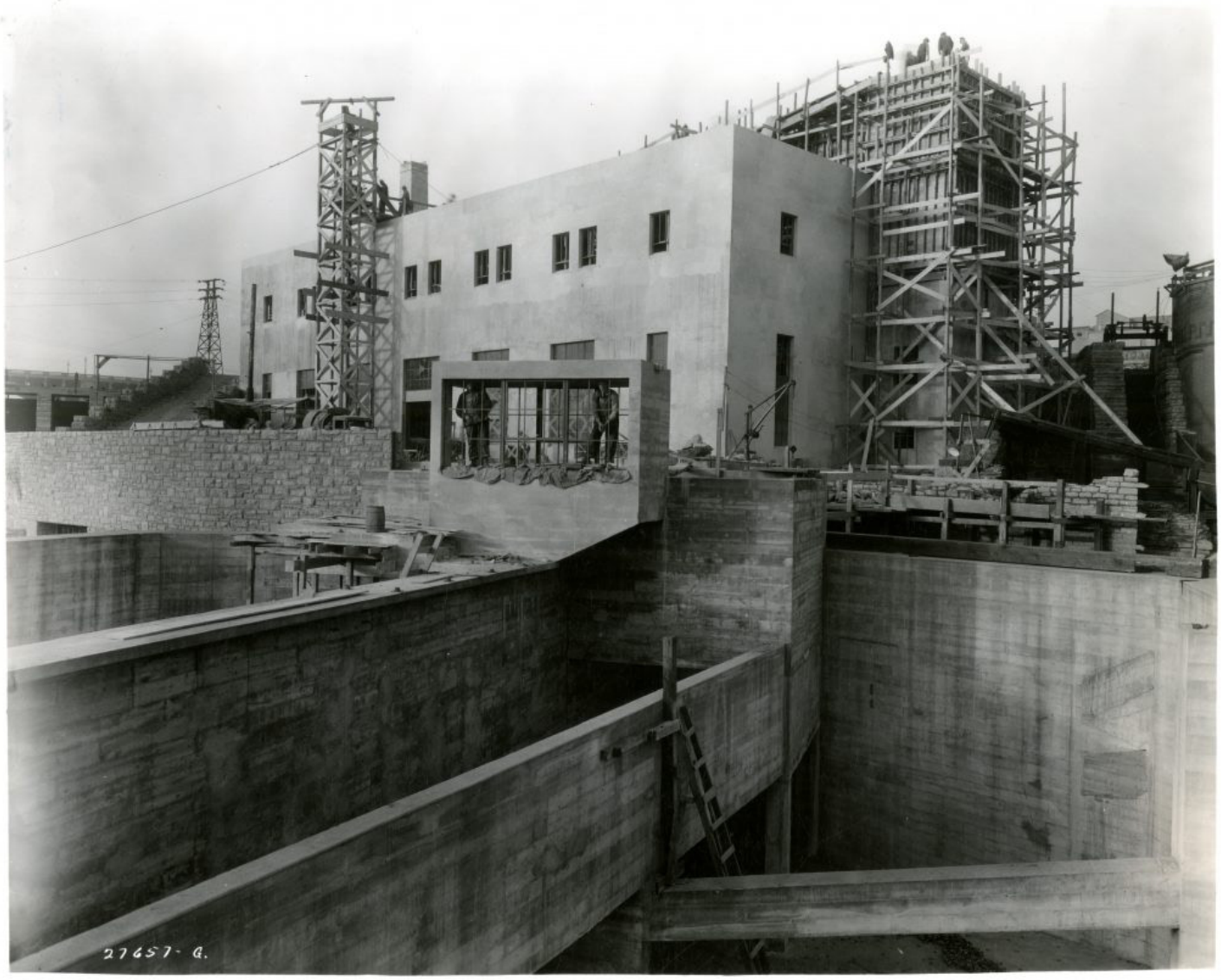


1937 construction of the model floor, SAFL's largest modeling/experimental space with access to the adjacent supply channel (middle of photo). Note the NSP (Northern States Power) diversion canal to the north (left of picture).

Construction photo of SAFL in 1937, showing extensive timber framing and the outflow channel, used to send water back to the river after its use in the laboratory. Viewed from near the river's edge.



Construction of SAFL's volumetric tanks used for deep water research, the basement level used for experiments, and lower deck. The basement level was designed to flood when the river levels rose above a certain level. Notice the Stone Arch Bridge and St. Anthony Falls in the background.



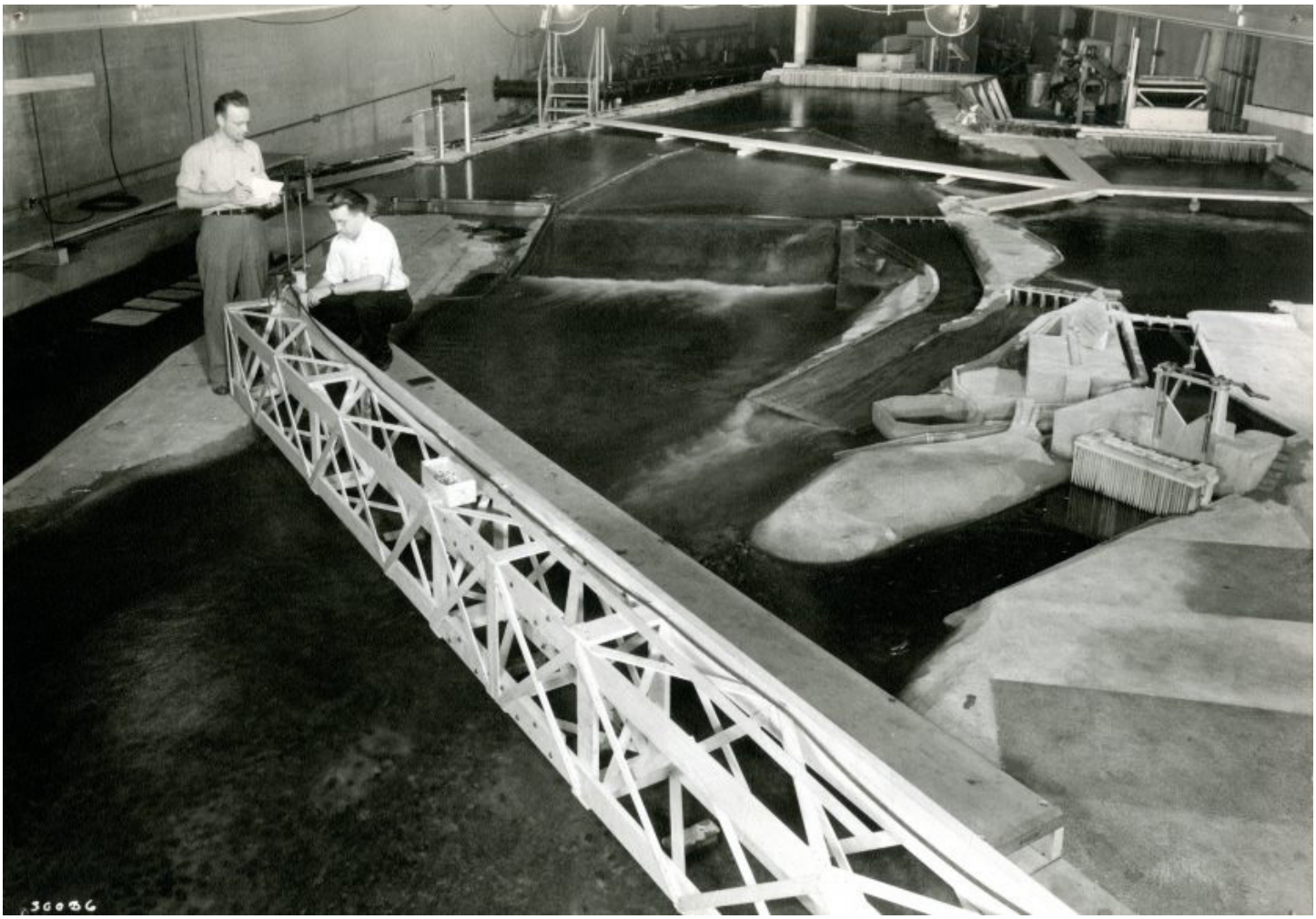
Continued construction of the laboratory in 1937. The building is starting to take shape. The volumetric tanks in the foreground are partially complete, later to be used for research requiring greater water depths.

The original outflow channel that moves water from the laboratory back to the Mississippi River was constructed for the former Minneapolis pumping station in the 1880s. The pumping station was demolished to make way for the lab. Note that the pumping station turbine (center of photo) still remains.

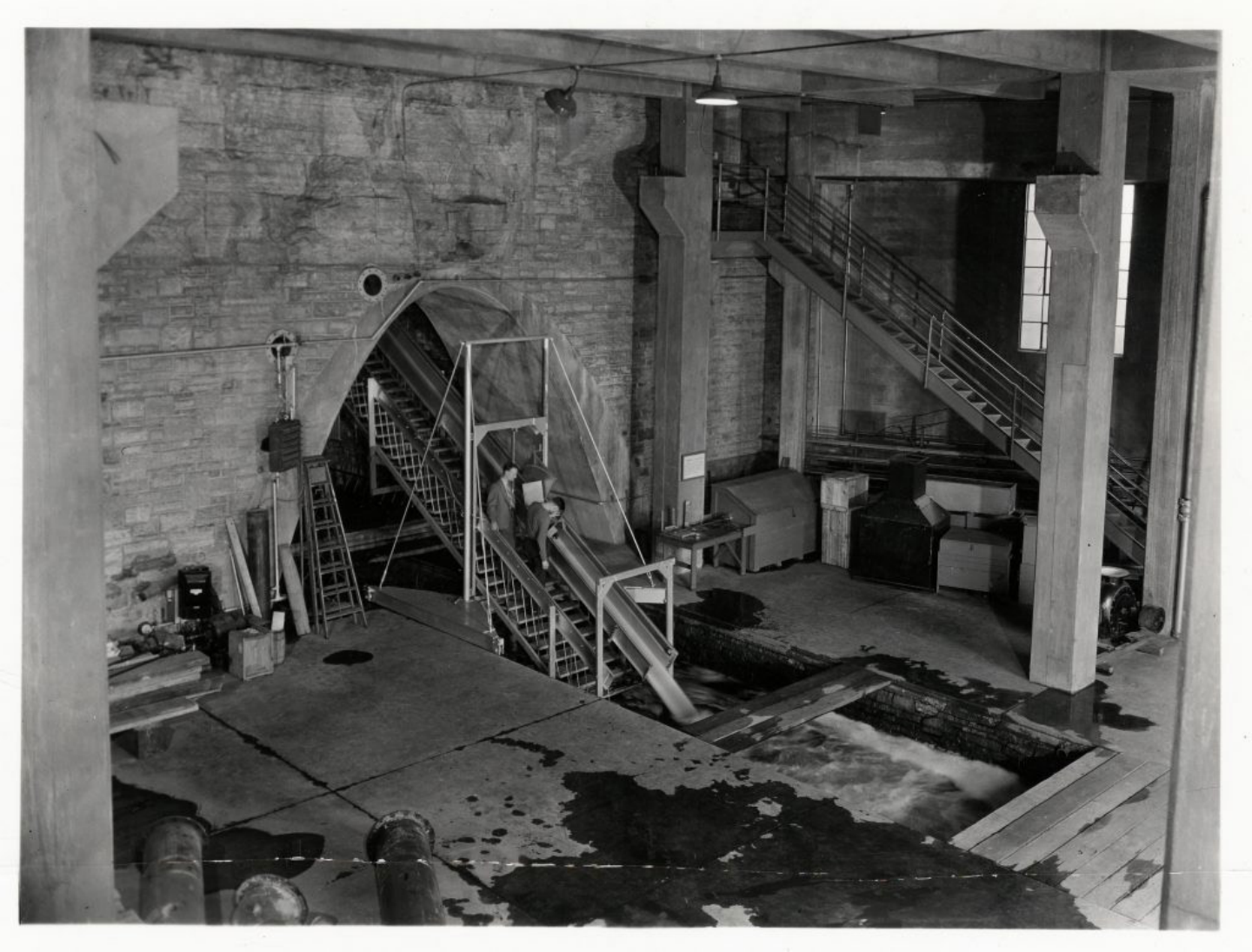
The basement level of the laboratory is constructed over the top of the outflow channel where water exits the building and rejoins the Mississippi River below the falls.

The completed St. Anthony Falls Laboratory in 1938. Notice the volumetric tanks in the foreground, and the city behind the lab.

View of the St. Anthony Falls and flood bypass channel alongside the newly completed St. Anthony Falls Laboratory with the volumetric basins visible in the foreground.

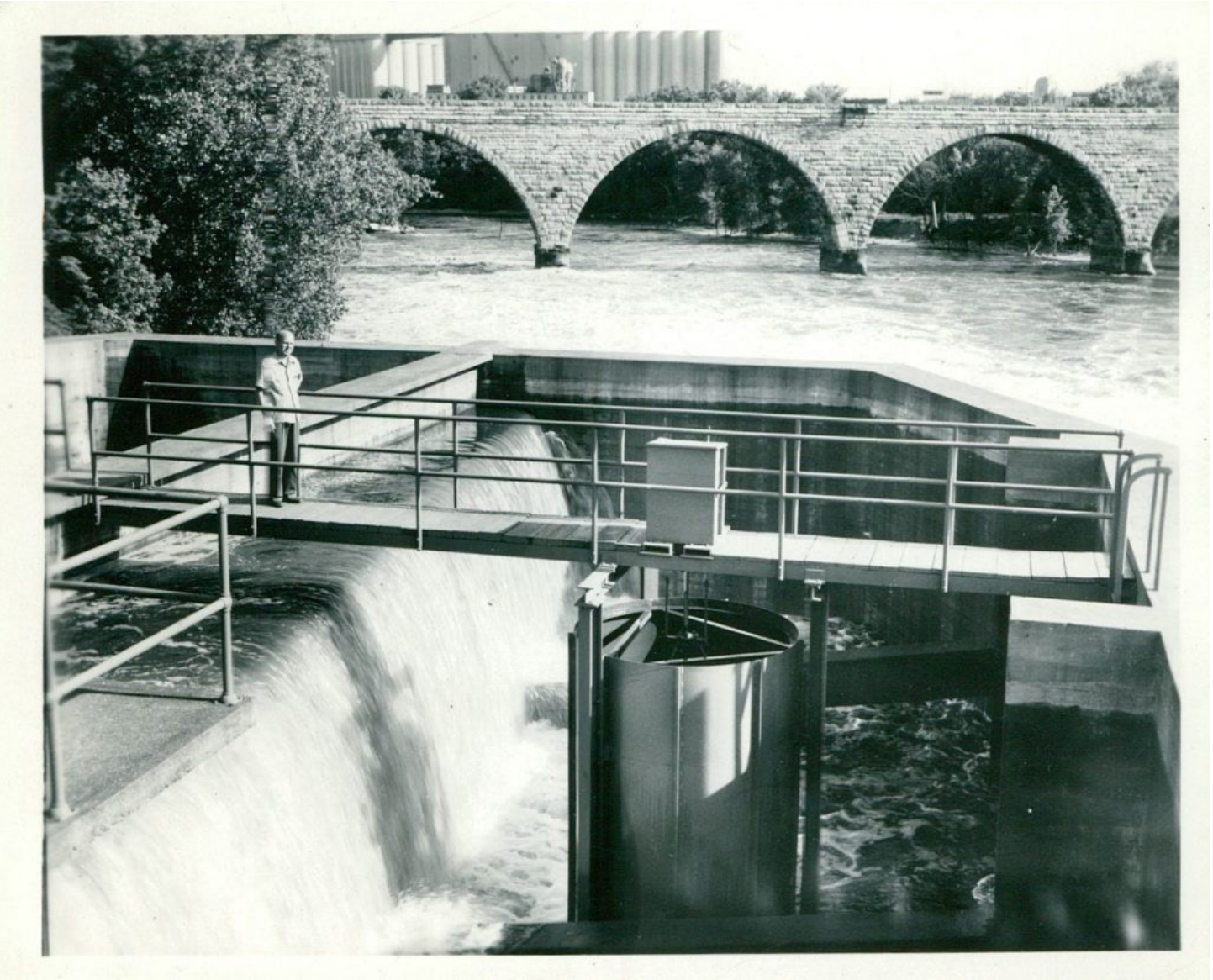


For several years, SAFL hosted a 1:50 scale model of the Mississippi River on its model floor. The model included the stretch of river from the Hennepin Avenue Bridge just upstream of St. Anthony Falls to the Washington Ave Bridge about one mile downstream. The model was built to better understand the potential effects upper and lower dams and locks on the Upper Mississippi would have on navigational conditions.



Water sent down an experimental channel (called a flume) enters SAFL's outflow channel, sending the water back to the river. This particular experiment explored the aeration behavior of water in an open channel.

See video of aerated flow in open channels from the SAFL film archives.



Lorenz Straub standing on the volumetric tank facility.
Notice the Stone Arch Bridge in the background.

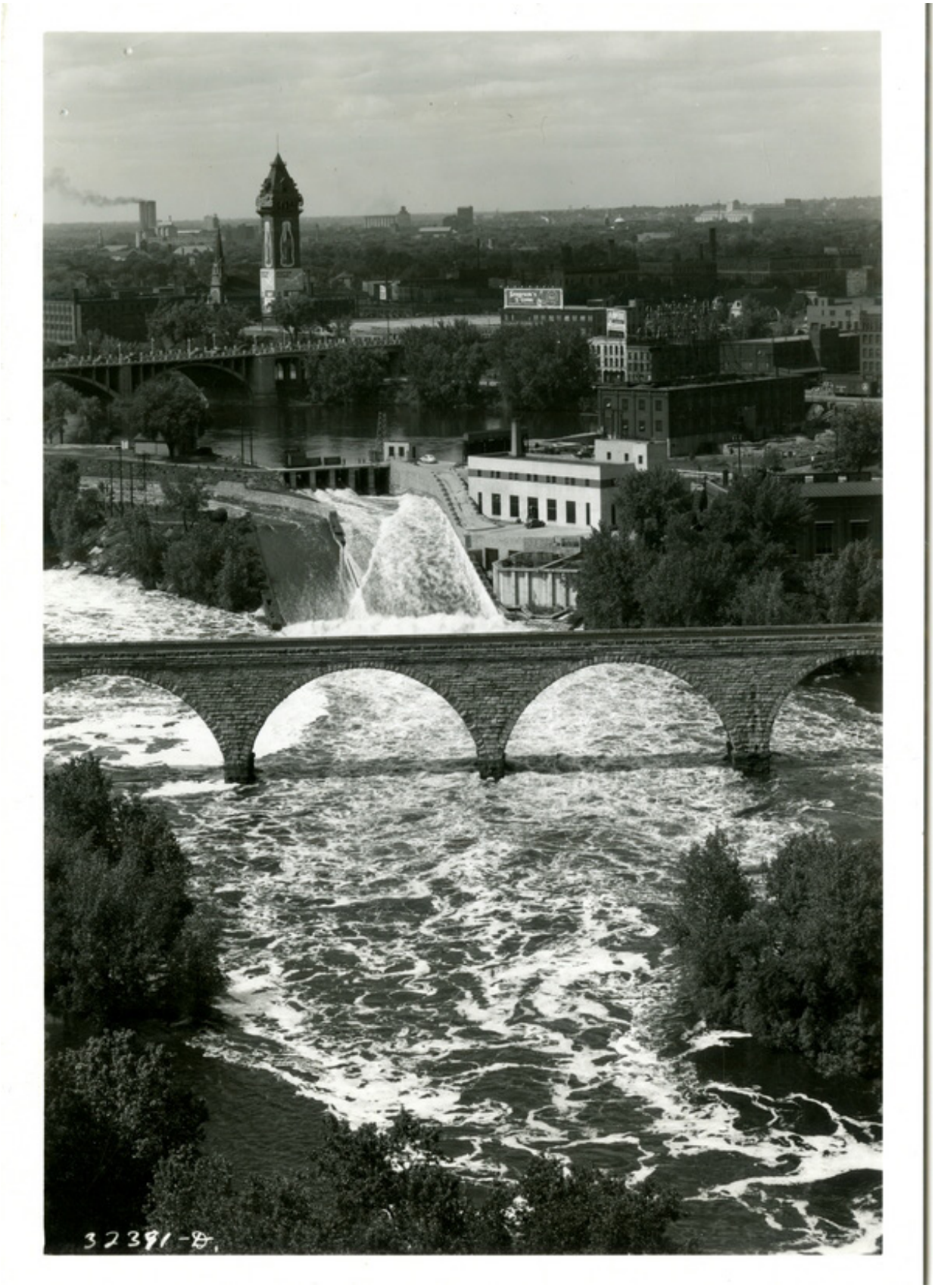
St. Anthony Falls Laboratory on the Minneapolis riverfront in 1942. The landmarks of Minneapolis are evident, as well as SAFL's intimate relationship with the river.

A view across the upper deck at SAFL showing the river itself from the perspective of the laboratory in 1942. Modern visitors to the lab will notice that the building has been expanded considerably since then.

The Minneapolis Chamber of Commerce held a meeting on SAFL's shop floor in the early 1940s. This is the first floor above the basement level, and not designed to be flooded when the river rises.

Lorenz Straub works at his desk at SAFL. He served as the director until his death in 1963.

Aerial view of the Minneapolis waterfront in 1942. Notice SAFL at the upper center of the river-front, downstream of the horseshoe dam and upstream of the Stone Arch Bridge. You can also see the Pillsbury A Mill on the upper bank.



Aerial shot of the laboratory showing its relationship to the Stone Arch Bridge and with water coming down the flood bypass channel just to the left of the laboratory building.

SAFL under the Stone Arch Bridge from the river itself in the 1940s. This iconic picture is beloved and has been used extensively by SAFL in publications and materials since.

All images courtesy of University of Minnesota Archives.

Recommended Citation

Heitkamp, Barbara. 2018. “Lab on the River – Snapshots of the St. Anthony Falls Laboratory.” *Open Rivers: Rethinking Water, Place & Community*, no. 10. http://editions.lib.umn.edu/openrivers/article/lab-on-the-river/.

About the Author

Barbara Heitkamp is the communications specialist for the St. Anthony Falls Laboratory (SAFL). She joined the SAFL technical staff in August 2011 and moved into the communications position in June 2014. Her technical background is in geology and hydrology, with a B.S. degree in geology from Texas Christian University and an M.S. degree in water resources science from Oregon State University.